Learning Forum London 2010 - Internet of Subjects Forum

ePortfolio - Key Competencies - Identity

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Foreword

During three days, the 8th international ePortfolio conference and the first Internet of Subjects Forum provided the opportunity to explore the achievements made since the first international ePortfolio conference (Poitiers, France, 2003) where we announced that "in 2010, every citizen will have an ePortfolio." Although we are not there yet, the ePortfolio is now a technology and a practice that has grown worldwide, so one could say that "in 2010, every country has one or more ePortfolio initiatives", several of them being established at local or regional levels. On the other hand, while every citizen does not yet have an ePortfolio most of those using the Internet have developed some kind of digital identity, i.e. using digital technologies to develop and showcase their identity online. This emerging practice has also revealed the flaws and limitations of the current Internet architecture: the constitutive elements of our identity are fragmented in information silos that are mostly out of our control... which also applies to many ePortfolio implementations... This is why we decided to use the opportunity of the international ePortfolio conference to launch the first Internet of Subjects Forum: our goal is to place the ePortfolio and educational practice in the global perspective of identity construction.

Those who were able to join us on day one had the opportunity to explore state of the art digital identity and ePortfolio technologies and practice through keynotes and workshops. A series of workshops run by Helen Barrett on Your Digital Self — Web 2.0 as Personal Learning Environment attracted numerous delegates wishing to use state of the art technologies to construct online identities. Those with an interest in making technologies work were able to join the Interoperability Challenge organised in partnership with JISC-CETIS.

Tuesday and Wednesday, an extensive track on ePortfolio in healthcare presented a number of case studies and research —the best papers are published by the International Journal of Clinical Skills (IJOCS). Presentations ranged from the design and implementation of ePortfolios in the curriculum, the use of ePortfolio for self-assessment, accreditation, professional identity construction, to continuing professional development and employment. 21st century skills, essential skills and key competencies were also addressed in a number of presentations.

The final plenary session offered a moment to reflect on what we learned from this event and plan the future of ePortfolio and identity construction.

We express our warm thanks to MKM our Platinum Sponsor, JISC-CETIS and TAS3 for their support and to Pr Harry Owen for his support in the organisation of the healthcare track.

We wish you an interesting reading of these proceedings and look forward to seeing you at the next ePortfolio conference, London 11-13 July 2011.

Serge Ravet
EIfEL, IoS Forum
# Table of contents

## Healthcare

**Facing the Challenges of 21st Century Healthcare Education** ...........................................11  
Harry Owen, Flinders University, Australia

**Can ePortfolios assist students' learning in the work place? Exploring students’ demonstration of their professional work experience through ePortfolios in the Construction Management and Nursing disciplines** .........................................................13  
Catharine Ann Simmons, Anthony Williams, Tracy Levett-Jones, William Sher, Lynette Bowen, Ning Gu The University of Newcastle, Australia

**The professional ePortfolio - a platform to support evidence-based professional development** ..............................................................................................................................................22  
Luke Feeney, Steve Pitman Royal College of Surgeons in Ireland Institute of Leadership, Ireland, Bahrain and the United Arab Emirates

**Effective embedding of ePortfolios in Medical and Dental curricula** .........................29  
Simon Cotterill, Paul Horner, David Teasdale, Janice Ellis, Mark Thomason, Chris Vernazza, Philip Bradley, John Peterson, Gordon Skelly, Tony McDonald, Steve Ball Newcastle University, United Kingdom

**ePortfolios in general dental practice: validating CPD activity for improved performance** ..............................................................................................................................................31  
Julia O’Sullivan, Robert Morgan Royal College of Surgeons of England, United Kingdom

**Electronic Portfolio Use as an Assessment Medium: Pharmacy Students' Perceptions and Experiences** ..............................................................................................................................................33  
Kenneth Lee a,b, Michelle Kinsella a,b, Beverley Oliver c, Brian R von Konsky c and Richard Parsons a,d a School of Pharmacy, Curtin University of Technology, Bentley, Western Australia b Curtin Health Innovation Research Institute (CHIRI), Curtin University of Technology, Bentley, Western Australia c Office of Teaching and Learning, Curtin University of Technology, Bentley, Western Australia d School of Occupational Therapy & Social Work, Curtin University of Technology, Bentley, Western Australia
DO I DARE DISTURB THE UNIVERSE? AN ePORTFOLIO VISION FOSTERING INDEPENDENT MINDEDNESS IN HEALTHCARE

Anne-Marie Howes Leeds Institute of Medical Education, University of Leeds

References

Experience acquired from the development of ePortfolio continuing competence solutions for 8 (eight) regulated health professions

John Terence Ogle SkilSure Limited, Canada

Rewards for Healthcare ePortfolio with Generic Competences

Ashfaque Ahmad SHAH, Sajjad Haider BHATTI IREDU (CNRS/UB DIJON), France

Physician, Know Thyself: a role for self-assessment in ePortfolios?

Alexander David Joseph Haig, Karen Louise Beggs, Claire Marie Tochel NHS Education for Scotland, United Kingdom

'Knowing Me, Knowing You': Tutor Practices of Encouraging Student Learning Through ePortfolio

Christopher Murray, Delia Muir University of Leeds, United Kingdom

ePortfolio for UK Healthcare Medical Revalidation

Alexander Warwick CALIBRAND, United Kingdom

Worlds apart? Developing a professional competency assessment framework that links university education with ‘real world’ practices in the Construction Management and Nursing disciplines

Catharine Simmons, Anthony Williams, William Sher, Ning Gu, The University of Newcastle, School of Architecture and the Built Environment, Australia; Tracy Levett-Jones, Lynette Bowen, The University of Newcastle, School of Nursing and Midwifery, Australia;

The Missing Link: An investigation into variations in Doctors’ use of features in the United Kingdom’s Foundation Programme ePortfolio

Joel William Smith, Tim Brown, Karen Beggs, Alex Haig

The training ePortfolio for UK physicians: how effectively is it being used?

Joseph Robert Booth Royal College of Physicians, United Kingdom

Integrating healthfolios with career ePortfolios in a post-secondary environment to improve student health and well being and reduce future healthcare costs

Cyri Jones

Health literacy in new university students: societal implications of expanding awareness

Ellen Ennever

Employment

Experimentation of the ePortfolio with Students Searching for a New Orientation

Laurence Pérennès, Dominique Duhaut, Université Bretagne Sud
Does the world of employment actually want ePortfolios? Messages from a UK university-business collaboration
Angela Smallwood, Tom Kirkham, Stuart Wood, Kirstie Coolin, Sandra Winfield

Building the ePortfolio City in Augusta, Arkansas
Darren Cambridge

CLICK-MyCareer
David Paul Sowden, Tracey Heath, Nick Hooper

ePortfolios – from pilots to policies
Dries Pruis, Lex Polman, Kenteq, The Netherlands

SAMSON & PIOP3: Working with ePortfolios to Liberate Learner Data
Sandra Winfield, Kirstie Coolin, Stuart Wood, Tom Kirkham, University of Nottingham, United Kingdom

Essential Skills ePortfolio
Don Presant, Learning Agents, Canada

EIPIL-PAN EU Project: Exporting Europass CV from Mahara ePortfolio
Marc Van Coillie eEL, Dave Waller MKM

Teacher education

ePortfolio for development of teaching identity: Identifying learning stages
Drs Kathy Sanford and Tim Hopper

Dynamic Learning Maps
Paul Horner, Simon Cotterill, John Peterson, Gordon Skelly, Newcastle University, United Kingdom

Teacher Portfolio: a Tool for Reflection on the Teaching Sense
Ljuba Pezzimenti, Pier Giuseppe Rossi, Lorella Giannandrea, University of Macerata, Italy

Hellenic Teachers’ Life-Long Learning Skills Validation via Interactive ePortfolios (HeTeLeSeP)
Niki Lambropoulos1, Marianna Vivitsou2

ePortfolio for development of teaching identity: Identifying learning stages
Katherine Sanford, Timothy Hopper

The use of ePortfolios to support Initial Teacher Training
Matt Wingfield1, Janette Mills2

Integrating ePortfolio in an Online Platform for Teacher Professional Development: Design and Expectations
Albena Todorova, Ludwig-Maximilians-University Munich, Germany; Danny Arati, Thomas Osburg Intel Corp.

The role of an ePortfolio in enhancing employability for Masters students in publishing
Mary Ann Kernan, City University London
Using a Capstone ePortfolio to Encourage Integration across a Degree Program.115
R J Lawson, University of Technology Sydney C. Bajada, University of Technology Sydney

Self-Evaluated Effects of Web-Base Portfolio Assessment for Various Student Motivation Levels .................................................................119
Chi-Cheng Chang, National Taiwan Normal University, Taiwan, Republic of China

Effects of Learners’ Reflection Category and Performance on Learning for Web-Based Portfolio Assessment ..............................................128
Chang, Chi-Cheng, National Taiwan University

Japanese case study on key-competencies for active citizenship by Internet Learning Communities.........................................................140
Yoshihiro Tatsuta, National Institution of Educational Research of Japan; Tomio Saku, Internet Learning Community for Citizen, Junnichi Yamanishi, Toyama University

Towards successful implementation of ePortfolios in blended learning ........146
Balaban, Igor; Divjak, Blazenka; Grabar, Darko; Zugec, Bojan University of Zagreb, Faculty of Organization and Informatics Varazdin

Examining Learners’ selecting, organising, and integrating process in a knowledge management system .....................................................154
Yang, Fu-fen & Yeh, Hui-chin

An ePortfolio system to assist teachers in evaluating students’ language learning .................................................................155
Hui-Chin Yeh1, National Yunlin University of Science and Technology, Taiwan, Republic of China; Fu-fen Yang, National Yunlin University of Science and Technology; Shih-hsien Yang, National Formosa University

ELKOPOS – E-Learning-Kompetenzportfolio: presentation and evaluation of e-learning competencies ...........................................157
Kristina Richter, Regina Bruder TU Darmstadt, Germany

Embarking on the Journey of ePortfolio Experience: A New Approach to Enhance Graduate Employability ...........................................159
Dean William Fisher, Hokling Cheung, Valerie Pickard, Yingjun Josephine Chen City University of Hong Kong, Hong Kong S.A.R. - China

Strategy of Implementing ePortfolio at the Siberian Federal University ..........164
Olga Georgievna Smolyaninova Siberian Federal University, Russian Federation

Introduction of University-wide ePortfolio System in Japanese Perspective ........166
Takeshi Matsuda, Daihachi Hachiya Yamagata University, Japan

Making ePortfolios work for those with learning disabilities – CODA project ....170
Joel Voysey United Response, United Kingdom

Capstone ePortfolio to Encourage Integration across a Degree Program...........172
Romy Lawson University of Technology Sydney, Australia
Cameras in Early Childhood: Tools of Communication, Voice and Reflection ..........173
Eileen Elizabeth Brennan Mercy College, United States of America

Showcase You on iTunes U: The iPortfolio enables student self-assessment of key capabilities and the public showcase of achievements ..................................................174
Brian R. von Konsky, Beverley Oliver, Peter Nikoletatos, Heath Wilkinson Curtin University, Australia

Development of an ePortfolio system for taking the initiative in learning .............182
Jun-ichi YAMANISHI, Takashi KURODA, Faculty of Human Development and Education, University of Toyama, Yoshimasa SUGIMOTO2, Tomio SAKU, NTEC Systems Institute, Inc, Japan

Implementation of ePortfolios within the Study Programme "Problem Solving Competencies" ......................................................................................................................186
Thomas Sporer University of Augsburg, Germany

A ground-breaking approach to the subjective assessment of ePortfolios using the Law of Comparative Judgement ................................................................................187
Matt Wingfield, TAG Developments, Richard Kimbell

Developing learner autonomy through the use of ePortfolio: consideration about qualitative and quantitative evaluation .................................................................188
Yoshikazu Ishibashi The Graduate University for Advanced Studies, SOKENDAI, Japan

Creation of Seamless ePortfolio Ecosystem: Challenges of the Rural and Sub-Urban Dwellers in Nigeria. .................................................................................................193
Dr. (Mrs) Philipa O. Idogho, Rector, Auchi Polytechnic, Auchi, Nigeria, Emadomi M. Igbape, Director, MIS, Auchi Polytechnic, Auchi, Nigeria.

An ePortfolio system to assist teachers in evaluating students' language learning .................................................................................................................................199
Yeh, Hui-Chin; Yang, Fu-fen; Yang, Shih-hsien

Technology

e³-Portfolio – Open Source Portfolio Tool based on the Content Management System “Drupal” .........................................................................................................................202
Johannes Metscher, Bernhard Strehl & Thomas Sporer Institute for Media and Educational Technology at University of Augsburg, Germany

Ensuring learner privacy in an ePortfolio environment ..................................................208
Allison Miller TAFE South Australia, Owen O’Neill, eWorks/Link Affiliates

Emerging issues in using ePortfolio .............................................................................212
Igor Balaban, Blazenka Divjak, Matija Kopic, Faculty of Organisation and Informatics Varazdin, University of Zagreb

Let’s Keep it Personal: ePortfolio Data in Next Generation Distributed Computing Applications .................................................................................................................219
Sandra Winfield, Tom Kirkham University of Nottingham, United Kingdom
Which open source ePortfolio software system fits the demands of the University of Vienna best? A comparative praxis analysis of three ePortfolio software systems, considering the perspectives of students, teachers, and the institution ..........................221
Birgit Peterson, Ingrid Aichberger, Petra Oberhuemer University of Vienna, Austria

Emerging issues in using ePortfolio .............................................................................................................223
Igor Balaban, Blazenka Divjak, Matija Kopic

Interoperability in Action – ePortfolios, Leap2a and ..................................................................................224
Johannes Metscher, Bernhard Strehl, Franziska Mossner, Thomas Sporer

Mahara: Book, Official Certification and eAssessment Integrations ..................................................225
Derrin Kent, Richard Hand, Glenys Bradbury, Meg Kent TDM, United Kingdom
Healthcare
Facing the Challenges of 21st Century Healthcare Education

Harry Owen, Flinders University, Australia

Healthcare education and training are undergoing both expansion and reform in most parts of the world. At the same time, the way healthcare is delivered is changing in response to increasing demand and budgetary constraints. The associated mobility of the both provider and consumer requires new processes to track outcomes and ePortfolios are playing a major role.

Basic healthcare education

Assessment in healthcare education is moving to encompass all aspects of what makes an effective practitioner. Knowledge can be assessed summatively at critical points of a course but clinical and cognitive skills such as decision making and communication with patients and peers and attitudes are best assessed longitudinally. Healthcare education must be patient-based and as healthcare has become more community-based so more student teaching now takes place outside university or teaching hospitals. The challenge for universities is to maintain fairness, validity and reliability of assessment. Medical schools are accountable for the education of their graduates and need evidence that their students have the knowledge, skills and attitudes to undertake patient care. Many portfolio-based tools have been used for this and there is now enough experience to identify features that make them more or less successful.

There is a long tradition in medicine of public patients being used for learning new skills and techniques. All psychomotor skills have a learning curve so it should not be a surprise that novices make more mistakes than experts. As the use of technology and invasive treatments has increased in medicine so has the ability to cause serious harm to patients. Mechanisms are needed to make sure that patient safety is maintained whilst giving students opportunities for learning. A skills passport is one of several examples of portfolio tools that have been used for this.

Post-basic and advanced (specialist) healthcare training

The introduction of work-time directives to manage fatigue in healthcare professionals has reduced the amount of clinical experience and the amount of supervision during training. Improved performance requires deliberate, varied practise and expert feedback but as a result of shorter hours of work and increased specialisation, trainees now have fewer opportunities for this. Taken together, these issues mean that it cannot be assumed that trainees have seen enough patients with a range of conditions to become independent practitioners in their field. Trainees need to demonstrate to accrediting bodies that they have had the required experience (both in range and volume) and become proficient in providing clinical care. Most disciplines have used a type of portfolio to manage this.

Revalidation of qualifications of healthcare professionals

The historical separation of undergraduate and postgraduate education of health professionals has been replaced by the concept of lifelong learning that starts in university. Several high profile cases where the actions or inactions of doctors and nurses caused the death of patients have led to inquiries into the way healthcare professions are regulated. The half-life of healthcare knowledge is less than 5 years so there is an undisputable need for all healthcare professionals to undertake continuing professional development (CPD). Increasingly, life-time registration at the completion of training is being replaced by a system of re-accreditation. Healthcare professionals need to be able to demonstrate they have the knowledge, skills and behaviours appropriate for continuing accreditation to practise. A multi-dimensional eportfolio will be used for this.

Trained health professionals do not automatically have the knowledge and skills needed to undertake new medical procedures and surgical techniques safely. The risk of adverse outcome from poor performance is leading to the scope of activity of individual practitioners becoming more defined. Increasingly, employers,
health funds, hospital privileges’ committees and medical insurers need proof of proficiency in particular procedures. This will eportfolio-based.

**Future directions**

There is urgent need to ensure interoperability between eportfolios managed by different organisations so that transitions from student to trainee to trained health professional and between employers is seamless.

CPD can be effective but requires personal commitment to self-regulation. In a lot of areas it is still unclear how clinical performance will be assessed. If knowledge gaps are allowed to develop there is increased risk of serious unwanted consequences occurring in the future. Who will be responsible for monitoring this?

On-line tools for audit of performance can be linked to a professional’s eportfolio. Should professional eportfolios be published so that patients can make an informed choice when seeking medical care?
Can ePortfolios assist students’ learning in the workplace? Exploring students’ demonstration of their professional work experience through ePortfolios in the Construction Management and Nursing disciplines

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Abstract
E-portfolios have increasingly come to the fore as a means to enhance students’ learning, and in particular, to enhance work integrated learning. Nevertheless, literature often warns of putting too much emphasis on these online technologies as the answer for improving students’ learning experiences (Cotterill et al., 2005; Hung & Der-Thang, 2001; Klenowski, Askew, & Carnell, 2006). Professional bodies in Australia require nursing and construction management university students to engage in practical/clinical placement experiences, such as working on construction sites and in clinical settings, as a requisite component of the undergraduate degree. This paper explores whether e-portfolios have a role to play in documenting and demonstrating the skills gained from work integrated learning experiences in relation to students’ undergraduate studies.

A recently awarded Australian Learning and Teaching Council project entitled ‘Facilitating work integrated learning through skills-enabled e-portfolios in the construction management and nursing disciplines’ conducted at the University of Newcastle, Australia, is investigating work integrated learning and assessment in the two disciplines. Students in these disciplines are required to complete periods of industrial/clinical experience. The project’s main aim is to develop a learning framework that will showcase to students how their university courses relate to each other and how the skills and competencies they acquire on campus and off campus (during work integrated learning experiences) can be integrated to enable them to graduate as qualified professionals. A component of the project aims to explore whether e-portfolio platforms and e-learning technologies can both facilitate and support students’ learning and engagement with their work integrated learning.

Derived from the outcomes of the project’s initial phase, this paper presents the development of a learning framework that encourages reflective learning during work based activities. It then explains how this framework can be incorporated in e-portfolios. The framework may be embedded into different e-portfolio platforms and used as a reflective tool assisting students to link the knowledge gained from their placement/industrial experiences with the theoretical concepts learnt at university (T Levett-Jones, Fahey, Parsons, & Mitchell, 2006). Potentially, students could use their e-portfolio following graduation to demonstrate the acquisition of professional skills relevant to their respective fields. Further, data gathered on students’ responses to the use of e-portfolios will be taken into account to illustrate the advantages and disadvantages of using e-portfolios for work integrated learning.

Keywords: e-portfolio, e-learning technologies, learning framework, work based learning, skills demonstration, construction discipline, nursing, professional skills, work integrated learning.

Introduction
In this paper the preliminary outcomes of a recently awarded Australian Learning and Teaching Council (ALTC) grant to the University of Newcastle, Australia to undertake a context study in the disciplines of construction management (Con Mgt) and nursing to investigate students’ practical and clinical placement experiences, specifically work integrated learning (WIL) are discussed. The paper considers broad literature on the topic, and the project’s developments to date. The project aims to facilitate links between students on campus learning and their WIL experiences. Furthermore, the project identifies e-portfolios as a way of guiding students in auditing, reflecting on and illustrating the skills they develop during their work integrated
learning. As the project is still in its initial stages, the purpose of this paper is to (a) review opportunities and issues presented by e-portfolios; (b) and to assess the potential for students to document and reflect on their placement experiences using e-portfolios; and (c) to examine whether e-portfolios have a role in enhancing student WIL and extending to the attainment of employability skills.

**Project Aims**

As stated, the main aim of the project is to create a ‘learning framework’ to assist students to make explicit connections between what is taught at university and WIL. The learning framework, derived from phase one of the project, will consist of a hierarchical framework of statements that map the competency requirements of relevant professional bodies to the learning outcomes of undergraduate programs.

**Context**

There are numerous differences in the ways Australian and United Kingdom (UK) universities respond to the requirements of their respective industries and accrediting professional institutions. In the UK there are separate degree programs in, for example, construction management and quantity surveying. Australian universities on the other hand generally offer one degree integrating both of these disciplines, sometimes including building surveying.

Generally UK construction management and quantity surveying degrees are of three years duration, whilst an Australian construction management and quantity surveying degree is generally four years. In the UK, universities offering these degrees are accredited by either the Chartered Institute of Building (CIOB) or the Royal Institute of Chartered Surveyors (RICS). In comparison, Australian construction management and quantity surveying degrees are accredited by numerous professional bodies in addition to the CIOB and RICS, including the Australian Institute of Building and the Australian Institute of Quantity Surveying. Several Australian universities also seek accreditation from the Australian Institute of Building Surveying, the Singapore Institute of Surveyors, the Malaysian Board of Quantity Surveyors and other professional bodies. These Australian degrees are amongst the most heavily accredited in the country.

In comparison, Nursing and midwifery programs are accredited by the Australian Nursing and Midwifery Council (ANMC). This is a relatively new development for the programs as prior to July 2010 each state or territory in Australia had a separate accreditation body. The ANMC has also developed, with industry consensus, competency standards that specify the knowledge, skills, attitudes, behaviors and values expected of novice practitioners (Andre 2009). These standards are not dissimilar to the standards of proficiency used in the United Kingdom (UK) by the Nursing and Midwifery Council for the same purpose (NMC, 2005).

**The Australian Learning and Teaching Council**

The Australian Learning and Teaching Council (ALTC) supports research into higher education Australia wide. A range of grants are awarded to universities to support learning and teaching initiatives. The ALTC’s commitments are to ‘create change in higher education institutions’, ‘raise the profile of teaching through innovative teaching procedures’, ‘develop good institutional practice’ and ‘benchmark learning and teaching processes with national and international knowledge’ (ALTC, 2009 p.2). A similar funding body in the UK is the Higher Education Academy (HEA) and the Centre for Education in the Built Environment (CEBE).

**Work integrated learning (WIL) and e-Portfolios**

WIL is a term used to describe educational activities that integrate theoretical learning with its application in a workplace, profession, career or future employment (Stephen Billett, 2001; Patrick, 2009). WIL is becoming popular in Australian universities and is increasingly being integrated in a broad range of undergraduate programs. WIL experiences can be off or on campus, real or simulated, depending on the discipline area, but must involve clearly stated outcomes, assessment and should be consistent with quality teaching and learning (S. Billett, 2010). It has been recently promoted by the Higher Education system to encourage opportunities for students to apply the conceptual knowledge they gain from on campus learning to the ‘real world’ or practice/industry. For instance, research into Con Mgt education has shown that when students start employment they frequently find it difficult to relate theory to practice. However once they have been exposed to the workplace, they tend to modify their views and make these connections more explicitly (Williams, Sher, & Simmons, 2009). The higher education system for the Con Mgt and nursing disciplines in particular promotes WIL opportunities within their curricula. In addition, it is
mandated by accreditation bodies for students to engage in WIL, through work placement experiences during their undergraduate studies.

WIL and Nursing

Australian universities have varied ways to manage clinical placements (also termed clinical practicum) and nursing students’ learning experiences can vary whilst they are on placement. For instance, at most universities, students undertake clinical placement in each year of their program for the purpose of building upon the knowledge and skills learnt on campus (Andre, 2010; Hallam et al., 2008). To encourage and support learning whilst on placements, universities use a range of processes, such as mentoring by experienced registered nurses, clinical skills practice and assessment and the completion of learning journals and portfolios (Cooke, Walker, Creedy, & Henderson, 2009). These portfolios are collections of evidence that can be used to reveal and stimulate learning and/or provide evidence of developing competence (Andre & Heartfield 2007, cited in Andre, 2010 p.2). This approach is designed to encourage students to reflect on their learning experiences whilst on placement (T. Levett-Jones & Bourgeois, 2007).

WIL and Construction Management

At the University of Newcastle, it is common for Con Mgt students to identify and arrange their own industrial placements (Sher & Sherratt, 2010). Further, students usually complete their placements during university vacations, but some study and work simultaneously (A. Mills & Ashford, 2004; Sher & Sherratt, 2010). Students may consult university staff about placement opportunities, but staff generally play no further part in placements until students submit evidence of completing their placement experiences (Sher & Sherratt, 2010). A range of documentation is called for in this regard, with some degree programs requiring students to submit formal reports while others simply require employers to confirm the duration of placements and the nature of the work students completed. Presentations and reports are required at some universities of students' practical experiences. Some programs offer construction site visits and/or have visitors from industry lecture students, whilst others offer simulated projects, where students take on roles in industry and ‘act out’ procedures, such as managing staff on site and the use of labs to test building materials (Ashford & Mills, 2006; Li & Randhawa, 2009; Maier, 2009).

E-Portfolio research and use in Australia

It is argued in the literature that online learning system platforms can be utilized as an effective medium to document and manage students learning experiences during WIL (J. N. Mills, Butcher, & Tilbrook, 2009; Skiba, 2005). The use of e-technologies for managing students learning has increasingly been studied and implemented by Australian universities, particularly that of e-portfolios to document students’ learning experiences (Ayala, 2006; Heinrich, Bhattacharya, & Rayudu, 2007; Reardon & Hartley, 2007). Generally an e-portfolio is an online program with links to Web 2.0 tools to document learning, assessment and ultimately showcase skills, progress and reflections (Ivanova, 2008; Schwartz, 2006). According to the Business Industry and Higher Education Collaboration Council (BIHECC, 2007 p.41) “one of the greatest strengths of (an e-portfolio) is that it provides a structured and cost-effective means to encourage students to manage their own career planning and skill development”.

The Australian e-portfolio project reported on current levels of e-portfolio practice at Australian universities (Hallam et al., 2008). Part of this study included a review of how industry professionals view the use of e-Portfolios for employability. One response from industry was that they found few students using e-portfolios for job applications to demonstrate their achievements. However, the researchers also stated that due to the timing of their study industry engagement in the research was limited (Hallam et al., 2008). Ultimately, this project aimed to work towards implementing a university wide e-portfolio system and highlighted the need for the creation of communities of practice to share e-portfolio knowledge as it emerges (Hallam et al., 2008). The e-portfolio project has also contributed towards the ‘Australian flexible learning framework’, an Australian Government initiative supporting research at Universities, TAFE and industry sectors on the use of e-Portfolios (Fergusson, 2009).

E-portfolios and Nursing

The use of e-portfolios across universities who offer nursing and midwifery is ad hoc in nature, being mainly used as parts of courses, or assessment items within a course (Hallam et al., 2008). Andre states that “Nurses, midwives and their associated professional and employer organisations are only just beginning to utilise social networking technologies as part of professional practice” (Andre, 2010 p.3). E-Portfolios used in nursing have been predominantly developed as an extension of traditional paper portfolio assessment
items which evolve over time as students reflect on their learning experiences (Andre, 2010). Anderson, Gardner, Rambotham and Tones (2009) reviewed the use of e-portfolios for nursing at one university in Queensland where the ANMC national competency standards were used as a framework for documenting students' reflective narratives of their skills and the related evidence of developing competence whilst on clinical placement. Anderson et al. (2009) identify two types of e-portfolios that universities typically use - these being the 'spinal column' and 'cake mixture' structure, the former being more focused on evidence and reflection linked to competency standards and for demonstration of professional abilities to future employees: and the latter having more focus on reflection and personal learning journeys as evidence of developing the personal qualities of nursing students. Anderson et al. (2009) analysed students' experiences of using e-portfolios to document their clinical skills and found that the ANMC competency statements were of benefit in shaping learning and reflecting in nursing and within e-portfolios. Similarly Garrett and Jackson (2006) reviewed the use of a mobile clinical e-portfolio for students whilst on placements in Canada. They found value in the use of this technology for placement situations to alleviate students' sense of isolation in remote locations. Andre (2010) similarly discusses the benefits of e-portfolios through their capacity to mediate information so that nursing students can learn how “prescribed learning activities relate to professional practice requirements” (Andre, 2010 p.5).

E-portfolios and Con Mgt

There is limited use of e-portfolios in the Con Mgt disciplines. However learning management systems (LMS) such as Blackboard are used regularly for such things as course administration, communicating to students and as a portal for downloading documents. Some universities employ LMS platforms to manage and administer students' WIL placements.

In regards to learning practical skills through e-portfolios, it is argued that generic e-portfolios provide little specific guidance on the skills (generic or discipline specific) that students need to develop. Here e-portfolios might be “seen by business and [Australian] universities to be a practical method for graduates to explain and provide examples of their employability skills” (BIHECC, 2007 p.4) but there is little evidence of their successful use in this regard in the Con Mgt and nursing domains. Indeed, recommendation 7 of the BIHECC (BIHECC, 2007 p.6) report encourages “more effective integration of employability skills in student e-portfolios”. Anderson et al (Anderson et al., 2009 p.75) similarly conclude that further qualitative research on the use of e-portfolios is needed to investigate the use of e-Portfolios to meet the all stakeholder needs as the qualitative nature of ‘content and the complexity of competence is not amendable to quantitative analysis’.

Students views on using e-Portfolios for WIL

Other studies of nursing students’ views on the use of e-portfolios for clinical placement has shown limitations with their use for documenting reflections and skills achieved. Structures in the hospital setting can inhibit use, for instance the high clinical workload in hospitals does not always allow time for students to engage in professional reflection whilst on placement (Garrett & Jackson, 2006). Furthermore the physicality of using mobile e-portfolios on placement is sometimes a barrier. Nursing students are not always permitted to use mobile devices on placements as there are concerns about interfering with technological patient monitoring equipment (Bogossian & Kellett, 2010). Other issues that can impede the use of e-portfolios include: time constraints, issues related to privacy and confidentiality of patient information, colleagues’ views of the value of reflection, and a lack of motivation to use the platforms (Bogossian & Kellett, 2010). Similarly, some disadvantages of e-portfolios viewed by engineering students were that they found the technology frustrating and time consuming, and effective use depended ultimately on the students computer literacy skills and how much they perceived they could benefit from the platform (Smith & Mills, 2009).

This discussion suggests there is a need for an investigation into more effective ways for e-portfolios to be used to promote deeper WIL, to integrate professional employability skills for nursing and Con Mgt students. The project discussed in this paper aims to investigate the logistics of this through a review of Nursing and Con Mgt employability skills and embedding these into e-portfolios. To do this, a learning framework will be developed to support deeper learning which aims to help students link theory learnt from their curricula with their undergraduate clinical/industry experiences.
Discussion: Managing and assessing practice based learning in Con Mgt and nursing

Issues with WIL

A recent report on construction education in Australia found that those responsible for managing construction programs at universities expressed reservations about industrial experience and WIL (Williams et al., 2009). These reservations centre on the availability of placement opportunities for students during volatile economic times, and the resource implications of administering WIL (Williams et al., 2009). The report found that some academics argue that, given the choice, it is debatable whether students would engage in industrial placements if these were not required by their degree program (Williams et al., 2009). On the other hand, this same report has shown that Con Mgt students greatly value WIL with teamwork and collaborative learning whilst on placement emerging as drivers of effective learning.

Recent studies in engineering related to WIL, have highlighted further concerns about the lack of linkages between programs, industry experience and assessment. Richardson, Kaidar, Henschke & Jackling (2009, p.338) discuss the issues of assessing WIL in engineering programs. They state that “the underpinning cause for inadequate WIL assessment is a lack of understanding of the nature of learning in the work place” due to the ad hoc nature of learning in these contexts (such as learning ‘informally’). Similarly, Hu, Oliver and Yusman (2009) identify a lack of research on what generic skills are required and should be gained from engineering industry placements. The authors reviewed current industry placements as an evaluation project, and identified the most important generic skills to be developed during WIL (Hu et al., 2009, p. p. 922). They evaluated these by investigating the skills developed, where the program is situated and the WIL experiences that support the development of these skills (Hu et al., 2009).

Some WIL issues identified in nursing pertain to how students make the necessary links between theory and practice when on placement. Researchers sometimes assert that despite the efforts of nursing theorists, educationalists and practitioners, the theory-practice gap continues to defy resolution (Rolfe, 1998). However, if the current model of viewing theory as informing and controlling practice were to give way to a mutually enhancing model in which theory is derived from practice, and in turn influences future learning, the so-called theory practice gap could be closed. Indeed, e-portfolios may encourage the closure of the so-called ‘theory-practice’ gap by an approximation of the two parts (Rolfe, 1998).

This similarity of WIL issues and opportunities highlighted between the two disciplines validates the need for this current project which aims to promote links between practice and theory for Nursing and Con Mgt students. The literature further raises the question as to how students currently link theory and practice. This is discussed below.

How do students link theory to practice? Reflection

Firstly, in order to promote links between practice and theory, it is necessary to understand how students make these connections. Reflective practice is a crucial professional activity. Reflection is intrinsic to learning. It is not simply introspection, but a deliberate, orderly and structured intellectual activity (Bolton, 2001). It allows students to process their experience, explore their understanding of what they are doing, why they are doing it and the impact it has on themselves and others (D. Boud, 1999). Engagement in reflective thinking requires students to critically review their practice with a view to refinement, improvement or change. Boud, Keogh and Walker (1985) similarly define reflection as ‘returning to experience’, ‘attending to feelings’ and ‘evaluating experience’, therefore defining a way for learners to return to the theoretical knowledge learnt, as they evaluate their experiences through reflection.

The topic of reflection through the use of portfolios is documented extensively in the nursing literature which states that this form of learning allows for a deeper learning experience (Cooke et al., 2009). This mode of learning lends itself to a reflexive approach which can result in “a more immediate, continuing, dynamic and subjective self awareness” (Finlay, 2002 p.533) from students. Reflexive learning therefore allows for a more holistic approach to learning; it further implies that students can make links between what is learnt in on campus to their practical experiences. These pedagogical practices on the role of reflexive learning are integral to establishing a foundation for the ‘learning framework’ posed in this study.
Project Developments: Mapping competencies – skill lists

To work towards the development of the learning framework that links theory/curricula with practice based skills, the initial phase of the project included an analysis of the competency statements of the accreditation bodies’ skills requirement lists (AIB, AIQS, CIoB, and ANMC). Due to the diversities of these requirements, the competencies and graduate professional qualities of the two disciplines were mapped and compared. This allowed the research team to identify core areas/synergies and discipline specific competencies between the two disciplines. Generic synergies were identified within specific competency domains. These were: accurate data reporting, communication skills, management skills, research and reporting skills, self evaluation, health and safety knowledge, knowledge of ethics, knowledge of risk management, legal knowledge, up to date knowledge of the field - industry and institution changes. This competency mapping is still in progress and will build on another ALTC projects’ findings which aims to publicise a nationally agreed competency assessment tool for nursing based upon the ANMC competency standards and for use Australia wide (Brown et al., 2009).

The above competency analysis will create a scaffold for the learning framework which will be developed from the qualitative stage of the research project.

Creating the learning framework

A recent study by Richardson, Kaider, Henschke & Jackling (2009) set out to develop a WIL assessment framework through interviews and surveys with educators, students and industry. The results from the data analysis formed the assessment framework, a criteria for creating relevant WIL assessment tools. The authors defined this framework as CCARDS (Contextual, Capability driven, Action-based learning, Relationship collaboration, Development, Student-centred). Similarly, Temple, Allan & Temple (2003) reviewed students’ use of e-portfolios to document their learning in an undergraduate physical education course. They asked students to think about their competencies in relation to their previous experiences and to categorise them as “behaviours, knowledge, skills, and abilities that are job related” (Temple et al., 2003 p.5). The acronym STAR (Situation, Task, Action and Results) was used as a framework foundation for students to reflect on the skills learnt from assessment tasks and which were embedded in an e-portfolio platform.

Nevertheless these models are broad in their application to WIL. The qualitative data gathered in the current project with the exploration of staff and students’ views on WIL in Con Mgt and nursing will contribute to the learning framework development to understand and encourage students to make links between their knowledge and the skills gained during WIL.

Using e-portfolios for WIL

Skills-enabled e-portfolio platforms have a section within the platform on ‘competencies’ - evidence based records where practical experiences may be documented and assessed. There are slightly different ways the competency sections can be viewed and assessed, such as ‘assessor views’, the range of competencies, or options where staff could create a WIL ‘shopping trolley’ of competencies (Barrett, 2004). Within the ‘competencies’ section of an e-portfolio there can be tags/links to artefacts, such as a document/video/audio of practical experiences uploaded to show students have achieved the relevant WIL competency (Barrett, 2004). Examiners can then validate this achievement with a comment or request for further work until this competency is completed. The competency statement in some platforms can be generic skills – for example, information and communication technology competence or communication skills; or they can be designed especially for a subject by the assessor in collaboration with the software provider/course provider (Clark & Eynon, 2009). For instance, the clinical portfolios in use by a number of nursing programs could be embedded into the competency section of the e-platform and students could indicate the skills they have achieved in the e-portfolio rather than the current paper based process.

Nevertheless, the question remains: how can e-portfolios create reflexive opportunities for students so they can make links between theory and practice whilst on placement? From a functional perspective the e-portfolio architecture allows for summative assessment. For instance there is a range of tools for reflection. Some examples include “action plans, journals, blogs and reflective activities that provide prompts when uploading achievements to specific activities” (Andre 2010, p.4). Similarly e-portfolios can provide a section where examiners and/or peers can comment on these entries. Or if it is a final portfolio for submission, this information can be made public by the student for professionals to see work achieved through reflections (Andre, 2010). Over time e-portfolios can display students’ progression and attainment of goals during their undergraduate years to use in their future careers (Andre, 2010). At the moment in Con Mgt there is a lack
of WIL assessment and therefore no official documentation of these experiences. However, this could be made possible with e-portfolios or online tools, with benefit to students, teachers and industry. This brief review of e-learning tools in relation to documenting WIL has shed some light on the benefits of these tools to promote deeper integrated learning experiences for nursing and Con Mgt students when they are engaged in practical experiences.

The literature reviewed in this paper raises the question as to how these e-portfolio practices can be advantageous to both the nursing and Con Mgt disciplines. This study reported on in this paper aims to fill this gap, through focus groups with staff and students and analyses of students’ placement portfolio reflections to illustrate how students make these learning links between theory. Overall the learning framework developed from the research will allow for a stronger benchmark of e-portfolio use Australia wide to establish the needs of stakeholders in the two disciplines. This will allow practical placement experiences and the consequent attainment of employability skills to be further documented and understood from all these stakeholder perspectives.

Conclusion
This paper documents a current ALTC project investigating the facilitation of WIL in the Con Mgt and nursing disciplines. Related WIL literature revealed that students’ work based experiences in both disciplines is integral to their learning. It is argued that both the Con Mgt and nursing disciplines could benefit from using e-learning technologies to document students' WIL, and especially for reflecting on WIL experiences to make links between theory and practice. As the project develops, the challenges presented by these technologies as primary facilitators of WIL will become clearer as will the logistics of implementing e-technologies and how the learning framework could be embedded into e-portfolio platforms. Further, qualitative domain specific data will highlight these issues and contribute to solutions for facilitating reflective WIL and the use of e-portfolios, so that students can make the necessary links between practice and theory and graduate as all-inclusive professionals in their fields.

References


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The professional ePortfolio - a platform to support evidence-based professional development

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Abstract
Throughout the world, change processes within healthcare services and professional bodies has positioned people management and value for money as central to the delivery of a high quality and safe healthcare service. With performance management, continuing professional development (CPD) and awareness/education key success factors to achieving such goals, the management of such factors with an emphasis on staff development outcome returns is likely to become increasingly important. A secure, online information technology tool developed for the needs of the healthcare sector, under these circumstances, has the potential to generate significant benefits for both public and private health service providers.

Against this backdrop, the Royal College of Surgeons in Ireland Institute of Leadership researched, developed, piloted and rolled out a professional electronic portfolio (ePortfolio) across Ireland, UK and the Gulf Region in late 2009.

The ePortfolio, based on the open source product Mahara, is an effective and efficient tool for internal/external use to accelerate healthcare organisations and healthcare professionals to develop high quality highly secure, online systems for managing CPD and reflective practice – thus ultimately contributing to high quality and safe systems of patient care. This project is an entrepreneurial endeavour with the vision to lead the international development of ePortfolios. It integrates with the Institute's knowledge and information management system strategy, focussing on excellence in healthcare education, quality and patient safety. Early feedback from a broad spectrum of ePortfolio users, nationally and internationally, is supporting the project business case through the delivery of outlined benefits.

Keywords: Portfolio, CPD, reflective practice, performance management, information management

Introduction
Throughout the world, change processes within healthcare services and professional bodies has positioned people management and value for money as central to the delivery of a high quality and safe healthcare service (Donaldson, 2001). With performance management, continuing professional development (CPD) and awareness/education key success factors to achieving such goals, the management of such factors, with a particular emphasis on staff development outcome returns, is likely to become increasingly important (Martinez, 2000). A secure, online information technology tool developed for the needs of the healthcare sector, under these circumstances, has the potential to generate significant benefits for both public and private health service providers.

Against this backdrop, the Royal College of Surgeons in Ireland, Institute of Leadership (RCSI-IL) researched, developed, piloted and rolled out a professional electronic portfolio (ePortfolio) across Ireland, UK and the Gulf Region during 2009. The vision of the RCSI-IL is to develop a professional ePortfolio that is flexible and adaptable by design to meet the needs of the public and private healthcare sectors nationally and internationally – an integrated, strategic tool enabling healthcare professionals and their organisations to track professional development and benchmark it against professional competency requirements. Such a tool can underpin high quality and safe patient care. The RCSI-IL ePortfolio, based on the open source product Mahara, is an effective and efficient tool for internal/external use to accelerate healthcare organisations and healthcare professionals to develop high quality highly secure, online systems for managing CPD and reflective practice – thus ultimately contributing to high quality and safe systems of patient care.

The RCSI-IL e-portfolio is first and foremost a ‘user-centric’ resource that can assist professionals in the management of their career and professional development by promoting a culture of life long learning. It
has been designed by healthcare professionals for healthcare professionals. While the e-portfolio is a personal and private resource the user has the ability to provide defined access to others through the use of “views” and professional social networking. The “view” function allows the user to provide organisations and professional bodies with access to required information. It can be used to meet the needs of organisations and professional bodies as part of continual professional development review and performance appraisal.

The ePortfolio is a key component of the RCSI-IL broader knowledge and information management system which includes an online learning portal based on the open source learning management system Moodle and a secure online document management system also based on the open source system called Alfresco.

RCSI Institute of Leadership

The Institute of Leadership is part of the Royal College of Surgeons in Ireland, one of the leading Irish organisation in professional education in healthcare. The RCSI-IL is based in Dublin, Dubai and Bahrain and its mission is to improve human health through the development of excellent leaders and managers in the health professions. The “Noble Purpose” of the RCSI is essentially to improve the quality of human health. The ePortfolio supports this Noble Purpose in the following respects:

1. It provides healthcare organisations with a service that will significantly increase their capacity to manage and develop their key professional resources to the benefit of both staff and patients.

2. It provides governmental agencies and regulatory bodies with a mechanism for communicating standards and professional requirements and for assessing the extent to which individuals are compliant.

3. It contributes to high quality and safe patient care by helping to develop competency models in healthcare and through the standardisation of the recording of professional qualifications, experiences and development history.

4. It provides individual professionals with a means of benchmarking their personal and professional development against appropriate competency models and also allowing them to network with colleagues to enhance their career progression.

What is an ePortfolio?

A portfolio in its traditional paper-based format has been around for a long time, usually found within educational settings most often used as a learning tool. Portfolios have also been commonly used as effective tools for career preparation and development in both business and teacher education (Zubizarreta, 2004).

The development and use of ePortfolios however has been a relatively recent phenomenon. Its importance has been underlined by a number of commentators such as Love, McKean, and Gathercoal (2004:1) who argue that “they [ePortfolios] may have the most significant effect on education since the introduction of formal schooling”. In the same way the capacity of ePortfolios to facilitate and record ongoing continuing professional development, life-long learning and performance has been of interest to healthcare organisations and professional regulators.

Beetham (2005:2) suggests that a portfolio is a “simply a collection of documents relating to a learner’s progress, development and achievements”. In a similar vein Sutherland & Powell, (2007) suggest an ePortfolio is a consciously-determined grouping of digital information such as reflections, competences, transcripts, etc. which can be presented to a selected audience for a defined need as evidence of a persons learning or ability. An ePortfolio, usually web-based, is a repository of documents, information, resource links, audio and video clips. It is a useful mechanism for showcasing the breadth of abilities, know-how and acquired skills for professional success (Zubizarreta, 2004). Atwell (2007) argues that ePortfolios support 3 main activities: scalable networking (social & professional); self, peer & directed knowledge construction; data, information and knowledge dissemination. The main advantages of an eportfolio includes the fostering of active learning, the motivation users, it as an instrument of feedback and discussion on performance. From a technological standpoint it is accessible, it can store multiple media, data is often transferable, and it is easy to upgrade. The disadvantages primarily related to the amount of training and support and the speed of technological development.
It is important to underline that a portfolio and hence an ePortfolio is much more than a document or collection of artefacts providing only evidence of what has gone before; it is “a dynamic record of growth and professional change” (Price, 1993:35). An effective and meaningful portfolio should be developed as “…a living, dynamic working document that supports advancing practice…” (Jasper, 1995:246) and personal growth. In an evaluation of students’ experience of using ePortfolio Gardner & Aleksejuniene (2008) reported ePortfolio learning to be positive experience. Students considered it to have made a valuable contribution to learning that could be integrated as part of life long learning. Its down side was the amount of time required to upload and maintain the ePortfolio and the requirement for technical skills. Tochel et al (2009) argue that there are only a limited number of quality studies that have examined the contribution of ePortfolios in post-graduate assessment and education. However, they report that there is good evidence that well implemented ePortfolios can be effective in increasing personal responsibility for learning and supporting professional development. A number of uses have been highlighted for ePortfolio use, which include:

1. Storage of Documents
2. To demonstrate learning
3. To demonstrate learning of teaching skills
4. To demonstrate skills of critical thinking & reflection on practice
5. Preparation for promotion
6. Personal development planning
7. Career planning
8. Performance review
9. Assessment of prior learning
10. Writing or revising a CV or résumé
11. Confirmation of professional development
12. Evidence of continuous practice

NCNM (2006)

The main components of a good career portfolio have been summarised using the following acronym PEAKS - Personal Characteristics, Experience, Accomplishments, Knowledge, Skills (Satterthwaite & D’Orsi, 2003). The potential functionality that could be incorporated includes inter alia:

- Abilities
- Achievements
- Action plans
- Proficiencies and competencies
- Experience
- Reflections
- Meetings
- online CV
- Blogs
- Professional social networking
- Transcripts

The RCSI-IL Eportfolio

The RCSI-IL ePortfolio has been custom-developed using the Mahara open source flexible display framework to meet the needs of healthcare and health education professionals. The RCSI-IL Mahara,
meaning “think” or “thought” in Te Reo Māori (the language of the indigenous population of New Zealand),
is user-centric environment with a permissions framework that enables ePortfolio artefacts and views to be
easily and securely managed and shared.

The RCSI-IL ePortfolio has been designed for use within the healthcare and health education sector,
although it’s inherent flexibility allows for its use across multiple industries. The central philosophy of the
RCSI-IL ePortfolio, i.e. provision of a “user-centric” resource to assist healthcare professionals in the
management of their continuing professional development, is motivated by the desire to promote and
facilitate high quality lifelong learning and personal development. In addition individuals’ can select and
share information stored within their ePortfolio with others, a feature particularly important as it allows the
sharing of information with organizations, social networks or regulatory bodies and can be used as part of
an quality appraisal or monitoring system. It is important to emphasize that the sharing of this information is
controlled by the individual user and not the organization.

Figure 1 perhaps best illustrates the essential links within the RCSI-IL ePortfolio system between e-portfolio
presentations and processes, as well as introducing the concept of learners creating different e-portfolios
for different purposes.

Figure 1: Essential links between e-portfolio presentations and processes

The benefits of the RCSI-IL ePortfolio include:

- For employees it promotes and encourages their own high quality management of continuous
  professional development (CPD) and learning.
- It can complement and enhance registration and statutory professional systems.
- It can complement and enhance organisational CPD or performance appraisal systems.
- It allows for the monitoring and recording of competencies and in-service training activities.
- It can be integrated into a Moodle-based virtual learning environment to build a more flexible and blended
  approaches to learning.
- It is adaptable and configurable to meet organisational needs and requirements.
• It promotes and facilitates communication and exchange of ideas through professional networking
groups, messaging and blogs.
• It promotes reflective practice.

The ePortfolio currently has a user based of 550 healthcare professionals and healthcare under graduate
students within the RCSI as part of its academic programmes in Ireland, Bahrain and Dubai in a variety of
different disciplines including healthcare management, quality and safety, physiotherapy and pharmacy. A
number of professional bodies and pharmaceutical companies have also expressed interest in the RCSI-IL
ePortfolio, and are currently reviewing its use with a view to implementation to manage high quality
continuing professional development and professional regulatory compliance. The features of the RCSI-
ePortfolio are outlined in Table 1.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Repository of information</td>
<td>Accommodates the recording of personal and professional activities, achievements, reflections and competencies. This includes supervision records, study activities, research, audit, project work, lecture and seminar presentations, in-service training, conference and seminar attendance and blogs.</td>
</tr>
<tr>
<td>Reflective Diary</td>
<td>Similar to the competency feature a unique reflective diary component is also available allowing users to record personal reflections. The structure of the reflective process can be configured to meet the requirements of the individual, organisation or professional bodies.</td>
</tr>
<tr>
<td>Resume Templates</td>
<td>Provides templates to enable users to quickly configure and download resumes.</td>
</tr>
<tr>
<td>Exporting Information</td>
<td>Users can download their information in a machine readable format which enables them to transfer their portfolio information to another system.</td>
</tr>
<tr>
<td>Branding</td>
<td>The system can be configured to reflect organisational branding.</td>
</tr>
<tr>
<td>Storage</td>
<td>Supports the uploading and storage of information configured to the needs of the customer</td>
</tr>
<tr>
<td>Web-based</td>
<td>It is a web-based resource that maximises accessibility and enables users to update information in work, at home or at any location that has access to the internet. It can also be configured for use on a private organisational network.</td>
</tr>
<tr>
<td>Multiple media</td>
<td>Enables text files, images, audio and video files to be uploaded and stored and also imbedded into “view” screens.</td>
</tr>
<tr>
<td>Hosting</td>
<td>Can be hosted by the RCSI-IL or the customer.</td>
</tr>
<tr>
<td>Security</td>
<td>Hosted on secure and backed up servers that conform to international security standards (ISO 27001).</td>
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</tbody>
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Project Approach to Eportfolio Development and Implementation
The RCSI-IL used the UK Office of Government Computing project management methodology PRINCE2 (Projects IN Controlled Environments) to manage the ePortfolio project. PRINCE2 is recognised as a world-class international standardised method for project management embodying many years of best practice in project management and provides a flexible and adaptable approach to suit all projects and environments irrespective of size (OGC, 2005). The PRINCE2 project management methodology was ideal for the RCSI-IL ePortfolio project as it provided a consistent, easily understandable framework to manage the wide variety of disciplines, activities and stakeholders required within such a project.
The focus or “compass” throughout the project was the “Business Case” for the ePortfolio (and indeed still is as the ePortfolio project is an essential component of the RCSI-IL continuous quality improvement programme). The business case was the rationale and business justification for the ePortfolio in the first case, as outlined earlier in this paper, and it drove all the project management processes and decisions, from initial project set-up through to successful conclusion and project closure. Additionally PRINCE2 supported “complimentary teaming” within the ePortfolio project to enhance the successful delivery and proved to be an excellent mechanism to harness all resources and enable the entire team to integrate and work together effectively on a project.

The project commenced with system functional analysis and development with the RCSI-IL’s technical partners, Enovation Solutions Limited, Dublin, Ireland in September 2008 and culminated with a pilot ePortfolio system which was presented at a UK ePortfolio conference in Newcastle University in February 2009 primarily to benchmark against other ePortfolio solutions. The pilot version was subsequently rolled out internally as well as to selected external professional stakeholders to assist in identifying both the strengths of the system and consequent possible uses as well as opportunities for improvement through the “tweaking” of existing features as well as the development of new features. The current fully-functioning version of the ePortfolio was rolled out across all RCSI-IL locations (Ireland, UK and the Middle East) in September 2009 with an upgrade in December 2009 and the user base has steadily risen from an initial 100+ to the current 550.

Without doubt through the application of the PRINCE2 project management methodology, the RCSI-IL has successfully delivered the ePortfolio, on time and within scope and budget and provided a high quality platform for the further development of the system to meet any future strategic needs of the Institute and its current and prospective customers across the globe.

Conclusions
The RCSI-IL ePortfolio is proving to be a significant continuous quality improvement development for both its customers and staff and underpins the strategic mission, vision and goals of the Institute. The potent high quality features of information artifact storage, management, professional connections and communication all contained within a high securely user-centric online environment are allowing the ePortfolio to support many applications - arguably the most important and significant being high quality CPD development and management, life-long learning and regulatory compliance. The RCSI-IL has additionally benefited from a number of unintended outcomes of the ePortfolio development project as well; primarily a deep understanding that with any information technology-based tool, its effectiveness will be determined by our team understanding the relationships among the many elements and features of the system and the environment in which they are to be used. The RCSI-IL ePortfolio has not been a solution looking for a problem, rather an elegant, sophisticated system seamlessly integrating into the functions and operations of the Institute whilst also providing significant benefits for all our customers.

References


Effective embedding of ePortfolios in Medical and Dental curricula

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Introduction
The extent to which ePortfolios are embedded in the curriculum is an important factor in engagement and is a major influence in how learners and teachers perceive portfolio building to be a meaningful process. This paper identifies different ways in which ePortfolios can be embedded in the curriculum, drawing on 7 years experience at Newcastle University, with specific examples from undergraduate Medicine and Dentistry. We also provide early evaluation of a new approach for embedding portfolio learning within online curriculum maps.

Integration with curriculum and assessment
A systematic literature review by Maastricht University identified robust integration into the curriculum as one of the factors in effective use of ePortfolios (Driessen , 2007). We also identified embedding with the curriculum as being important to student engagement with ePortfolios in our recently completed EPICS-2 project. Other factors influencing engagement in pilots for EPICS-2 (including, staff regularly referring to ePortfolio, mention of ePortfolio in curriculum documentation, and clarity of purpose) were also related to ‘embedding’ within the curriculum.

Embedding ePortfolios in Medicine
ePortfolios were first piloted in undergraduate medicine at Newcastle University in 2002. This was in response to curriculum and policy requirements to develop ‘reflective practitioners’ with the skills and attitudes required for the regular appraisals, assessments and revalidation that are part of professional practice. It took several years for ePortfolios to ‘find their place’ within the curriculum. They are now ‘embedded’, being used to support annual appraisals in which students use ePortfolios to evidence a number of ‘high level’ skills. The evidence summaries from the ePortfolio inform part of a face-to-face appraisal session. The ePortfolio is also used for summative assessment in student selected components (SSC) in which the portfolio is used to plan, monitor and reflect on achievement of objectives during the SSC. ePortfolios are referred to within Study Guides and other curriculum documents and the software is integrated within the virtual learning environment used by the programme.

ePortfolios at the point of learning in Dentistry
In undergraduate Dentistry students perform clinical procedures on a day to day basis in multi-chair clinics at the Dental Hospital and in smaller clinics across Newcastle. Wireless devices (laptops, PDAs and smart phones) are used to access ePortfolios in clinics and students record procedures complete self-assessment and receive assessment and feedback from supervisors. As such the ePortfolio is embedded in day-to-day practice and directly relates to the Dental curriculum and assessment. The process provides immediate and contextual formative assessment and feedback. Additional reflections can be added later via the Web-based ePortfolio.

Dynamic Learning Maps
Dynamic Learning Maps is a JISC funded project in which we are developing navigable curriculum maps, which include facilities for learners to add notes, reflections and upload files against particular topics within their maps. This is integrated with the students’ ePortfolios and provides a novel approach for embedding reflection and portfolio learning directly linked to teaching sessions, cases, learning outcomes and other aspects of the curriculum. The students personal information is stored in their ePortfolio and as such can support evidencing for appraisals, other portfolio-related pedagogy, and can be exported as part of a life-
long learning record using national and international interoperability standards. Piloting with Medical students began in February 2010 following focus groups and other formative evaluation. Initially, 193 Stage 1 and 2 medical students were given a short demonstration of DLM and 78% thought that the map would be useful for reviewing and reflecting after a session. 69% thought it would be useful to add notes and reflections to teaching sessions and other parts of the map. Evaluation is ongoing.

**Conclusions**

Embedding in the curriculum is a key factor in engagement and effective use of ePortfolios. There are a number of ways in which ePortfolios can be embedded in the curriculum and a wide range of ways they can be used to support formative and summative assessment. Here we provide examples of embedding of ePortfolios in Medical and Dental curricula. This includes embedding in appraisal processes, summative assessment of SSCs, assessment at the point of learning and early evaluation of embedding portfolio learning within Dynamic Learning Maps.

**References**


EPICS-2 regional ePortfolios project: [http://www.epics.ac.uk/report](http://www.epics.ac.uk/report)


Dynamic Learning Maps: [http://learning-maps.ncl.ac.uk](http://learning-maps.ncl.ac.uk)
ePortfolios in general dental practice: validating CPD activity for improved performance

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Introduction
The demand for quality, effectiveness and efficacy within healthcare requires practitioners to demonstrate their continuing competence to practise by providing evidence of their continuing professional development (CPD) activity and its impact on their practice. The tool used for this is a CPD Portfolio which is increasingly web-based. The Faculty of General Dental Practice (UK) [FGDP(UK)] at the Royal College of Surgeons is introducing an ePortfolio to support members to record, evaluate and produce evidence of their CPD. The FGDP(UK) is a standard-setting and educational body for general dental practitioners (GDPs) and dental care professionals (DCPs) providing CPD opportunities through educational courses, research and assessments.

The FGDP(UK) ePortfolio
GDPs and DCPs are required to keep a portfolio for a number of purposes eg registration with the regulator, the General Dental Council (GDC), foundation training, contracting with Primary Care Trusts. The FGDP(UK) is piloting a customised ePortfolio for GDPs and DCPs working with a software provider, Pebble Learning. It is important for the FGDP(UK) that the ePortfolio encompasses the following principles so it is a:

- Learning tool
- Reflective and evaluative tool
- Assessment tool with different authorisation levels for access determined by the individual
- Career long tool.

The validation of CPD activity is critical. The focus is rightly on demonstrable achievements but individuals need to go through the process of learning, reflection and evaluation to produce outcomes for validation. The FGDP(UK)'s ePortfolio is a personal learning system which will enable individuals to assess the impact of CPD activities, some of which can be validated through the assessment tool. The individual owns their entries on the system and can choose to share any of them with peers, tutors and assessors. The ePortfolio can also be used to share ideas and facilitate group discussions.

Pilot phase
150 volunteers have signed up to the pilot to test the ePortfolio which runs from mid-February until the end of May 2010. Pilot users are asked to complete 10 specific tasks which gives them some structure to the process. Some tasks are generic and others are specific to their professional role. They are also encouraged to use as many elements of the ePortfolio as possible. Pilot users have been asked to share most of their entries by posting them to an open ‘gateway’ which means everyone can view and comment on everyone else’s entries. This provides a peer support forum and also gives the project team informal feedback. There is also a blog on the pilot gateway for volunteers to comment on the system.

Those taking part will receive verifiable CPD if they complete the feedback and some or all of the tasks resulting in the submission of a webfolio (portfolio of evidence). Time spent on the activities can be logged onto the system.

Evaluation of the pilot
The pilot will be evaluated from formal feedback which will be collected twice during and once at the end of the pilot. The informal feedback on the gateway will also be collected and analysed. The results of the evaluation will be available for presentation and will inform the further customisation of the tool before the national roll-out in early 2011.
Future activity
The ePortfolio will also be used for FGDP(UK) educational programmes and assessments in the future. The FGDP(UK) runs a number of postgraduate diploma and certificate programmes relevant to general dental practice. Participants on the programmes will submit their assignments and clinical cases through the ePortfolio for marking by tutors and a record of their progress will be kept on the system.

The FGDP(UK) jointly runs an innovative membership examination with its sister Faculty, the Faculty of Dental Surgery, which includes the compilation and submission of a portfolio of evidence by foundation trainee dentists. It is planned that the portfolio of evidence will be compiled from the ePortfolio and submitted for assessment.

The ePortfolio will also be used by the FGDP(UK) divisions for online discussion forums, communication with fellow professionals and organising professional events, all of which are designed to improve the quality and safety of patient care.

Summary
The introduction of the ePortfolio is a work in progress. The overall aim is to develop a tool that is attractive to dental care practitioners, facilitates the evaluation of learning in practice and is secure to protect patient confidentiality. The benefits will be that GDPs and DCPs will have a career long ePortfolio to manage their CPD activity and that evidence can be extracted to meet a range of purposes including revalidation.
Electronic Portfolio Use as an Assessment Medium: Pharmacy Students’ Perceptions and Experiences

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Abstract
The roles of allied health professionals have expanded beyond traditional duties. Providers of higher education are left to find more effective methods of assessment in order to prepare graduates for these new roles. Emerging literature suggests the use of so-called ePortfolios to facilitate this graduate preparation. Curtin University in Western Australia piloted their ePortfolio system, the iPortfolio, in 2009. This system was integrated into the assessment structure of Pharmaceutical Practice 322, a third year unit in the Bachelor of Pharmacy program. The goal was to improve student learning using the iPortfolio as a medium for feedback and assessment.

A study was conducted using two questionnaire-type instruments to assess students’ perceptions of the iPortfolio as an assessment medium, their experience with the iPortfolio system, and whether using the iPortfolio improved the learning of course material. Each instrument collected both quantitative and qualitative data. The results and findings from both instruments were subsequently triangulated to improve the depth of understanding of the research objectives.

From the data collected, it was found that whilst students were initially uncertain or negative about the implementation of the iPortfolio as an assessment medium, after 13 weeks of using the iPortfolio, they were generally enthusiastic about its use in the unit. However, regarding their experience with the iPortfolio system, students indicated that ease-of-use and ability to customise their iPortfolios were issues that needed to be addressed. Regarding the influence of the iPortfolio on learning, students indicated that they felt they were able to learn and retain more of the course material.

Overall, results from this study are promising, and further studies into other applications of the iPortfolio to uncover its full potential are recommended.

Background
Factors such as the ageing population and the increasing burden of chronic diseases have impacted health professionals in recent years, particularly in Western countries [1, 2]. Health professionals, particularly those in the allied health sector, have seen their roles expand beyond traditional duties [3, 4]. Higher education is charged with preparing graduates for these new roles, as well as providing continuing professional development for those established in the health professions [5]. However, there is evidence to suggest that traditional assessment methods, such as examinations based on knowledge recall, may be inadequate for this task of graduate preparation [6-9].

This was the experience in Pharmaceutical Practice 322, a third year unit in the Bachelor of Pharmacy program at Curtin University in Western Australia. This unit focuses on informing students of both present and future professional roles of pharmacists in Australia. As part of the learning outcomes, the unit requires students to demonstrate professionalism, effective communication skills, and an understanding of the factors that influence healthcare delivery by pharmacists [10]. Traditionally, a majority of such learning outcomes were assessed via a single end of semester examination comprising 50% of the total assessment marks. Student feedback and teacher reflection suggested that this was not an optimal way to assess skills required for the changing role of health care practitioners, or to prepare students for ongoing professional development. Literature on teaching and learning and curriculum design has long supported this. Bloom's taxonomy, devised in the mid-twentieth century, categorised tasks into levels of cognitive
demand [11]. Anderson and Krathwohl's revision refines the categories [12]. Both concur that basic recall of information is the lowest level of cognitive demand. Subsequent emphases in pedagogical thought, particularly the literature associated with graduate employability and work-integrated learning, confirms that tasks focused on recall of information rather than its application in authentic professional contexts is unlikely to lead to high level learning outcomes [6-9]. International teaching and learning initiatives across the Western world confirm that a predominant approach to graduate preparation in higher education is to focus on student achievement of higher order thinking skills as well as professional and generic competencies, capabilities and attributes [6, 13-15]. Thus, alternative methods of assessment should be explored in order to adequately prepare graduates for their modern roles.

Emerging literature also confirms that portfolio approaches to assessment, particularly in the electronic mode, present a viable alternative to prepare graduates for professional life [16-19]. Such electronic portfolios are also known as ePortfolios.

Curtin University piloted its new ePortfolio system, the iPortfolio, in 2009 [20]. The iPortfolio is an online space designed for students and staff at Curtin University, and like other ePortfolio systems, allow the user to collect, select, reflect, and publish artefacts from their ePortfolio to a target audience [21]. The iPortfolio also enables students and staff to perform a range of self-directed learning tasks including: self-assessment of their achievements of Curtin's graduate attributes and triple-i curriculum; sharing of work-in-progress and getting feedback from peers; and showcasing their achievements within and beyond Curtin (see www.iportfolio.curtin.edu.au) [20]. Curtin aims to provide graduates with access to their iPortfolios for professional development [20].

During the pilot, the opportunity was taken to use the iPortfolio to reconsider the traditional assessment in Pharmaceutical Practice 322 and replace it with a more authentic approach. This was aimed to provide students with the stimulus to initiate a collection of artefacts to demonstrate their learning and achievements that would be applicable in their professional lives, as well more interactive and personal feedback during the process. Instead of having to answer questions on topics such as legislative matters, sociological and environmental factors that impact on health, and patient education for quality use of medicines in a single end of semester examination, [10] students generated a number of artefacts related to such topics, both individually and in groups, and showcased these on their iPortfolios throughout the semester. All artefacts were designed to address the learning outcomes of the unit and included short movie clips of patient counselling role-play exercises to demonstrate professionalism and communication skills, reflective journals on sociology in pharmacy to demonstrate understanding of sociological factors that impact on health, case study reports and a concept map. All were evaluated and assessed with personalised feedback through the iPortfolio.

Despite the well-established use of ePortfolios in various national contexts, particularly in Australian universities[17], few studies have explored the contribution of ePortfolios to learning from the perspective of a tertiary level health science student[17]. This study focussed on the Pharmacy student perceptions and experiences of using the iPortfolio as an assessment medium. More specifically, the research explored (1) students’ pre- and post-perceptions of the iPortfolio as an assessment medium; (2) their experience using the iPortfolio and (3) whether using the iPortfolio altered their overall learning experience.

Methodology

A convenience sampling model was adopted and the sample comprised 137 third year pharmacy students enrolled in Pharmaceutical Practice 322. The research design chosen for this study was a mixed method experimental design drawing on both quantitative and qualitative data, and aimed to provide an in-depth understanding of the research objectives[22]. Furthermore, two research instruments, each collecting both quantitative and qualitative data, were used and the data obtained were subsequently triangulated. This attempted to overcome biases [22, 23] from individual instruments and enrich overall quality of the data [22, 23].

Two questionnaire-type research instruments were used in this study: a paper-based and an online questionnaire. These questionnaires were titled: “Pharmaceutical Practice 322: iPortfolio – Student User Survey 2009”, and “eVALUate Unit Survey”. The design of the User Survey was taken from two questionnaires that were used in past [17] and forthcoming ePortfolio research, and adapted to this project. The eVALUate Unit Survey is Curtin’s online student feedback system [24].

The User Survey consisted of four sections:
- **Demographics**

- **Understandings of the iPortfolio:** a series of multiple choice questions, in which the participant was instructed to choose only one option, as well as a series of questions inviting the participant to identify their attitude to certain statements

- **iPortfolio Use:** a five-point Likert response scale ranging from strongly disagree to strongly agree for nine questions and

- **Your Experiences and Perceptions:** a series of questions which invited the participant to report their opinion of iPortfolio as an assessment medium, what aspects they liked, what aspects could be improved, and whether the use of the iPortfolio as an assessment medium has altered their overall learning experience.

The User Survey was distributed to the 137 students enrolled in Pharmaceutical Practice 322 during a lecture time slot towards the end of semester. eVALUate was available to all students enrolled in Pharmaceutical Practice 322 in the last three weeks of the semester, and students were given 6 weeks to respond. For both surveys, voluntary participation was emphasised.

**Quantitative Results and Qualitative Findings**

The response rate for the User Survey was 86% (118/137). The response rate for eVALUate was 50% (69/137).

The following four tables summarises the quantitative results from the User Survey:

Table 1 shows that the majority of participants were aged between 20 to 25 years old (87%), female (65%), had Australian residency (61%), and good information technology (IT) skills (76%). Approximately half (52%) of the participants spoke English as a first language.

### Table 1: Participant demographics (n = 118)

<table>
<thead>
<tr>
<th>Age group</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20</td>
<td>8</td>
</tr>
<tr>
<td>20 - 25</td>
<td>87</td>
</tr>
<tr>
<td>26 - 35</td>
<td>3</td>
</tr>
<tr>
<td>Over 35</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>35</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Language</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>52</td>
</tr>
<tr>
<td>Other</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian</td>
<td>61</td>
</tr>
<tr>
<td>International</td>
<td>39</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IT Skills</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>16</td>
</tr>
<tr>
<td>Good</td>
<td>76</td>
</tr>
<tr>
<td>Poor</td>
<td>9</td>
</tr>
<tr>
<td>Very Poor</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 2 demonstrates that the majority of participants either strongly agreed or agreed with the statements regarding iPortfolio use. In particular, 79% of participants indicated that iPortfolio “Has improved [one’s] understanding of the material taught in this unit” and 90% indicated that iPortfolio “Allows [one] to store examples of...extra-curricular activities relevant to [one’s] future career”.

35
The results in table 3 indicate that whilst a majority of participants (47%) initially responded with either uncertainty, negativity, anxiety or confusion towards the use of iPortfolio as an assessment medium, after 13 weeks of using the iPortfolio, the majority of participants (83%) responded with either enthusiasm or positivism towards iPortfolio as an assessment medium.

Table 4 demonstrates that, of the participants who initially chose uncertain, negative, anxious or confused as a response, the majority of these participants had an improved attitude after 13 weeks of using the iPortfolio. Only 7% of participants who initially selected the enthusiastic or positive option had a worsening change of attitude. Furthermore, the overall change towards a positive attitude was statistically significant (p<0.0001, where a p-value <0.05 was taken to be a statistically significant association).

A logistic regression analysis was then conducted to investigate any possible associations between gender, first language, residency, level of IT skills and initial attitude, and a final enthusiastic/positive attitude. However, it was found that there was no apparent association between gender, first language, residency, and level of IT skills with the final attitude. The number of participants not aged between 20 to 25 years old was small (n = 15), showing that the students were fairly homogenous with respect
to age. Hence Age was not included as an independent variable in the regression model. The only statistically significant finding was that an initial enthusiastic/positive attitude appeared to be associated with a final enthusiastic/positive attitude (p = 0.04, where a p-value <0.05 was taken to be a statistically significant association).

Table 5 summarises the quantitative results from the eVALUate survey, and demonstrates that a majority of participants either strongly agreed or agreed with the statements regarding their opinions towards the overall Pharmaceutical Practice 322 unit. In particular, 98% of participants indicated that they were satisfied with the unit overall. Although this result does not directly indicate satisfaction with the iPortfolio as an assessment medium, the qualitative findings suggests this.

**Table 5: General statements regarding the Pharmaceutical Practice 322 unit (n = 69)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree/agree (%)</th>
<th>Unable to Judge (%)</th>
<th>Strongly disagree/disagree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learning outcomes in this unit are clearly identified.</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The learning experiences in this unit help me to achieve the learning outcomes.</td>
<td>96</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>The assessment tasks in this unit evaluate my achievement of the learning outcomes.</td>
<td>98</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Feedback on my work in this unit helps me to achieve the learning outcomes.</td>
<td>99</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>The workload in this unit is appropriate to the achievement of the learning outcomes.</td>
<td>97</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I am motivated to achieve the learning outcomes in this unit.</td>
<td>98</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I make best use of the learning experiences in this unit.</td>
<td>98</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I think about how I can learn more effectively in this unit.</td>
<td>89</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Overall, I am satisfied with this unit.</td>
<td>98</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

The remainder of this section explains the qualitative findings:

From both the User Survey and eVALUate, it was found that many participants expressed an initial reticence to the implementation of iPortfolio as an assessment medium. However, many responses indicated that this initial attitude changed within the 13 weeks of using the iPortfolio. For example:

Initially I was extremely negative about straying away from the usual exams and tests but as I began to complete assessments and compile the iPortfolio my negative attitude changed. I believe the iPortfolio enables students to express themselves as people rather than as students who just spit memorised lecture content out. (User Survey)

Another example: “I [sic] was initially really skeptical about iPortfolio but after actually starting it, I [sic] found it to be a good assessment medium”. (eVALUate)

A number of participants also found that the iPortfolio facilitates improved learning and retention of information compared to traditional assessments. For example:

I really think that doing assessments this way helps me retain the actual information better than doing an exam. During exams, students often just memorise the content and then forget it straight after. Doing these iPortfolio assessments allows students to take the time to think about what needs to be written and as a result, improves information retention. (User Survey)

Another example: “allows us to develop a better understanding of what the lectures are really about”. (eVALUate)

Some other common findings regarding the iPortfolio as an assessment medium include participants liking the freedom to express themselves, liking the personal feedback and having more motivation to learn
the material taught. Many participants also appeared to like the idea of using iPortfolio as an assessment medium compared to traditional assessments. For example:

I like it! It’s not only a good way to express ourselves personally and individually about relevant issues, but it also replaces sitting an exam where we are supposed to cram our information and our feelings into a 2 hour session, which I don’t find effective in this regard. (User Survey)

Another participant responded that iPortfolio was “Better than memorising and writing heaps and getting stressed out in exams”.

When asked about their experiences with the iPortfolio system, some comments suggested that iPortfolio needed to be more user-friendly. One participant from the User Survey suggested “make [iPortfolio] easier to use”. A number of participants also suggested that they would like to have more control over customising their iPortfolio. A suggestion made by a participant from eVALUate: “More personalization [sic] tools on iPortfolio would be nice, such as a dedicated image uploader, font colour etc”.

One other common finding regarding the iPortfolio system was that participants appeared to like the ability to store and access their work via the iPortfolio.

Discussion

The iPortfolio, whilst still in its infancy, appears to be a viable facilitator for assessments. Regarding students’ pre- and post-perceptions of the iPortfolio as an assessment medium, the quantitative results indicated a statistically significant change towards an enthusiastic/positive impression after the 13 weeks of implementation of the iPortfolio as an assessment medium. This improved attitude appeared to be consistent across groups defined by: gender, first language, residency and level of IT skills. It was also supported by the qualitative findings in which some participants indicated that their initial uncertainties were allayed after commencing the use of the iPortfolio and completing the authentic assessments. This degree of acceptance suggests that minimal changes to the use of iPortfolio as an assessment medium are required. However, an investigation into how iPortfolio could be better introduced should be conducted in order to improve students’ pre-perceptions.

Although participants were not invited to answer questions on their experiences with the iPortfolio system in the quantitative section of eVALUate, the qualitative section of eVALUate invited participants to comment on what aspects of the Pharmaceutical Practice 322 unit could be improved. Similarly, only limited questions were asked regarding the matter in the quantitative section of the User Survey (table 2), whilst the qualitative section of the User Survey asked participants to comment on the aspects of the iPortfolio that they liked and what they thought could be improved. Findings indicated that the iPortfolio required improvements to its usability and customisability. Such findings are valuable to the iPortfolio team as it will allow for future improvements to the iPortfolio system.

From the limited quantitative data that were obtained from the User Survey (table 2) with respect to students’ experiences with iPortfolio, it was also found that a majority of participants agreed that the iPortfolio allowed them to store and easily access their work, both curricular and extra-curricular. This was again supported in the qualitative findings.

Some of the quantitative results helped to address the third research question: whether using the iPortfolio altered students’ overall learning experiences. The quantitative results from the User Survey (table 2) indicated that a majority of participants thought that iPortfolio had “helped [them] become a more effective and independent learner” as well as “improv[ed their] understanding of the material taught.” These findings were supported by the quantitative results from eVALUate (table 5) as a majority of participants strongly agreed/agreed that: “The learning experiences in this unit help me to achieve the learning outcomes”, “I make best use of the learning experiences in this unit”, “I think about how I can learn more effectively in this unit” and “Overall, I am satisfied with this unit”.

Furthermore, the qualitative findings from both the questionnaires supported these quantitative results as well as providing more depth into students’ views. Participants believed that they have learnt and retained more information, and liked that they were able to freely express themselves in their assessments. Participants were also found to like the iPortfolio concept compared to traditional assessment methods. This further suggests the viability of the iPortfolio as an assessment medium.
Interestingly, a majority of participants acknowledged the ability of the iPortfolio to store information relevant to their future careers in the quantitative section (table 2). However, none of the participants expressed their understanding of the importance of this feature in the qualitative sections. This feature of the iPortfolio is especially important for pharmacy in Western Australia as current Pharmaceutical Council requirements for registration as a pharmacist include a portfolio that demonstrates various professional competencies [25]. Artefacts such as the patient counselling movie clip could be used to demonstrate competence in communication and the standard of a graduate’s professionalism. Furthermore, as Curtin intends to allow graduates access to the iPortfolio for professional development, it is a recommendation that further studies be conducted to assess the viability of using the iPortfolio for continuing professional development. The findings will be useful for determining the capacity of the iPortfolio to integrate tertiary education, subsequent employment and continued professional development. Hence, not only can the iPortfolio potentially aid in preparing graduates for their new roles but also sustaining the quality of professionals in the current healthcare workforce.

Conclusion

Although further studies into other applications of the iPortfolio such as its use to facilitate continuing professional development are yet to be conducted, the results and findings from this study are generally very positive, and demonstrate the potential capabilities of the iPortfolio as a facilitator for assessments.

References


DO I DARE DISTURB THE UNIVERSE? AN ePORTFOLIO VISION FOSTERING INDEPENDENT MINDEDNESS IN HEALTHCARE

Anne-Marie Howes
Leeds Institute of Medical Education, University of Leeds

Key Words: Independent Mindedness, Autonomy, Responsibility, Complexity, Decision-making, Self-efficacy, Medical Education, ePortfolios

Abstract: Assessment and Learning in Placement Settings (ALPS) facilitated a student led ePortfolio project to address the requirements of 16 different healthcare professions, across 5 universities, in West Yorkshire, with the aim of designing an ideal ePortfolio. This highlighted the importance of generic and specific pedagogical issues underpinning facilitation of teaching in healthcare settings and in the use of ePortfolios.

The ALPS ePortfolio team (comprising 16 students from health and social care courses and 4 members of staff) was set up, as part of the ALPS Centre for Teaching and Learning (CETL) programme, with three aims:

• Developing a better understanding of how students and staff currently use ePortfolios in health and social care across the 5 Partner Higher Education Institutions (HEIs) - University of Bradford, University of Huddersfield, University of Leeds (Lead Partner), Leeds Metropolitan University and York St John University.

• Suggesting approaches for improving this use.

• Championing the use of ePortfolios to reluctant users.

A review of how ePortfolios are used in health and social care disciplines has been completed; this information is being used as a platform from which to develop an ideal ePortfolio. Several themes are emerging; these will guide future development.

One of our aims in redesigning ePortfolios was to ensure that they support the most important areas of current pedagogical thinking. My particular focus was supporting the development of independent thought and practice. Although there is a plethora of literature about psychological constructs in relation to cognition, metacognition and metalearning [1, 2, 3, 4, 5, 6]; I will concentrate on supporting pedagogy and pragmatics regarding the provision of learning environments and teaching strategies that foster independent mindedness.

Martin Heidegger’s philosophy focuses on ‘dasein’ - literally ‘being there’, or colloquially ‘where you’re at’ [7]. Dasein dictates whether an individual has an ‘authentic’, or ‘inauthentic’ existence: that is, if you live your life one step removed, this has implications for your perspective, vision and creativity, and your interaction with others; it also increases vulnerability. An individual’s orientation changes the meaning of their experience – this has repercussions for all aspects of education e.g., there is a contradiction between the formulaic approach regarding assessment and competencies, and the amorphous complexity of personal development, which underpins professional development. Robotic behaviour and apathy are the outcome of concentration on competencies, because an individual loses – or never develops – the motivation to think and act independently.

Professionalism hinges on a student recognising their position on a continuum from closed systemisation (playing by the rules) to intuition; plus the development of self-awareness regarding their degree of rigidity/flexibility along this continuum, in relation to context. In addition, it is essential that students integrate professionalism into their personality, rather than masking their identity in order to become - for example, ‘a doctor’ (especially if they have a flawed, dated model as an ideal). If there is a need to distort or mask the self, communication with others becomes constrained and inauthentic; furthermore, there is a greater risk of burnout and avoidance behaviours e.g., alcoholism.
Michael Polyani believed that all skills and intuitive insights were underpinned by tacit knowledge [5]; his work has recently been refined by Harry Collins [8]. Educators/clinical tutors play an important part in helping students recognise their individual patterns of thought and behaviour; and also facilitate understanding and making explicit what they already know. Both Polyani and Collins use riding a bike as an analogy. This is also a useful analogy regarding playing by the rules, in that if you think too hard about riding a bike you are much more likely to fall off i.e., both trusting intuition and playing by the rules are potentially dangerous. Atul Gawande includes pause points in check lists to counteract mindless following of lists and also to give space for the thought: ‘is there anything not on the list…?’ [9]

Implications for Medical Education

There is a quantitative/qualitative shift point when students move from passive observation to active observation and start taking responsibility ‘as if’ they are the doctor as an essential part of the process of becoming one. There are several factors that can assist students in building confidence and expertise, thus providing a bridge from apprentice to master, accommodating mistakes (a crucial part of the learning process) [10], yet remaining safe in their practice, avoiding any negative impact on patient care. Awareness of the following by both tutors and students may help to accelerate this process:

**Zoom Facility:** Interpretation of an interaction or event is arrived at through numerous small decisions stemming from knowledge, beliefs, expectations and the complexity of experience. Reflective practice requires a zoom facility, thus enabling an individual to hone what they choose to attend to; in any given situation this involves varying both the object and the degree of attention.

John Launer describes this process: “One important aspect of reflective practice in the health professions is that it involves being in encounters with patients as an active participant, but also simultaneously being an analytical and self-critical observer of one’s practice. It means taking part in the consultation as a practitioner, but at the same time ‘going up to the ceiling’ to look down at the patient, at one’s own interaction with the patient, and at the wider contexts that influence that interaction. It is therefore a way of being emotionally and intellectually engaged with the patient, but simultaneously maintaining enough detachment to be a dispassionate internal commentator on what is going on at many different levels.” [11]

Zoom facility creates the capacity for seeing the forest and the trees at the same time, thus encompassing the complexity of a situation, maintaining flexibility and facilitating micro-adjustments. Clinical diagnostic thinking requires an ability to work with shifting patterns (like a kaleidoscope), plus a need to constantly re-adjust opinions in the light of new information.

**Threshold Concepts:** Meyer and Land's theory of 'Threshold Concepts': “transformed way of understanding, or interpreting, or viewing something without which the learner finds it difficult to progress, within the curriculum as formulated” [4]; and the resulting 'liminality' (colloquially: feeling all at sea) are fundamental to students learning how to be with uncomfortable: the degree to which a doctor can be with uncomfortable dictates how effective they will be at several levels e.g., emotional self control, flexibility in relation to attachment and detachment to patients, and calm decision making.

Ray Land describes three aspects of liminality:

- a transformative state that engages existing certainties and renders them problematic, and fluid
- a suspended state in which understanding can approximate to a kind of mimicry or lack of authenticity
- liminality as unsettling – sense of loss” [12]

Attending a first post-mortem invariably induces this state.

Liminality correlates with the notion ‘void’. This term is used in much philosophical and theological literature: “The void is universal slipping away, central to and constitutive of everything.” [13] The above state can be both dis-enabling and enabling. Control and acceleration through this process can be gained by using ‘zoom facility’; developing the ability to focus your attention on something and to deliberately disengage when this is unproductive and yet be able to return to re-examine this later, is an important part of becoming resilient, which is recognised as fundamental to becoming a good doctor [14].
Pragmatics

Ideally the tutor’s role is that of facilitator, rather than distributor of knowledge [15], plus potentially providing ‘containment’ during phases of liminality. If the roles of pastoral support, teaching, supervision and assessment are combined this provides greater opportunities to work in depth with individual students.

Zoom facility and microadjustments can be facilitated by:

**Reflection-in-action:** Students may acquire the habit of assuming that because they agree with what they are observing this would translate into acting similarly in a real situation. Performance can be improved by making predictions in the moment. Speech and writing are both performatives [16], which can provide a bridge between observation and taking responsibility for decision-making in relation to diagnosis and management; mobile technology can be useful for this purpose.

**Reflecting-on-action and Reflecting-for-action:** Students need guidance to develop critical judgement regarding why, what, when, where, and how to reflect. Tutors and peers play an important role in helping recognise blind spots and also in identifying appropriate approaches to particular events. Asking the right questions is key, followed by clarifying, summarising, reformulating, predicting and planning: independently, collaboratively and in ePortfolios; thus maximising the opportunity to fully integrate learning [17, 6]. High quality feedback enhances reflection: it must be prompt, context specific, demonstrate knowledge/recognition of where a student is at and contain confirmation, or suggestions for change.

Barriers

Identifying barriers to self efficacy and independent mindedness informs feedback and action plans. Some of these are mentioned below:

- Over-focussing on perceived lack of knowledge or competence
- Dissonance between expectation and experience
- Lack of awareness: student thinks they are on the right track
- Hesitancy: lack of knowledge, lack of confidence, unwillingness to rock the boat, feeling that it is impolite to ask/contradict superiors e.g., Fukushima conducted a cross cultural study of polite request strategies in British English and Japanese and demonstrated that British and Japanese undergraduates use different politeness strategies when making requests. He concluded that perceptions of power, social distance and the weight of the imposition influenced politeness strategy choice in the two cultures differently [18].
- Staying with what is known and not having the confidence to progress to the next stage
- Defensive entrenchment: fear about the next stage. Psychoanalyst, Bion identified the notion of an ‘arrogant knower’ who uses this pose to block knowing and development [19]
- Feel inadequate in relation to peers and settle for mediocrity [20]
- Lack of resilience: overwhelmed by personal life

ePortfolios

How do we develop an ePortfolio that includes competencies, but also integrates/reinforces deep learning, personal identity and self-efficacy?

*ePortfolio functions that promote deep learning:* customisability, default private and free text. In addition, software regarding framework, templates, diary/journal, skill blogs, mistake blogs and rant blogs provide a sense of ownership and promote first order reflection, plus a sense of immediacy, which increases the likelihood of students making connections for themselves. Conversely, certain functions tend to result in shallow and competency driven learning: rigid structure, default to tutor, tick boxes.

Conclusion

Understanding of the above pedagogy promotes awareness of subtlety and flexibility in relation to the learning and decision process, which dictates how knowledge is assimilated and used. If tutors are aware of these aspects it will enhance their capability to engender self-awareness in students and increase the likelihood of creating ‘compassionate and resilient practitioners’ [14] who exhibit independent mindedness.
The effectiveness of ePortfolios is dependent on the quality of their pedagogical (and technological) support. Underpinning pedagogy can usefully inform the development of ePortfolios: software could be built in to facilitate optimum use of functions to promote integration of personal and professional development by increasing the level of interplay and demand for integration of material to promote continual readjustment.

“And indeed there will be time
To wonder, ‘Do I dare?’ and, ‘Do I dare?’
Time to turn back and descend the stair…
Do I dare
Disturb the universe?
In a minute there is time
For decisions and revisions which a minute will reverse.”

(T.S. Eliot; 1930)

Acknowledgements
The author would like to thank the staff and students involved in the ALPS project.

References


Experience acquired from the development of ePortfolio continuing competence solutions for 8 (eight) regulated health professions

John Terence Ogle
SkilSure Limited, Canada

The case study will describe the experience and learning gained during the last three years from the development of continuing competence ePortfolio solutions for 8 (eight) regulated health professions in Canada. The case study will address the issue of:

- Competing legislation: personal privacy vs. mandatory quality assurance of professional competence
- The challenges of building solutions that fit and work with professions' existing information technology
- The good news and bad news about software solutions and the health professions existing QA CPD processes
- Identifying the common elements of QA CPD processes that are typically automated
- Building software to automate:
  - Reflective practice
  - Self Assessment
  - Learning Planning
  - Recording learning Activity
  - Audit and Assessment
  - System Administration
- Show Representative Screen shots
- Summarize the learning from the experience
Rewards for Healthcare ePortfolio with Generic Competences

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IREDU (CNRS/UB DIJON), France

Abstract
In 21st century society, heavily immersed in the deluge of information technology, van Wesel and Prop (2008) suggest the preferred use of ePortfolio. For successful functioning and development, Nijhof (1998) thinks labour market relevant knowledge and skills as well as a set of personal competences as crucial. To our understanding ePortfolio is an expression of the individual's competence repertoire. Although, for health profession specific competence is vital, nevertheless, it doesn't eliminate the necessity of generic competence. Heijke et al. (2003) discovered that generic competences (having indirect monetary value rather than the direct one) are used by on-the-job training to adjust the required level of specific competences. Being more explicit, critical self-reflection (a generic competence) is seen as an essential precondition to be included in the ePortfolio of the medical students (Branch & Paranjape, 2002; Driessen, van Tartwijk, Vermunt, & van der Vleuten, 2003). On this pretext we are going to explore the significance of generic competences in the ePortfolio of health graduates. We use an international data set provided by the team of Reflex project. On the basis of health graduates’ assessment of the competences we compute mean values and see the difference in their acquired and required levels of competences. Then we take all nineteen competences (both acquired levels and required levels of them) as determinants for the (logarithm) of total monthly income of young health graduates. We observed positively as well as negatively significant competences along with number insignificant competences. For us the negatively significant relationship was a bit perplexing at first. We tried to review the literature in this regard. Hause (1975) says, “A negative simple correlation between initial earnings and ability could arise if ability is a strong complement of on-the-job training which may be paid for by reduced initial earning”. We may say that there could be some reason of this negatively significant relationship. “Mastery of your own field or discipline” is remarkably showing insignificant relationship with income for acquired levels, and highly negative relationship for required levels. Garcia-Aracil et al. (2004) comments, “with respect to specialised competences, it is ironic, though not surprising, that jobs where specialised competences (that is, those related to field specific knowledge) were highly required but not better paid. For future research venture we propose to take into account more targeted and focused research for health graduates which may encompass a long enough period of their practically active time in the labour market. Larger sample of health graduates may also be of some remarkable outcome. Country wise comparison, if possible, can also be a good research track. We may conclude our study by saying that it is not only interesting but important to incorporate generic competences in the ePortfolio of health graduates in modern day society of information technology.

Key Words: generic competence, healthcare, Income, ePortfolio.

Introduction
An electronic or digital portfolio, also known as a webfolio or ePortfolio, is becoming increasingly important in the information society of 21st century which heavily relies upon information technology. “In recent years, the internationalisation of economic life is being reflected more and more in the internationalisation of education”, said Heijke and Meng (2006). ePortfolio plays imperative role through the various stages of education and employments and even into retirement of the health graduates of today’s modern society.

We know that paper portfolio was in use long before the inception of ePortfolio. However, the later has certain advantages over the former. The most conspicuous gain of ePortfolio is that it is much more cost effective as compared to its paper counterpart. Portability and manageability are two other merits of it. Results of a comparative research, by van Wesel and Prop (2008), between paper based portfolios and electronic portfolios in the same setting, suggest the preferred use of an ePortfolio which leads to better learning outcomes. This is perceptible through, for example, LinkedIn (http://www.linkedin.com) and europass (http://europass.cedefop.europa.eu), which are making excellent use of ePortfolio.
For successful functioning and development, Nijhof (1998) regarded the labour market relevant knowledge and skills as well as a set of personal competences as crucial. In fact, ePortfolio is an expression of the individual's competences. It supports life long learning as it can be enthusiastically maintained over time. There is a debate over the ascendancy of specific over the generic competences, or the inverse of it. A good number of researchers (see for example: Campbell and Laughlin, 1991; and Mane, 1998) are inclined to merit specific competences more than the generic competences for employability in the labour market. However, Teichler (1999) appears to be strict in his conviction that discipline specific knowledge is rendered obsolete at an increasing rate by the pace of technological progress; hence the generic competences are more important in the world of work (Bowen, 1977; Stasz, 1998). Amidst these (apparently) antithetic point-of-views, which are based on empirical findings, regressive opinion characterises the flexible graduates to be equipped of necessary and sufficient (level of) specific competences along with the repertoire of generic competences, of international breadth, in their ePortfolio. Heijke et al. (2003) discovered that generic competences (having indirect monetary value rather than the direct one) are used by on-the-job training to adjust the required level of specific competences. Being more specific, critical self-reflection (a generic competence) is seen as an essential precondition to be included in the ePortfolio of the medical students (Branch and Paranjape, 2002; Driessen et al., 2003).

Although highly specialised profession of health, usually, supposed to remains confined to specific competences; yet, we think that ePortfolio of health graduates must possess a good deal of specific competences including clinical skills beside a rich stock of generic competences.

**Hypothesis**

We intend to study in this article, the significance of generic competences in the ePortfolio of health graduates from a multinational data set. We are curious to study if there are some pecuniary rewards for generic competences in the ePortfolio of health graduates.

**Data**

We are using the data set of Reflex project (see http://www.reflexproject.org). Reflex was a research project funded by the European Union under the 6th framework programme and several national funds. This project was coordinated by the Research Centre for Education and the Labour Market at Maastricht University, the Netherlands. From autumn 1998 to 2000, about 40,000 graduates in total from fifteen countries (Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Switzerland and the United Kingdom) provided through a written questionnaire on the relationship between higher education and employment three to four years after graduation. At the time of survey in 2005 Graduates were in labour market.

Our analyses comprise selected variables from the enormous data set descended from the Reflex project. We include only the health graduates from the Reflex data set. Health graduates rated their acquired levels of competences (see Appendix A) at the time of their graduation along with the required levels of the same competences in the labour market at the time of survey which was carried out some four years later. Seven point rating scale, from very low to very high, was used in the survey.

**Results and Discussion**

It is pertinent to mention here that all the required as well as acquired levels of competences are assessed by the health graduates included in the present study. This could have rendered this study dubious if Shah (2009) has not established the reliability of graduates’ assessment.
Table 1

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Competences</th>
<th>$n_s$</th>
<th>$\bar{x}_s$</th>
<th>$n_r$</th>
<th>$\bar{x}_r$</th>
<th>$\bar{x}_r - \bar{x}_s$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mastery of your own field or discipline</td>
<td>1310</td>
<td>5.35</td>
<td>1321</td>
<td>5.88</td>
<td>-0.54</td>
</tr>
<tr>
<td>2</td>
<td>Knowledge of other fields or disciplines</td>
<td>1303</td>
<td>4.25</td>
<td>1306</td>
<td>4.12</td>
<td>0.13</td>
</tr>
<tr>
<td>3</td>
<td>Analytical thinking</td>
<td>1303</td>
<td>5.24</td>
<td>1303</td>
<td>5.09</td>
<td>0.15</td>
</tr>
<tr>
<td>4</td>
<td>Ability to rapidly acquire new knowledge</td>
<td>1309</td>
<td>5.68</td>
<td>1313</td>
<td>5.58</td>
<td>0.10</td>
</tr>
<tr>
<td>5</td>
<td>Ability to negotiate effectively</td>
<td>1306</td>
<td>4.62</td>
<td>1313</td>
<td>4.57</td>
<td>0.05</td>
</tr>
<tr>
<td>6</td>
<td>Ability to perform well under pressure</td>
<td>1311</td>
<td>5.48</td>
<td>1321</td>
<td>5.84</td>
<td>-0.36</td>
</tr>
<tr>
<td>7</td>
<td>Alertness to new opportunities</td>
<td>1304</td>
<td>4.72</td>
<td>1310</td>
<td>4.47</td>
<td>0.25</td>
</tr>
<tr>
<td>8</td>
<td>Ability to coordinate activities</td>
<td>1305</td>
<td>5.40</td>
<td>1312</td>
<td>5.29</td>
<td>0.11</td>
</tr>
<tr>
<td>9</td>
<td>Ability to use time efficiently</td>
<td>1307</td>
<td>5.60</td>
<td>1313</td>
<td>5.75</td>
<td>-0.15</td>
</tr>
<tr>
<td>10</td>
<td>Ability to work productively with others</td>
<td>1300</td>
<td>5.72</td>
<td>1313</td>
<td>5.55</td>
<td>0.16</td>
</tr>
<tr>
<td>11</td>
<td>Ability to mobilize the capacities of others</td>
<td>1305</td>
<td>4.73</td>
<td>1310</td>
<td>4.64</td>
<td>0.09</td>
</tr>
<tr>
<td>12</td>
<td>Ability to make your meaning clear to others</td>
<td>1307</td>
<td>5.25</td>
<td>1314</td>
<td>5.09</td>
<td>0.16</td>
</tr>
<tr>
<td>13</td>
<td>Ability to assert your authority</td>
<td>1305</td>
<td>4.56</td>
<td>1313</td>
<td>4.72</td>
<td>-0.16</td>
</tr>
<tr>
<td>14</td>
<td>Ability to use computers and the internet</td>
<td>1311</td>
<td>5.51</td>
<td>1318</td>
<td>5.19</td>
<td>0.32</td>
</tr>
<tr>
<td>15</td>
<td>Ability to come up with new ideas and solutions</td>
<td>1297</td>
<td>5.00</td>
<td>1307</td>
<td>4.59</td>
<td>0.41</td>
</tr>
<tr>
<td>16</td>
<td>Willingness to question your own and others’ ideas</td>
<td>1304</td>
<td>5.32</td>
<td>1311</td>
<td>4.74</td>
<td>0.58</td>
</tr>
<tr>
<td>17</td>
<td>Ability to present products, ideas or reports to an audience</td>
<td>1303</td>
<td>4.65</td>
<td>1313</td>
<td>4.55</td>
<td>0.10</td>
</tr>
<tr>
<td>18</td>
<td>Ability to write reports, memos or documents</td>
<td>1305</td>
<td>4.93</td>
<td>1312</td>
<td>4.74</td>
<td>0.19</td>
</tr>
<tr>
<td>19</td>
<td>Ability to write and speak in a foreign language</td>
<td>1305</td>
<td>4.43</td>
<td>1301</td>
<td>3.86</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Table 1 takes account of observations along with the mean values for all the 19 competences included in the data set. Subscript A and R stand for acquired and required levels of competences, respectively. The last column contains the difference of mean values of acquired and required levels of competences. Competence 1, 6, 9 and 13 (in Table 1) are found more required than their acquired levels as assessed by the health graduates. Competences 2, 4, 5, 8, 11 and 17 are found to be almost in equilibrium. For the rest of the competences we observe higher acquired levels than their required levels for respective competences.

It is a matter of serious concern that “Mastery of your own field or discipline” has been discovered severely deficient. This is in favour of what Teichler (1999) had maintained that discipline specific knowledge is rendered obsolete at an increasing rate by the pace of technological progress. “Ability to perform well under pressure” has also been revealed sternly wanting. Furthermore, health graduates felt paucity in their ability to use time efficiently as well as assert their authority. We are presenting the regression analyses for acquired and required levels of competences in the ensuing paragraphs.

Table 2 (both A and B) is concerned with the acquired levels of competences whereas Table 3 (both A and B) is about the required levels of competences.

In our first model, acquired levels of all 19 competences are taken as the determinant for the log of total monthly income of the health graduates. Overall model is highly significant (see Table 2A), but with small value of R square as it often comes in case of large data sets (Gujarati and Sangeetha, 2007).

Table 2A

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>19</td>
<td>175.62</td>
<td>9.24</td>
<td>15.64</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Error</td>
<td>1131</td>
<td>668.49</td>
<td>0.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1150</td>
<td>844.11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2B presents the analyses of acquired competences rearranged in descending order of $\beta$s. Five competences are observed to be significant and positively moving the income. Ten competences (typed in bold letters in Table 2B) are found insignificant and it is not surprising if “Mastery of your own field or discipline” falls under this group as it adds to what Teichler (1999) has pronounced as mentioned earlier in the preceding lines. Insignificant relationship, in general, exemplifies vague information.

### Table 2B

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Acquired Competences (rearranged)</th>
<th>$\beta$</th>
<th>S.E.</th>
<th>$t$</th>
<th>P</th>
<th>Tol</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to perform well under pressure</td>
<td>0.19</td>
<td>0.02</td>
<td>8.47</td>
<td>&lt;0.0001</td>
<td>0.65</td>
<td>1.55</td>
</tr>
<tr>
<td>2</td>
<td>Alertness to new opportunities</td>
<td>0.13</td>
<td>0.02</td>
<td>6.19</td>
<td>&lt;0.0001</td>
<td>0.60</td>
<td>1.66</td>
</tr>
<tr>
<td>3</td>
<td>Ability to work productively with others</td>
<td>0.09</td>
<td>0.02</td>
<td>4.26</td>
<td>&lt;0.0001</td>
<td>0.58</td>
<td>1.71</td>
</tr>
<tr>
<td>4</td>
<td>Ability to write reports, memos or documents</td>
<td>0.07</td>
<td>0.02</td>
<td>3.96</td>
<td>&lt;0.0001</td>
<td>0.64</td>
<td>1.55</td>
</tr>
<tr>
<td>5</td>
<td>Analytical thinking</td>
<td>0.06</td>
<td>0.02</td>
<td>2.45</td>
<td>0.0146</td>
<td>0.68</td>
<td>1.47</td>
</tr>
<tr>
<td>6</td>
<td>Ability to write and speak in a foreign language</td>
<td>0.03</td>
<td>0.01</td>
<td>1.93</td>
<td>0.0541</td>
<td>0.79</td>
<td>1.26</td>
</tr>
<tr>
<td>7</td>
<td>Ability to use time efficiently</td>
<td>0.02</td>
<td>0.03</td>
<td>0.86</td>
<td>0.3899</td>
<td>0.58</td>
<td>1.72</td>
</tr>
<tr>
<td>8</td>
<td>Ability to make your meaning clear to others</td>
<td>0.00</td>
<td>0.02</td>
<td>-0.11</td>
<td>0.9129</td>
<td>0.62</td>
<td>1.61</td>
</tr>
<tr>
<td>9</td>
<td>Knowledge of other fields or disciplines</td>
<td>-0.02</td>
<td>0.02</td>
<td>-1.09</td>
<td>0.2779</td>
<td>0.75</td>
<td>1.34</td>
</tr>
<tr>
<td>10</td>
<td>Ability to assert your authority</td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.74</td>
<td>0.4596</td>
<td>0.58</td>
<td>1.73</td>
</tr>
<tr>
<td>11</td>
<td>Ability to use computers and the internet</td>
<td>-0.03</td>
<td>0.02</td>
<td>-1.73</td>
<td>0.0830</td>
<td>0.76</td>
<td>1.31</td>
</tr>
<tr>
<td>12</td>
<td>Ability to present products, ideas or reports to an audience</td>
<td>-0.03</td>
<td>0.02</td>
<td>-1.57</td>
<td>0.1158</td>
<td>0.60</td>
<td>1.67</td>
</tr>
<tr>
<td>13</td>
<td>Mastery of your own field or discipline</td>
<td>-0.04</td>
<td>0.03</td>
<td>-1.36</td>
<td>0.1729</td>
<td>0.72</td>
<td>1.38</td>
</tr>
<tr>
<td>14</td>
<td>Ability to coordinate activities</td>
<td>-0.05</td>
<td>0.03</td>
<td>-1.93</td>
<td>0.0536</td>
<td>0.52</td>
<td>1.93</td>
</tr>
<tr>
<td>15</td>
<td>Ability to mobilize the capacities of others</td>
<td>-0.06</td>
<td>0.03</td>
<td>-1.95</td>
<td>0.0509</td>
<td>0.61</td>
<td>1.63</td>
</tr>
<tr>
<td>16</td>
<td>Willingness to question your own and others’ ideas</td>
<td>-0.07</td>
<td>0.02</td>
<td>-3.07</td>
<td>0.0022</td>
<td>0.67</td>
<td>1.50</td>
</tr>
<tr>
<td>17</td>
<td>Ability to come up with new ideas and solutions</td>
<td>-0.08</td>
<td>0.03</td>
<td>-3.01</td>
<td>0.0026</td>
<td>0.52</td>
<td>1.91</td>
</tr>
<tr>
<td>18</td>
<td>Ability to rapidly acquire new knowledge</td>
<td>-0.10</td>
<td>0.03</td>
<td>-3.43</td>
<td>0.0006</td>
<td>0.59</td>
<td>1.68</td>
</tr>
<tr>
<td>19</td>
<td>Ability to negotiate effectively</td>
<td>-0.10</td>
<td>0.02</td>
<td>-6.04</td>
<td>&lt;0.0001</td>
<td>0.73</td>
<td>1.38</td>
</tr>
</tbody>
</table>

Four competences showed a perplexing comportment as these are significant but with a negative parameter estimate. We thought right away that this could be due to likely multicollinearity among competences. We calculated tolerance (Tol) and variance inflation factor (VIF), but, no indication of multicollinearity was traced. Although there are no standard values to decide if there is multicollinearity, however, value of VIF more than 10 or of tolerance less than 0.1 is considered an indication of multicollinearity (Jeeshim and Kucc, 2002). The fact that these competences are significant in our analyses does not permit us to leave them unnoticed. As plausible reasons we may think that either these competences have not been acquired to their threshold or these are undervalued in the labour market.

"Willingness to question your own and other's ideas" is traced significant but with negative sign in the analysis of acquired level of competences. Perhaps, this competence is not among those which are more demanding in terms of financial output in the labour market. Either this is not important for health graduates, at all, or is less remunerated, at least, in the beginning of the career of young health graduates in the labour market. Similar is the case with “Ability to come up with new ideas and solutions”. This competence is significant but with negative sign in present analysis. This competence might also be not among those which are very demanding in the labour market. Acquired level of “Ability to rapidly acquire new knowledge” and “Ability to negotiate effectively” could also be regarded as of similar comportment.

In rather simple terms we can say that these competences are acquired to a lesser level than to what they are required in fact in the labour market. And, the health graduates think that they would have been earning
more than their actual earnings if these competences would have been acquired, at least, up to their required threshold level in the labour market.

Table 3A

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F-value</th>
<th>P-value</th>
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<tr>
<td>Model</td>
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<td>148.59</td>
<td>7.82</td>
<td>12.36</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Error</td>
<td>1114</td>
<td>704.92</td>
<td>0.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1133</td>
<td>853.51</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N=1134, R square=0.1741

In the second model, logarithm of total monthly income of health graduates is regressed against the required levels of all the 19 competences. Overall model is detected highly significant (see Table 3A). Small value of R square eventually results in models with large data sets (Gujarati and Sangeetha, 2007), which might help not to surprise in our case.

Table 3B

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Required Competences (rearranged)</th>
<th>β</th>
<th>S.E.</th>
<th>t</th>
<th>P</th>
<th>Tol</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alertness to new opportunities</td>
<td>0.13</td>
<td>0.02</td>
<td>7.52</td>
<td>&lt;0.0001</td>
<td>0.61</td>
<td>1.63</td>
<td></td>
</tr>
<tr>
<td>Ability to perform well under pressure</td>
<td>0.11</td>
<td>0.02</td>
<td>4.80</td>
<td>&lt;0.0001</td>
<td>0.66</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>Analytical thinking</td>
<td>0.06</td>
<td>0.02</td>
<td>3.05</td>
<td>0.0024</td>
<td>0.61</td>
<td>1.65</td>
<td></td>
</tr>
<tr>
<td>Ability to use computers and the internet</td>
<td>0.04</td>
<td>0.02</td>
<td>2.07</td>
<td>0.0383</td>
<td>0.56</td>
<td>1.78</td>
<td></td>
</tr>
<tr>
<td>Ability to make your meaning clear to others</td>
<td>0.04</td>
<td>0.02</td>
<td>1.77</td>
<td>0.0772</td>
<td>0.50</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Ability to use time efficiently</td>
<td>0.04</td>
<td>0.02</td>
<td>1.44</td>
<td>0.1502</td>
<td>0.55</td>
<td>1.82</td>
<td></td>
</tr>
<tr>
<td>Ability to write reports, memos or documents</td>
<td>0.03</td>
<td>0.02</td>
<td>1.92</td>
<td>0.0552</td>
<td>0.63</td>
<td>1.58</td>
<td></td>
</tr>
<tr>
<td>Ability to mobilize the capacities of others</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.25</td>
<td>0.8032</td>
<td>0.50</td>
<td>1.99</td>
<td></td>
</tr>
<tr>
<td>Ability to come up with new ideas and solutions</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.35</td>
<td>0.7241</td>
<td>0.39</td>
<td>2.54</td>
<td></td>
</tr>
<tr>
<td>Ability to write and speak in a foreign language</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.71</td>
<td>0.4802</td>
<td>0.68</td>
<td>1.46</td>
<td></td>
</tr>
<tr>
<td>Ability to present products, ideas or reports to an audience</td>
<td>-0.02</td>
<td>0.02</td>
<td>-1.27</td>
<td>0.2033</td>
<td>0.61</td>
<td>1.63</td>
<td></td>
</tr>
<tr>
<td>Willingness to question your own and others’ ideas</td>
<td>-0.05</td>
<td>0.02</td>
<td>-2.04</td>
<td>0.0420</td>
<td>0.45</td>
<td>2.23</td>
<td></td>
</tr>
<tr>
<td>Ability to work productively with others</td>
<td>-0.05</td>
<td>0.02</td>
<td>-2.02</td>
<td>0.0441</td>
<td>0.53</td>
<td>1.89</td>
<td></td>
</tr>
<tr>
<td>Ability to assert your authority</td>
<td>-0.05</td>
<td>0.02</td>
<td>-2.44</td>
<td>0.0149</td>
<td>0.64</td>
<td>1.57</td>
<td></td>
</tr>
<tr>
<td>Ability to coordinate activities</td>
<td>-0.05</td>
<td>0.02</td>
<td>-2.25</td>
<td>0.0248</td>
<td>0.51</td>
<td>1.94</td>
<td></td>
</tr>
<tr>
<td>Knowledge of other fields or disciplines</td>
<td>-0.06</td>
<td>0.02</td>
<td>-3.20</td>
<td>0.0014</td>
<td>0.74</td>
<td>1.35</td>
<td></td>
</tr>
<tr>
<td>Ability to rapidly acquire new knowledge</td>
<td>-0.07</td>
<td>0.02</td>
<td>-2.74</td>
<td>0.0062</td>
<td>0.55</td>
<td>1.83</td>
<td></td>
</tr>
<tr>
<td>Ability to negotiate effectively</td>
<td>-0.08</td>
<td>0.02</td>
<td>-5.17</td>
<td>&lt;0.0001</td>
<td>0.70</td>
<td>1.43</td>
<td></td>
</tr>
<tr>
<td>Mastery of your own field or discipline</td>
<td>-0.10</td>
<td>0.02</td>
<td>-3.94</td>
<td>&lt;0.0001</td>
<td>0.74</td>
<td>1.35</td>
<td></td>
</tr>
</tbody>
</table>

Table 3B provides the analyses of required competences rearranged in descending order of βs. Required levels of four competences are observed to be significant and these are positively affecting the income of the health graduates. Seven competences (typed in bold letters in Table 3B) are marked insignificant. This is not a strange thing in our analyses of required (levels of) competences. “For early years in the earnings profile, the ability coefficient is very small, and in most cases not statistically significant”, believes Hause (1975).

The last eight competences in Table 3B are significant but with a negative parameter estimate. Consequently, we checked all the competences for likely multicollinearity by computing tolerance (Tol) and variance inflation factor (VIF); but, no intimation of multicollinearity was traced. Although there are no
standard values to decide if there is multicollinearity, however, value of VIF more than 10 or of tolerance less than 0.1 is considered an indication of multicollinearity (Jeeshim and Kucc, 2002). Nevertheless, we cannot leave them unnoticed. As a probable reason, again, we reflect that these competences might be being undervalued in the labour market.

Let us peep into the literature for clear guidance in this regard. Garcia-Aracil et al. (2004) comments, “with respect to specialised competences, it is ironic, though not surprising, that jobs where specialised competences (that is, those related to field specific knowledge) were highly required but not better paid. It is likely that these are more traditional jobs, in many cases in the public sector, having lower salaries at least at the beginning of the career”.

"Initial earnings of people first entering the labour force could have a positive, zero, or negative simple correlation with ability. A positive correlation could indicate that those with higher ability are immediately more productive ... A low positive or zero simple correlation between initial earnings and ability could reflect ... imprecise information ... A negative simple correlation between initial earnings and ability could arise if ability is a strong complement of on-the-job training which must be paid for by reduced initial earnings", states Hause (1975).

These two citations are fairly explaining the situation which we suspected for multicollinearity, and which according to our analyses doesn’t exist in our case, at all.

We have observed through analyses that most of the competences are not highly demanding in labour market in terms of their financial output. Either these are not important for health graduates at all, or are less remunerated, at least, in the beginning of the career of young health graduates in labour market. In other words, the health graduates think that they would have been earning more than their actual earnings if these competences would have been up in their demand in labour market.

Conclusion

In 21st century society, heavily immersed in the deluge of information technology, van Wesel and Prop (2008) suggest the preferred use of ePortfolio. For successful functioning and development, Nijhof (1998) thinks labour market relevant knowledge and skills as well as a set of personal competences as crucial. To our understanding ePortfolio is an expression of the individual’s competence repertoire. Importance of specific as well as generic competences has been studied by a number of researchers. For professions, say health, specific competence is vital. Nevertheless, it doesn’t eliminate the necessity of generic competence. Heijke et al. (2003) discovered that generic competences (having indirect monetary value rather than the direct one) are used by on-the-job training to adjust the required level of specific competences. Being more specific, critical self-reflection (a generic competence) is seen as an essential precondition to be included in the ePortfolio of the medical students (Branch & Paranjape, 2002; Driessen, van Tartwijk, Vermunt, & van der Vleuten, 2003).

This is a very brief pretext for the current discourse which is to explore the significance of generic competences in the ePortfolio of health graduates. We use an international data set. We are thankful to Reflex team for providing us the data set.

On the basis of health graduates’ assessment of their competences we compute mean and see the difference in their acquired and required levels of competences. “Mastery of your own field or discipline” has been discovered severely deficient. This is in accordance with the findings of Teichler (1999). “Ability to perform well under pressure” has also been marked severely inadequate. Health graduates felt scantiness in their ability to use time efficiently as well as ability to assert their authority.

Seven competences, acquired as well as required levels, exhibited significant relationship with income; following is the list of these competences.

1. Ability to perform well under pressure
2. Alertness to new opportunities
3. Analytical thinking
4. Ability to work productively with others
5. Willingness to question your own and others’ ideas
6. Ability to rapidly acquire new knowledge
7. Ability to negotiate effectively

In the list above, first three competences affecting the income positively are found common in the analyses for acquired as well as required (levels of) competences. The fourth competence is marked positively significant for the analyses of acquired level of competences but negatively significant for the analyses of required level of competences. Conversely, next three of the list above are found to negatively move the income. Computation of VIF and tolerance established that there was no indication of multicollinearity.

Hause (1975) says, “A negative simple correlation between initial earnings and ability could arise if ability is a strong complement of on-the-job training which may be paid for by reduced initial earning”. There could be a number of reasons of this negatively significant relationship. As a few of possible reasons we may think that:

1. These are less demanding in terms of financial output in the labour market
2. These are not important for health graduates at all
3. These are less remunerated, at least, in the beginning of the career

“Mastery of your own field or discipline” is remarkably showing insignificant relationship with income for acquired levels, and highly negative relationship for required levels. Garcia-Aracil et al. (2004) comments, “with respect to specialised competences, it is ironic, though not surprising, that jobs where specialised competences (that is, those related to field specific knowledge) were highly required but not better paid. It is likely that these are more traditional jobs, in many cases in the public sector, having lower salaries at least at the beginning of the career”.

For future research venture we propose to take into account more targeted and focused research for health graduates which may include a long enough period of their practically active time in the labour market. Larger sample of health graduates may also be of some remarkable outcome. Country wise comparison, if possible, can also be a good research track. We may conclude our study by saying that it is not only interesting but important to incorporate generic competences in the ePortfolio of health graduates in modern society of information technology. Our intention is propose only a workable idea in this regard. Undoubtedly, it needs a lot to work it out.

References


http://europass.cedefop.europa.eu/


Appendix

Following is the excerpt from the Reflex Master Questionnaire. In section H1 of Reflex Master Questionnaire, graduates were to rate their competences on a rating scale of seven ranging from very low i.e. 1 to very high i.e. 7.

<table>
<thead>
<tr>
<th>Competency</th>
<th>A Own level</th>
<th>B Required level in current work</th>
</tr>
</thead>
<tbody>
<tr>
<td>. How do you rate your own level of competence?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. What is the required level of competence in your current work?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you are not currently employed, only fill in column A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a Mastery of your own field or discipline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b Knowledge of other fields or disciplines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Analytical thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Ability to rapidly acquire new knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Ability to negotiate effectively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f Ability to perform well under pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g Alertness to new opportunities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h Ability to coordinate activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i Ability to use time efficiently</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J Ability to work productively with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K Ability to mobilize the capacities of others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L Ability to make your meaning clear to others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m Ability to assert your authority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n Ability to use computers and the internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Ability to come up with new ideas and solutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p Willingness to question your own and others' ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>q Ability to present products, ideas or reports to an audience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r Ability to write reports, memos or documents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>s Ability to write and speak in a foreign language</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Physician, Know Thyself: a role for self-assessment in ePortfolios?**

*Alexander David Joseph Haig, Karen Louise Beggs, Claire Marie Tochel*

*NHS Education for Scotland, United Kingdom*

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**Background**

Self-assessment is increasingly advocated across the health professions for a variety of purposes, including formative and summative assessment, identification of learning needs and quality assurance of education and training. The proliferation of self-assessment processes continues, as it is adopted as a core activity to maintain professionalism and support life-long learning by numerous national regulatory bodies in medicine and nursing, often facilitated via electronic portfolios. Despite the widespread and growing use, the effectiveness of self-assessment in the scenarios it is being employed has not been well tested outwith the theoretical using real life situations and data.

A systematic review of the literature on self-assessment concluded in 2007 that there was no firm evidence that it could be used to identify learners’ needs, influence their choice of learning activity or change clinical practice or patient outcomes. While various interventions were seen to improve self-assessment, the evidence strongly suggested that the least able at a particular task were also the least able to accurately self-assess and tended to significantly over-estimate their own abilities. In fact, the pattern of self-assessment scoring tended to fall into quartiles, and those with the highest and lowest abilities were least able to accurately judge their own abilities when compared to the middle 50% of the population. The evidence indicated that clinical skills were more accurately self-assessed than non-clinical skills.

Although it now supports tens of thousands of healthcare trainees across the UK, the NHS Education for Scotland ePortfolio was initially created for Scottish medical trainees in the Foundation Programme. Foundation is the two years of medical practice after graduation during which trainee doctors are required to submit regular self and non-self structured assessments.

This paper examines one complete year of this assessment data to test whether the pattern of self-assessment of clinical skills replicates the existing literature when delivered and recorded by a mandatory ePortfolio. Multi-source feedback (MSF) scores by self and non-self raters were compared, as were the relationships between self-assessment and use of other educational tools in the trainee doctors’ ePortfolios.

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**Methods**

Trainees (n=1600) were required to submit a minimum of four non-self and one self MSF during two first year posts and one second year post. This requirement was met by 91% (1st year) and 90% (2nd year) for self MSFs and 85% (1st year) and 82% (2nd year) non-self. Each MSF recorded the rater’s score for 22 areas of the trainee’s professional competence on a seven point scale including six clinical skills, e.g. assessing acute conditions and safe prescribing.

Data on each of these six competencies were extracted and the distribution of scores examined. They were found to be positively skewed, and therefore to sensitively identify quartiles of high and low self-assessors the mean of all six clinical scores was calculated. This was done by grouping individual trainee’s self MSFs submitted during each post.

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**Results**

Both self and non-self clinical assessment scores were very high with medians of 6 or 7 in all competencies. The mean clinical score below which low self-assessors fell, increased from 5.167 in post 1, to 5.833 in post 3 and 6.000 in post 5 which may depict the recalibration effect described in the literature. The paper will describe this in more detail including the extent to which trainees move between high, mid and low self-assessment groups over time. The meaningfulness of the high / low group assignations will also be presented, for example by triangulation with peer and supervisor scores.
The paper will provide a detailed comparison of other ePortfolio components as measures of educational activity, for a random sample of high and low scoring individuals. These include:

- Personal Development Plan (improving perception of learning needs)
- Educational Log (promoting change in learning activity)
- Significant Event Analysis (improving clinical practice).

**Discussion**

Despite the narrowly demarcated scores in MSFs generally, there is emerging evidence that self-assessment of clinical skills in this medical trainees’ ePortfolio replicated patterns in other studies.

The medium of ePortfolio has enormous potential to improve the accuracy and value of self-assessment as it could be used to instantly triangulate results with other assessments, improve the awareness of standards to the learner and provide timely and rich feedback.
Knowing Me, Knowing You': Tutor Practices of Encouraging Student Learning Through ePortfolio

Christopher Murray, Delia Muir
University of Leeds, United Kingdom

Background or context

Knowing Me KNowing You': Tutor Practices of Encouraging Student Learning Through E-portfolio

Christopher Murray, University of Leeds & Delia Muir, University of Leeds

Introduction

The recent Best Evidence Medical Education (BEME) review of the educational effects of portfolios on undergraduate learning (Buckley et al 2009) highlighted the need for more investigation focussing on the ways in which the use of portfolios impacts on the pedagogical approach of the tutor and how the electronic format affected student-tutor relationships.

The School of Medicine at the University of Leeds has been using an e-portfolio approach to facilitate students' Personal Development Planning since 2005. Subsequent research and evaluations highlighted the importance of audience as a factor impacting on student engagement with the e-portfolio tool and consequently with the learning process such engagement was intended to facilitate (Murray et al 2006).

The Feedback: Enhanced and Electronically Delivered Project (F:EED) commenced in 2009. The main objective of the project is to find out more about how tutors use the medium of e-portfolios to deliver feedback to students. From this research we hope to produce practical guidelines for tutors and those supporting student learning, looking at integrating e-portfolio learning into teaching, and discover if the use of e-portfolios has any impact on tutor practices.

The central question of this qualitative study is to examine if the use of e-portfolios by students has any impact on tutor practices. The impact of regular tutor access to student e-portfolios illustrates the power of ‘knowing’ and outlines how access to student e-portfolios increases tutor knowledge about the student and, in the context of the medical degree (MBChB), other areas of the course. Can this knowledge alter classroom practices and enable tutors to provide a more personalised learning, and in some case pastoral, experience to learners?

This paper represents a preliminary report of early findings from the project. We recognise that these findings will be strengthened when triangulated with patterns of student e-portfolio usage and qualitative exploration of learners’ experiences.

The terms Progress File and e-Portfolio used in this study are interchangeable. They both refer to the one electronic system used by students to record their thoughts after formative and summative assessments, to input their weekly diary and present at appraisal evidence of their progress.

We outline the context of e-portfolio usage within the MBChB, the methodology used, an outline of the main findings, what the practical implications are for tutor practices in light of these findings and summarise how we will further investigate these initial findings.

The Context

Students are encouraged to complete a structured reflective exercise after every summative and formative assessment and complete a weekly diary which they must use to inform the writing of a reflective essay during their second term.
The use of the e-portfolio, or Progress File, is not assessed but students are expected to present evidence of their development throughout the year at their annual appraisal, using materials such as the reflections collected in their Progress File.

Six Individual Course Unit (ICUs) make up the first year of the medical degree and students are expected to reflect on their grades and performance in each of these A large part of the Personal and Professional Development (PPD) ICU focuses on developing students' reflective capacities and this part of the course is delivered through small-group session with a facilitator assigned to each group.

Facilitators from PPD were approached to take part in the study. This part of the first year course is the only one which utilises small group discussion as a learning and teaching method and the only part of the course where any changes to the tutors teaching approach would occur.

**Literature Review**

As highlighted by Buckley et al (2009) there are very few studies which look at how the use of e-portfolios by students affect student-tutor relationships and if the use of e-portfolios by students in any way changes the pedagogical approach of tutors. We only encountered three studies which illuminated tutors usage of e-portfolios.

The use of e-portfolio within these studies did not however mirror the context of e-portfolio usage on the MBChB at Leeds. One study focussed on e-portfolios as a tool for e-tutoring (Deketelaere et al 2009) and another within the advising system (Bashook et al 2008) Dekker et al (2009) cites tutor or mentor support as the biggest influence in engaging students in e-portfolio learning, a concept also echoed by Murray et al (2006) in an earlier study of the use of e-portfolios across different learning phases from the end of compulsory secondary education to professional practice.

Buckley et al (2009) cites improved tutor/student relationships as one of the main benefits of portfolio use and suggests that more qualitative studies are needed to fully understand this. Tochel et al (2009) supports the idea of audience as an important motivating factor for students, suggesting that feedback can have a positive effect on student uptake. However, this paper also points out the lack of literature around the role of the ‘mentor’.

An interesting feature of tutor usage highlighted by Bashook et al (2008) is the openness which students displayed in their online work. This openness then allowed tutors to gain a more rounded view of their students and adjust their mentoring style accordingly. Adjustments to the structure of feedback provision is also highlighted as a consequence of the tutor use of e-portfolio with students (Deketelaere et al 2009). These studies however are focussed on the impact of student e-portfolio usage in a tutoring and advising scenario, not, in a teaching environment.

The work of Dekker et al (2009) also emphasises the importance of the tutor role but this is linked to the student creation of a completed e-portfolio ‘product’ which is to be assessed.

Our focus is the impact of student e-portfolio usage during the initial stages of the course on tutor practices. We define ‘practices’ as those actions which tutors employ to support learning and teaching within their student group.

**Methodology**

Tutors facilitating on the Personal and Professional Development (PPD) ICU of the MBChB agreed to use the Progress File with students throughout the year. Tutors were given no guidelines on what to use the Progress File for and were only given technical training on the use of the e-portfolio tool. In February 2010 the tutors were invited to take part in a focus group and 5 tutors agreed to answer questions on their use of the tool with students. The number represents 41% of all PPD tutors (n=12) who taught on the first year of the course.

A semi-structured group interview was selected as the data collection method it has the reported advantage of being ‘inexpensive, data rich, flexible, stimulating to respondents, recall aiding and cumulative’ (Fontana and Fey 1998).

The interview was transcribed and analysed by the project manager and the project researcher. The text was coded and then both shared their findings to find common definitions for the categories used and to evidence, using the text, where these categories and codes had emerged. The transcribed text was then
categorised by another member of staff with no background in education or educational theory and a meeting was arranged to compare the emerging themes from the three analyses.

These codes were collated and grouped into categories and linked back to the original research questions. How does the use of the e-portfolio affect tutor practices?

**Findings**

The theme of ‘knowing’ emerges strongly from the group interview data and runs through our findings. It is this essence of knowing which appears to alter tutor practices as a result of student e-portfolio usage.

The theme of ‘knowing’ could be seen as referring both to the knowledge acquired via the Progress File which informed the classroom based sessions, and to the face to face relationships which informed the way feedback was delivered online. In this way the tutors themselves became learners; understanding more about their students and how best to support them. Paulo Freire cites this long standing theory of dialogue or co-learning as an essential part of education. This is particularly important when the learning is informal and continually developing rather than based around a ridged curricula. (Freire 2006)

Tutors found that they needed to accommodate the Progress File into existing course structures and agree with students how the Progress File would be used in the context of their teaching. Changes to feedback focus and structure were also noted as the use of the tool developed over time and the safety of the e-portfolio environment also began to deepen the relationship between tutor and student. Students revealed more knowledge about themselves which tutors could use to alter classroom practice or in some cases to provide more focussed and personalised support to members of their group.

**Accommodating and Acknowledging**

All of the tutors felt that they needed to accommodate the use of the Progress File into the existing course delivery: Tutors needed to negotiate with students the practical use of the e-portfolio and acknowledge and highlight to students opportunities where the Progress File could be used.

**The need to negotiate**

The use of the Progress File by tutors varied between groups. Tutors highlighted to their group opportunities when they could use the Progress File to record learning and negotiated with their learners when they should share their entries with them and when they could expect feedback.

’I staged it’ said one tutor, ‘I think as I said to them right at the beginning if you write anything I will comment on it so you know I’ve read it and I think that’s really important, ’when we first met that first time I sort of introduced the project and you know it’s new for me and it’s new for you, erm you know obviously what we say to each other is confidential, reassured them about that. It was a way of contacting me, erm, you know and I would like to, er, we’re all very new to it but if there’s something that’s worrying them and or they don’t want to put it down on the, you know in the computer if they just say things like, I’d like to speak to you on your own after the session next Monday and that happened, that’s happened once or twice’

“I didn’t care if it was something short and ….. I would be on there at least once a week myself to give them feedback.”

This however was not universal. Some tutors initially left students to their own devices as one tutor pointed out,

’I made a decision having worked with first year students quite a lot that actually in that first term I wanted them just to free wheel.’

Tutors found that contracting with students was vital to not only encourage learners to use the Progress File but to also enable the tutor to feel a sense of ownership and control over how they would use the Progress File and to form their own relationship with the technology as a tool for learning and teaching.

**Bringing the Progress File into the Classroom**

Once use had been negotiated tutors were able to highlight to students key moments where the tool could be used and what would be useful to record in their weekly diaries. One tutor explained how she engaged students with the process of recording evidence and experiences,
'I go online with them and actually get them to maybe put some kind of entry with me there…'

Another began to see how the Progress File could be used with students in other years proclaiming,

‘I could see how it could be used in the second year!’

**Communication**

Tutors found the tool useful as a means of communicating with learners. Not only did the Progress File enable tutors to provide feedback to individual students but it also enabled some tutors to find out more about the learners who attended physical sessions. The safety and confidentiality of the e-portfolio environment provided opportunities for students to disclose personal issues, which impacted on tutors and their practice. There were also opportunities for tutors to learn from student entries more about activities and learning taking place in other areas of the course.

**Changing the nature and structure of feedback**

All the tutors noted a change in the way they structured feedback to students when using the Progress File and it was noted that the relationship with the student was linked to the type of feedback tutors could provide to students through the online environment.

Tutors noted that it was common practice for them to start feedback with positive comments,

‘I’ve tried particularly in this first year and I mean since September virtually all ways to give you know positive feedback. ‘This approach was echoed by another tutor’I always start off with something nice no matter what.’

All agreed that feedback should begin with positivity and encouragement but would then move into a ‘question-posing’ phase. Feedback through the Progress File was more likely to take the form of a discussion. One tutor articulated the reasons behind this approach,

‘I think but it’s what kind of result do you want from this and the result is that you want to come back and write more don’t you? So you want them to feel sort of encouraged that you’re taking an interest, that you’re taking an interest in what they think and what they write so they think oh well you know maybe I could think about that a bit more. So I think yeah it’s not so much criticism as discussion I suppose.’

It is this notion of discussion rather than critique which drives the provision of feedback within the Progress File reflecting the teaching style used in the small group sessions. The e-portfolio is not a tool for summative assessment but an area for continuous development and feedback provided should mirror this.

**The Focus of Feedback**

It was not only the structure of feedback which changed through the use of the Progress File but also, for some tutors, the focus of that feedback. All of the tutors were aware of the underlying pedagogy behind the use of the Progress File, a tool to facilitate and encourage, reflective learning, but some of the tutors felt that continued use of the Progress File could enable them to focus feedback on other areas of the student’s development. Particularly that related to the use of English,

‘I mean I know that a lot of them are very all round clever but I would guess that they would think that that’s not their strength and they’re frightened of putting, they think the quality of their writing maybe found lacking and also a few said to me oh my spellings terrible, and I you know well that’s not my main area of interest you know in this (laugh) and it’s an opportunity to get some help with it if you really are bad at it’

This focus helped one tutor to provide assistance and support to two students who suffered from mild dyslexia and enabled some of the tutors to provide more support to students whose first language wasn’t English.

‘actually I’ve got two students who are dyslexic and they’re both engaging a lot because I told them that I would help them with editing and I’ve looked at some of their other work and it’s quite satisfying because you can, you can sort of see the improvement.’

This focus on helping the students’ with their written English will, believe some of the tutors, improve their ability to reflect. As the student’s use of language matures so does their ability to articulate their reflections.

“I think that’s one of the good things about getting them to do some reflection in writing because they can start to move towards that and I found that they do start off in that very, almost like they’re writing in
Facebook kind of way some of them but that's fine if you're reflecting for now but when it comes to your assignment at the end of the year that won't be fine no so it's like baby steps towards that more formalised way of doing it but without losing the reflection and the turning into a report about what happened, I think some of them struggle with the balance”

“I think the point is that even in scientific subjects people need to have a repertoire of different ranges of language don’t they?”

Negotiating the focus of feedback is an important aspect of e-portfolio practice for the tutor and helps the tutor to deliver an individual learning experience to the student. The personalised and ‘safe’ environment of the Progress File also impacts on the type of information students share with tutors.

Confidential Matters
The communicative power of the Progress File coupled with negotiated use, encouraged some students to discuss personal issues and make these available to tutors.

One member of a student group used the Progress File to indicate to their tutor that they wished to talk confidentially,

“She said through the e-portfolio that she wanted to speak to me on her own and that was useful, without saying why and you know, and it's understanding why she's been a bit quiet as well.’

The safety of the Progress File and the knowledge that their entries were being read and responded to acted as a channel for some students to contact their tutors with personal matters.

Another tutor found that international students in their group were also posting directly to them and furnishing them with knowledge,

’some students in my group are naturally quiet, often the overseas students, I've got two overseas students in my first year group who don't say much at all in the sessions, and yet if it's on line they've got more chance to actually talk.’

Another tutor discussed an entry shared with them by an international student,

‘He told me that and I've got loads of friends and I play the guitar but here everyone thinks I'm just silent, and it you know, I just think it's useful to know that sort of thing. Then something like this and a feeling that somebody's there giving them a bit of support who kind of knows them’

Both tutors in these cases were provided with information from the student which directly related to their behaviour in the classroom and enabled the tutor to incorporate this knowledge into classroom practice and strengthened the relationship between tutor and student.

Making Links
By having access to the students’ e-portfolios and reflections tutors were also able to gain a better picture of what was being taught in other areas of the course and of students non-academic activities. One tutor discusses reading a student entry about an ethics session

‘…and whilst that was nice and it was nice to read we have nothing to do with the content, don’t even know very often what the content of the ethics session that they've sat on is’

Another tutor discusses how this knowing was useful in terms of being able to make the linkages between different sessions and parts of the course and how this new knowledge could be used to inform the provision of feedback,

‘Just knowing, because I know nothing about the ethics component and so much of the stuff that I saw that they’d written on the e-portfolio and on erm, I was looking at erm some of the assessments they do and I thought it all links in to the stuff we talk about, its under another heading but we talk about this stuff in the sessions all the time and it's interesting to know that because now I would actually say and this is like in ethics when you do this scenario and I could actually make the links.’

‘… and you’d do something and you’d feedback in order to promote them to make the links.’

Through access to students e-portfolio entries tutors have been able to see the students’ experience of the MBChB in its entirety and make linkages between learning in theirs and other parts of the course as well as with student experiences outside of university.
Implications for Practice
These preliminary findings have opened up other areas of research for the project but several findings indicate the following implications for practice:

- Tutor knowledge of the Progress File and how it can be used increases their confidence to link usage to their own teaching, highlighting and encouraging specific usage to students.
- Negotiating with students how the tutor will use the Progress File, when they will provide feedback and on what they will provide feedback is vital to position the use of the e-portfolio
- Feedback provision becomes more discursive.
- Tutors provide an audience for students. If a student enables a tutor to view their entries they require a response. Student and tutor relationship then begin to be formed on a bed of trust which can be strengthened through classroom contact.
- The confidential nature of the progress file can also increase tutors awareness of issues affecting the student. Tutors therefore need to be aware of and be able to refer to specialist services when necessary or be able to integrate this knowledge into the way they organise one to one or group contact
- The use of the e-portfolio increased the tutors’ knowledge of other aspects of the course enabling tutors on this particular ICU to make linkages with the students to learning taking place elsewhere on the course.

Conclusion
This initial study on tutor practices opens up questions about negotiations, feedback structure and focus, learning from and about students and issues of confidentiality. Further triangulation is required with the student view to examine the effect of these issues on student learning but the ‘knowing’ generated by student e-portfolio usage impacts on pedagogy and the student-tutor relationship and is worthy of further investigation

References


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63
ePortfolio for UK Healthcare Medical Revalidation

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This paper details an ePortfolio project implementation that was undertaken following the publication of the UK Government’s White Paper, ‘Trust, assurance and safety - the regulation of health professionals in the 21st century’.

The principles of UK Medical Revalidation were established through an expert working group chaired by Sir Liam Donaldson, the Chief Medical Officer for England, through 2007 - 2008. The scope and recommended implementation steps were based on discussions regarding the UK Government’s White Paper.

A new medical revalidation system was established in response to public and medical practitioner concerns brought by the Shipman inquiry, and the inquiries into the conduct of a number of other doctors. The new system means that doctors are required to demonstrate to the General Medical Council that they are up-to-date with their learning and development, and fit to practice medicine. Doctors who take part in revalidation are granted a license to practice, and will be reassessed via the system every five years.

The introduction of medical revalidation is a large step change, so naturally there are some areas of concern, but the benefits of revalidation to the medical profession, patients, the public, and employers at large are potentially enormous.

Medical revalidation using ePortfolio provides rigorous proof, evidence and reassurance to many stakeholders, regarding medical practice. It also provides sound support to doctors in reflecting on their practice and helping to refresh and develop their skills and talents. Revalidation helps a small number of doctors to improve on those areas where they need assistance to meet the standards of their peer group. Cementing the trust that patients have in the medical profession, will also be a desirable outcome.

The ePortfolio was developed to follow the guidelines as set out by the White Paper: the ePortfolio processes need to be “effective and efficient...fair, open and transparent...free from discrimination...command confidence...and engage with and draw on the expertise of different stakeholder groups.”

By partnering with an English NHS Primary Care Trust and harvesting the valuable input of a British Medical College, the ePortfolio is seen as the most appropriate method of fulfilling the requirements of medical revalidation. By running careful, incremental pilot programmes from a targeted cohort group, this has proven to provide the best chances of successful implementation, as suggested by the White Paper.

The ePortfolio also helps facilitate remediation and rehabilitation as essential elements of the process for the very few who struggle to revalidate, giving them guidance and help wherever possible. Revalidation using eporfolio aids the transition to it becoming a continuing process, not a seismic event that takes every five years, so that problems can be identified and resolved quickly and effectively.

New roles that are created from the introduction of medical revalidation are taken into account during the design, testing and implementation of the ePortfolio. The Responsible Officer’s role, in many ways, mirrors that of a Medical Director in the National Health Service. The ability to interrogate ePortfolio data, evidence and records are integral to supporting the medical revalidation process.

The ePortfolio system’s management functionality ensures that the Responsible Officer can pre-empt any training needs or formative feedback and can intervene at an early point in the revalidation process, rather than the five year check point.

This project demonstrates how an ePortfolio can provide help to medical professionals to improve standards and provide reassurance to the public at large as well as patients. The clear and unambiguous directives from the White Paper help as a framework to establish development plans and successful ePortfolio implementation.
An important part of higher education for the Nursing and Construction Management (Con Mgt) disciplines is to promote the professional competencies of their students. However, the disciplines at times are perceived not to support these professional competency requirements. This impacts heavily on students as these professions require graduates who are ‘work ready’ on finishing their degrees. To address this potential issue, Australian professional accreditation bodies prescribe professional competencies that University degrees need to deliver. In addition, many accreditation bodies require students to engage in periods of practical work experience [often referred to as work integrated learning (WIL)]. However, studies have shown that students often question the relevance of the theoretical concepts they are taught at university in relation to what they learn from their ‘real world’ workplace experiences. Indeed, students and academics sometimes regard WIL and university learning as unrelated entities (Williams, Sher & Simmons 2009).

A recently awarded Australian Learning and Teaching Council (ALTC) research grant entitled ‘Facilitating work integrated learning through skills-enabled ePortfolios in the Con Mgt and Nursing disciplines’ is currently being conducted at the University of Newcastle, Australia. It is investigating WIL within the two disciplines and aims to demonstrate how these practical skills may be embedded into ePortfolio platforms. The project deliverables will include online resources which align WIL with formal learning, reports on the potential of ePortfolios to enhance WIL practice, online teaching resources and support for academics incorporating WIL in their formal lessons and finally, discipline specific continuing professional development modules that link WIL with formal university curricula.

Still in its initial stages, the project aims to develop a robust learning framework that facilitates and encourages reflective learning during students’ WIL activities. Such a framework will enable students to link theoretical concepts they have learnt at university with their practical experiences (Levett-Jones, Fahey, Parsons & Mitchell, 2006).

To-date the project has been developing competency alignments for the framework that will showcase to students how their university courses relate to each other and to their profession. The framework shows how the skills and competencies students acquire at university and during WIL meld together to enable them to graduate as professionals in their respective disciplines. The process of creating the framework has so far involved an analysis of competencies from different accreditation bodies resulting in a hierarchy of skill sets within these competencies. For instance, generic synergies such as; ethical practice, team communication and occupation health and safety practice were identified in the competency domains. This paper will discuss the proposed learning framework development and review data gathered for the project. It will also discuss some of the related issues arising from developing the framework. In conclusion, the paper will examine how work based competencies can be documented, demonstrated and assessed to enhance students learning outcomes to strive towards creating a learning environment consisting of both practical and theoretical knowledge.
The Missing Link: An investigation into variations in Doctors’ use of features in the United Kingdom’s Foundation Programme ePortfolio.

Joel William Smith, Tim Brown, Karen Beggs, Alex Haig

The Foundation Programme is a two year postgraduate training for newly qualified medical graduates. Proficiency in specific defined competencies must be demonstrated in order to progress through the training programme and be licensed to practise medicine. The National Health Service (NHS) Education for Scotland (NES) Foundation ePortfolio is an online tool used to document progress though the Foundation Programme, used extensively across the Hospitals and Trusts that make up the functional units of the United Kingdom’s NHS. In the 2008-09 training year there were 12653 Foundation Doctors using the NES Foundation ePortfolio in 17 different geographical regions of the United Kingdom.

A key element in the usage of the Foundation Programme ePortfolio is the ability to link evidence to competencies on a curriculum, thus providing an indication of the individual's relevant achievements: e.g. assessments or educational activities. This allows Educational Supervisors or Programme Directors to monitor that particular Doctor’s progress though the curriculum. It also empowers a Doctor to self-assess their current position relative to their educational aims and take actions to plan their skills, knowledge and attitude development. This paper will investigate the reasons behind regional differences in Foundation Doctors’ linkage activity in the ePortfolio by exploring the attitudes and behaviours of the key people concerned.

Anonymised data on linkage in different geographical areas were generated from the central ePortfolio database from the 08-09 training year. In the year analysed there were a total of 1,715,170 evidence artifacts and 730,709 links to examine. By comparing the total number of evidence artifacts to the total number of links generated we can investigate linkage trends in certain geographic regions.

A questionnaire has been developed to measure the attitudes of individuals towards linking in the ePortfolio and their understanding of the process and responses analysed according to the individual’s location and roles. The study population will include Foundation Doctors, Educational Supervisors and Foundation Training Programme Directors. For a more in-depth qualitative investigation of a sub-set of respondents’ attitudes, the questionnaire will request willingness to participate in focus groups or individual interviews. The study has been targeted at two regions that demonstrated different linkage patterns in the results of the database investigation.

Initial results from the database work show that there are differences in the rate and pattern of linking curriculum competencies to evidence items in different areas of the United Kingdom. Some areas demonstrate a tendency to input large amounts of evidence but show low levels of linkage. Other areas input less evidence but link the items to many curriculum competencies.

Early feedback indicates that there are several influencing factors on the pattern and rate of linkage activity for Foundation Doctors, including local Hospital / Trust guidelines, the individual learning style of the Doctor and approach of their supervisor.

Given that the Foundation curriculum is the same in all areas the reasons for the observed differences in linkage will reveal the extent to which the ePortfolio can flexibly support a range of approaches to formal learning and assessment. This paper will describe some of the attitudes and behaviours that drive these regional variations. Future work could assess the relative merits of the different approaches to linkage and the impacts on overall training outcomes.
The training ePortfolio for UK physicians: how effectively is it being used?

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Royal College of Physicians, United Kingdom

In 2007 the Joint Royal Colleges of Physicians Training Board (JRCPTB) introduced an ePortfolio for trainee doctors in newly-created Core Medical Training programmes.

The JRCPTB ePortfolio allows evidence to be built up to inform decisions on a trainee’s progress and provides tools to support trainees’ education and development. It is a requirement on all UK medical training programmes that annual reviews of progress are carried out for trainees based on evidence of assessment and their acquisition of competencies. The ePortfolio is therefore highly structured for use in this context.

Trainees’ main responsibilities are to ensure the ePortfolio is kept up to date, arrange workplace-based assessments and ensure they are recorded, prepare drafts of appraisal forms, maintain their personal development plan, record their reflections on learning and record their progress through the curriculum.

Supervisors’ main responsibilities are to use ePortfolio evidence such as assessments, reflections and personal development plans to inform appraisal meetings. They are also expected to update the trainee’s record of progress through the curriculum, write end of attachment appraisals and supervisor’s reports.

Since 2008 use of the ePortfolio has been extended to more senior trainees in higher speciality training programmes (e.g. neurology, cardiology) and we currently have over 5000 users.

Work is now underway to review quantitative and qualitative data from the ePortfolio in order to understand how the ePortfolio is being used. Questions being addressed include:

How effective have assessors been in providing useful feedback for trainees? Is there variation in quality of feedback depending on grade of assessor?

How much use of the ePortfolio is being made by supervisors – what is recorded on their behalf and what is recorded by them directly?

How effective have supervisors been in providing useful feedback to trainees via the ePortfolio?

How much use have trainees made of reflective practice tools in the ePortfolio and what has the nature of this reflection been? Do trainees know how to write reflectively? What has been the nature and quality of supervisor feedback on shared reflections?

We will provide an update of highlights from this work-in-progress.
Integrating healthfolios with career ePortfolios in a post-secondary environment to improve student health and well being and reduce future healthcare costs

Cyri Jones

Capilano University / BCIT, Canada

This workshop will share how career ePortfolios and healthfolios are being introduced concurrently to incoming students at a post-secondary school in British Columbia, Canada using a common, WordPress-based platform.

The healthfolios are not just for students in healthcare related programs for certification and accreditation purposes; they are a tool that all students can use regardless of their program area to better track their own health information, and health related learning resources. As students get into the habit of regularly updating their career ePortfolio throughout their school program they will also be encouraged to regularly update their healthfolio to help them be proactive with their own health management and well-being while a student and hopefully also later in their life after graduation, leading to improved health outcomes and reduced healthcare costs.

The workshop will explore and provide tips on:

- how to implement a single-login, standardized ePortfolio tool for multiple portfolio purposes (reflective ePortfolios, career ePortfolios, healthfolios, etc.) so students don’t have to learn multiple tools and interfaces.
- how to leverage students’ use of social media to help increase the adoption rate for a combined career ePortfolio / healthfolio platform.
- how to integrate students’ personalised healthfolios to a more formalised government or private sector electronic health records system.
- how to help students benefit by collaborating with others on aspects of their healthfolio such as sharing health resources, fitness programs, or forming online communities of interest on specific health conditions while still protecting the privacy of their sensitive personal information.
- how to ensure students truly own their data and are free to migrate their data out of the institutions preferred healthfolio and career ePortfolio platform.
- how to ensure that a student’s healthfolio and career ePortfolio can be used throughout their lifetime, not just while they are students.
- how to measure the effectiveness of a joint career ePortfolio / healthfolio initiative.
- how to get the support of government and industry to help fund a large scale implementation of integrated healthfolios / career ePortfolios.

The approach of integrating healthfolios with career ePortfolios is quite new and so the tips provided will be based on initial experiences. This workshop will provide the opportunity for participants to share their experiences as well and to see if there is consensus on the best way forward.

The workshop will be led by Cyri Jones, faculty member at Capilano University (Marketing Department), and the British Columbia Institute of Technology (Operations Management Department), both located in British Columbia, Canada. He has personally helped more than 5000 students over the past five years develop their career ePortfolios using free, open source, social media tools and is launching a program in the Fall of 2010 to include an integrated healthfolio and "Fitfolio" tool.
Health literacy in new university students: societal implications of expanding awareness

Ellen Ennever

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Health literacy is a relatively new field of research that crosses the health and social sciences. The nature of its scope and development are subjects of debate with many health professionals and health systems seeing it in terms of a “risk” to be managed while public health advocates and adult education professionals view it more as an “asset” to be developed over a lifetime, and both these views seem destined to co-exist, as outlined by Professor Don Nutbeam in 2008.

This paper will detail the reasoning behind a research project into the health literacy of incoming health sciences students at Australian university and will address why health literacy is an important component of professional attributes, citizenship and multiple literacies across society. The aim in the University of Tasmania is to have students provide evidence over time of their increasing skill in interpreting what health literacy means, especially in terms of the levels typically found in the general population and how health professionals can partner with clients and patients to optimise health outcomes. Literature on health literacy increasingly emphasises this partnership approach as a keystone of health systems and active citizenship in the 21st century.

One of the tools the university is adopting to help capture attribute development in fields like health literacy is the use of ePortfolios, and this paper will also address the use of these as a tool to help inform the promotion of health literacy in society as a whole.
Employment
Experimentation of the ePortfolio with Students Searching for a New Orientation

Laurence Pérennès, Dominique Duhaut, Université Bretagne Sud

Abstract
Université de Bretagne-Sud put a study program into place called the COC “Cycle d’orientation et de Consolidation” which allows first-year students to make a new direction choice during the year. We are currently testing the use of an ePortfolio for students who are currently enrolled in this program.

In this Personal and Professional Project program, they develop the means to manage, organise, and archive information. This year, the approach will be using the ePortfolio. Meant to be, first and foremost, an introspective and structuring process of one’s thoughts, it is also a tool for capitalising on and exploiting collected information by structuring it. This paper will focus on the acceptability of the ePortfolio, meaning how the students will use and appropriate it within the specific framework of this program.

Keywords: ePortfolio, information, structuring, reflection, traceability, personal and professional project, technology acceptance model

Introduction
In this paper, we present a specific action called COC “Cycle d’Orientation et de Consolidation”. It helps students to define and manage their personal and professional projects (PPP). This year, we have experimented, connected to the PPP, the use of an ePortfolio that has been developed at Université de Bretagne Sud, in France. Meant to be, first and foremost, an introspective and structuring process of one’s thoughts, it is also a tool for capitalising on and exploiting collected information by structuring it [1].

The method of the PPP is based on a set of related activities, designed on one hand to acquire a better knowledge of oneself and one’s environment, and on the other hand, to acquire the skills and key competencies needed to succeed in a professional project. The ePortfolio keeps in memory all the results of the different activities involved in the construction and evolution of a professional project.

The first part deals with the COC which is a study program for students to better help them construct their personal and professional projects.

The second part of this paper gives a quick presentation of the ePortfolio, its foundation and its basic structure.

In the third part, we wanted to find out how the ePortfolio would be accepted. We answer the issues of ePortfolio use: Is the ePortfolio seen as useful, easy to use, and as an introspective tool for oneself?

Finally some conclusions and perspectives will be given.

COC (Cycle d’Orientation et de Consolidation): a study program for personal and vocational guidance

Presentation
The COC is a study program for students, which has been in place at Université de Bretagne Sud for 10 years. It is offered to first year students who have had difficulties or who are unsure of their choice. The objective is to consolidate student knowledge in a certain number of disciplines to prepare for a change of direction for the beginning of the next school year (another Bachelor’s degree, technological degree, A.S...) to create a new professional project with the help of a career counsellor and to validate the project through a training period in a business. This pathway will not lead to a degree but it is evaluated. Each year, it includes around one hundred students from various majors coming exclusively from Université de Bretagne-Sud.
It specifically includes first year students with a French professional or technological high school diploma (STT, STI, SMS, STL,...), even a vocational training certificate, as well as students who had to redo their first year.

**Integration in the programme**
To integrate this program, a preliminary meeting is held with the student’s counsellor-teacher, and the student must be willing to do so.

Indeed, all of the first year students from various majors (science, law, economy, literature, foreign languages, history) have at least one meeting per semester with their counsellor-teacher who offers them, if need be, the possibility of integrating the COC according to the results obtained by the student and his/her project.

Once the tutor has agreed, and if the student is willing, he/she then goes to the university’s career center, the SUIO-IP (Service d’Information, d’Orientation, et d’Insertion Professionnelle), to schedule a personal meeting with a career counsellor to confirm the request of enrolling in the program or not.

**Development**
The program lasts for ten weeks during the second semester of the academic year. The student enrolls in compulsory and elective courses.

The students are evaluated regularly and there is a final exam to conclude the program. Class attendance is required, and is therefore verified for each class. Any absences are reported allowing a SUIO-IP worker to get in contact with the student rapidly to understand the reason for absence, or, if need be, to try to motivate the student to go back to classes.

Along with the classes, the student project is supported through both a collective and individual approach. The career counsellor regularly follows up on each student during the entire program and even after the end of the academic year. The counsellor makes sure the student was able to integrate the course of study of their choice that was in accordance with their project.

If this was not the case, meeting can be scheduled to try to find a solution that is adapted to the project. Each year, 80 to 90% of students manage to enrol in their course of choice.

The counsellor, while advising the student, will propose a certain number of activities based on the concepts described hereafter, which will help fill out the ePortfolio (cf.§ 2).

It is within this framework that the students are asked to use the ePortfolio.

**Activities**
Building a PPP is an essential part of student life. At that time he/she decides what he/she wants to become in the future and what place he/she wants to take in the society. To help himself/herself in this approach, the student must take information from his environment: on the economic situation, prospective situation, but he/she must also get introspection to know who he/she is. One of the underlying characteristics of introspection is understanding what competencies are [2]. One of the main objectives of the PPP is to characterise the competencies of the student. We present in the following the retain definition of competencies.
In our definition, competencies are based on three notions: knowledge, abilities and choices. The organisation of the ePortfolio is closely linked to this definition of competencies.

Knowledge
Even if other classifications of knowledge can be found in the literature, we focus on four aspects: knowing, doing, living together and being.

- *Knowing*: will allow the student to understand and predict his/her environment. This is roughly learned in school. The effect is to stimulate discernment and increase curiosity.
- *Doing*: will increase the quality and efficiency of the work. The side effect is that, in a team it will increase its trust in what people are able to do efficiently.
- *Living together*: is an introduction to human diversity. It shows similarities, interdependence, social and cultural diversity between people.
- *Being*: this characterises the way we are in society. Autonomous, communication, judgement, charisma are some of the master words of this.

Abilities
Abilities are characterised by the execution of aptitudes. Aptitudes are the personal features that make us different from one another. Abilities are the use of these aptitudes; if someone does not train his aptitudes they may be lost. For instance aptitudes are; will, pugnacity, listening, optimism, concentration, memory ...

Choices
Even if we have a wide range of knowledge and a lot of abilities, if we are not able to use them in front of a situation then it is waste. The choices are motivated by three notions: needs, values, personality.

- *Needs*: here we use the basic Maslow hierarchy of needs[3].
- *Values*: are based on Schwartz’s Value Inventory [4].
- *Personality*: The underlying model is taken from Briggs-Meyer MBTI [5].

ePortfolio structure
The ePortfolio is a structure [6] designed to record the information acquired during the PPP activities. Initially, the structure is the same for all students, however the information stored in the portfolio will depend on the choices of each individual user. The student can modify the ePortfolio’s structure by adding or deleting criteria but cannot change the basic structure. The students are free to create their e-portfolio as they wish within the above-stated five folios. They are then given full responsibility and autonomy to create sections in each folio to organise and personalise their ePortfolio throughout the elaboration of their PPP. This means that the description presented in this part is to be understood as a generic structure.

Furthermore, the originality of the ePortfolio resides in its functioning. In fact, it is possible to add information for two different means of use: through a graphic interface or through e-mail.
To create and build a personal professional project, the ePortfolio has a basic structure of five folios: my uniqueness, my discoveries, my project, my competencies, and my communication.

**My uniqueness**
The goal of this folio is to identify and keep all of the student's basic information.

**My discoveries**
This folio stores the results of the different activities the student has done to discover the working world. For example: documentary research, external view: reports on all the meetings, visits, conferences, forums, etc. in which the student participated, the student's personal network, which he/she will be able to use for his/her future project and complementary education: list of complementary skills or knowledge required to increase the potential of the student.

**My project**
This part defines all the criteria used to identify and manage a project. This section should be completed only after the previous two, as it is strongly connected to them both. In the criteria formalisation students can describe the main project with all the skills needed, the steps to be done, and the knowledge required.

Some possible alternative projects are also defined as acceptable solutions.

**My competencies**
It is focused on the skills of the person. His/her competencies are first identified, their capacity to be used in other contexts is then studied, after which promotion and updating are defined, and finally, consideration of their evolution (past and future) is engaged. See [7] on this subject.

Students can have the results of the MBTI personality test for those who take it, development which reflects the choices the person had to make in life and how he/she was helped in those choices, motivation which is based on the Maslow hierarchy here, and values based on the S.Schwartz theory.

**My communication**
In this part, we store all the information the student wants to use to share information with the business environment. This part of the ePortfolio is public. It includes the CV, the cover letter for a particular sector, and finally, a blog for personal.

**Hard copy of an example of the ePortfolio**

![Example of ePortfolio](image)

**How is the ePortfolio used?**
From a scientific point of view we need to analyse the potential and effective use of the ePortfolio. In a more general term we need to apply the method defined in Theory of Acceptance.

Source: Unified Theory of Acceptance and Use of Technology (UTAUT) [8]
The TAM [8,9] states that user acceptance of a new technology depends on two influencing factors: the perceived usefulness and perceived ease of usefulness. The concept of the TAM is based on the idea that user perception of the usefulness and ease of usefulness determine the attitude and consequently, use behaviour for new technologies.

It is undoubtedly one of the most accepted and wide-spread acceptance theories; it was, however, greatly enhanced by the author, and is currently enhanced a several other theories (theory based on user satisfaction, theory of disconfirmed expectancy,...)

This theory is based on a certain number of external variables (expected performance, expected added value, social influences and representations, ease of use), as well as intrinsic variables taking sex, age, experience, willingness or unwillingness into account, have an impact on the use intention of a new technology and behavior.

Our experiment is not aimed at completely covering all of the aspects mentioned in this theory, however we have focussed on the following aspects: having an idea of how the students use the e-portfolio, how they will appropriate it, and seeing how useful it is to build the PPP.

The experiment was performed with 50 students in the first year. This paper reports on the questionnaire given after the first month of use. The experiment will run all the year and will be evaluated again at the end of the year.

The full questionnaire is given in See Annex

These are the main answers:

Overall, the students understood that it required introspection and the importance of self-knowledge. The use of the ePortfolio and the ease at which it can be used generally correspond to any type of use (either the graphic interface mode, or e-mail mode).

Among some of its most appreciated features is the freedom at which the information they add to it can be structured and organised.

Generally speaking, they like the digital organisation of their information, which they prefer to a paper version.
The results on both means of ePortfolio use should, for the moment, be taken with precaution as the experiment timeframe did not allow for full assessment of the e-mail mode. Consequently, the slightly low results for the e-mail mode can be noticed throughout the answers.

Usefulness/Use

The same can be noted elsewhere due to the experiment timeframe. Its immediate short-term usefulness is not obvious, however they consider it rather interesting for a more long-term perspective.

Appropriation of tool

This short-term evaluation has not had much impact on their habits for the moment; they do not see its usefulness in relation to the construction of their project yet. They are currently not convinced of the usefulness of this tool, and consider that a non ePortfolio organisation of their information would be just as efficient.

However, the time period in which it takes to appreciate the tool seems quite short, judging by use frequency and use reflexes. These results should therefore be confirmed in a long-term approach.

Definitive conclusions cannot be drawn today due to the low number of students who did respond.
Conclusion

This presentation has described the experiment on ePortfolio use by students enrolled in the “Cycle d’orientation et de Consolidation” study program, specifically for the construction of the personal and professional projects.

It would need to be seen through a more long-term perspective to take into account the necessity of a more distant view by the students so as to obtain long-term assessments to confirm results. The scope of this experiment on the Cycle d’orientation et de Consolidation will be progressively widened to all students hoping to obtain a Bachelor's degree in one or more courses of study.

References

Robert Bibeau, teacher and specialist on the use of information and communication technologies in teaching in Québec, Le portfolio numérique pour une pratique réflexive en éducation, APOP Conference, Montréal, 2007


Schwartz S.H., Bilsky W. Toward a theory of the universal content and structure of values: extensions and cross-cultural replications, journal of personality and social psychology, 58, 5, pp. 878-891. 1990,


Official journal of the European Communities, detailed work programme on the follow-up of the objectives of education and training systems in Europe c142/1.6.2002mered list of references


Annex: questionnaire on the use of ePortfolio/UBS 2009-2010

Part 1: methodology

1.1. What is a PPP?
1.2. Did you understand what introspection was?
1.3. What is an ePortfolio used for?

Part 2: Use / ergonomy

2.1. Did you find it easy to use?
2.2. Does the folio and section organisation seem well adapted to the use of the tool?
2.3. Were you satisfied with the "interface" mode?
2.4. Were you satisfied with the "e-mail" mode?

Part 3: Usefulness / use

3.1. Does it seem useful to you?
3.2. Does it make organising and structuring your information easier?
3.3. Did you like being able to structure your information they way you wanted to?
3.4. Is it comparable to a paper version? A file?
3.5. Would you have preferred to use a paper version?
3.6. Do you understand the titles of the folios? Do you have any remarks to make?

Part 4: Appropriation of tool

4.1. How do you structure your information? Your sections?
4.2. Do you have the reflex of immediately posting your information?
4.3. What often do you use the tool?
3.7. Does it change the way you deal with your information?
3.8. Does it seem useful in the construction of your PPP?
3.9. Does its use have meaning for you?
3.10. Do you see an immediate use?
<table>
<thead>
<tr>
<th>Part 5: what functions should be added?</th>
<th>Part 6: other</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1. What functions would you like to see added to the tool?</td>
<td>6.1. Would you accept to show your e-portfolio to a career counsellor?</td>
</tr>
<tr>
<td></td>
<td>6.2. Who would you authorize to add information? Would you accept to give us your name?</td>
</tr>
</tbody>
</table>
Does the world of employment actually want ePortfolios? Messages from a UK university-business collaboration.

Angela Smallwood, Tom Kirkham, Stuart Wood, Kirstie Coolin, Sandra Winfield

University of Nottingham, United Kingdom

Background and objectives

Collaboration between the education sector and the world of employment has long presented a challenge to champions of ePortfolio learning in universities in the UK, outside the ‘professional’ disciplines such as teacher education, nursing and physiotherapy where successful linkages have been achieved. In subject areas where links between academic disciplines and graduate jobs are not obvious, instances of universities and employers sharing practice with ePortfolios are still scarce.

The current UK government agenda for higher education places increasing emphasis on universities demonstrating effectiveness in engaging with business and industry. The JISC is currently funding a programme of projects devoted to innovative technologies for universities’ business and community engagement. One of these is presented here (University of Nottingham SAMSON project – Shared Architecture for eMployer, Student and Organisational Networking) and is developing a service-oriented environment to support partnership-building across the divide between business and academia. The aim is to create an integrated software framework to enable greater collaboration between the region’s universities and employers around lifelong learning.

Work so far has focused on data-sharing to support interactions between all the stakeholders involved when students go out on work placement into local companies, and when employees from a local company enter any of the three local universities for blocks of part-time study, in line with their work-based Learning and Development plan. ePortfolios provide the windows onto the shared environment from the learner’s point of view. This paper will reflect on work-in-progress to identify the ePortfolio functionality valued by the employer and the potential benefits to the company’s HR processes of interoperability with multiple ePortfolio systems across the several universities where their employees are studying.

One exemplar company is the regional centre of a major international employer with relationships with all three local universities. The HR staff arrange demand-led Learning and Development (L&D) provision at all three, through face-to-face contact with tutors. As L&D is designed specifically for each individual, they also send employees to HEIs elsewhere in the UK, and thus need technology to support virtual dialogue, feedback etc, facilitating a communications flow between employees, line managers, tutors and HR staff.

Methodology

The SAMSON team have selected one course at one university supporting 28 of the company’s employees and are working with the tutor, a university learning technologist and the company HR manager to determine requirements and design a pilot implementation which will yield both learners’ views and feedback from all stakeholders. The project has already been able to identify key purposes and processes for company access to university-provided ePortfolios and enhancements to organisational practice. Comparisons are being made with parallel situations in the other two universities, where further implementations involving different ePortfolio products will take place.

Implementation

At the pilot University, the ePortfolio system allows the employer and student to share information about how the learner is progressing. The company’s problem is that the manager needs information from the employee’s ePortfolio in specific formats. The data from the ePortfolio therefore needs to be processed to allow its consumption by the company’s internal systems, but the SAMSON environment also needs to allow managers rapid and easy access to specific university data such as attendance records. So the project is developing a portal to act as an aggregator of data from both the ePortfolio and the university, for company use.
Results
Pilot interactions between ePortfolios and the company portal will have taken place by the time of the conference and evaluation results will be reported. Further required portal services will have been identified. The key purposes and enhancements identified by the company’s HR staff will be outlined and discussed. Examples so far include:

- Access, with learners’ permission, to self-assessments of progress in all their ePortfolios irrespective of location and specific software being used
- identifying pressure points for all employees
- keeping managers up to date
- planning employees’ time away from work.

Conclusion
The project’s approach to ePortfolio use is very much in the spirit of the new JISC-CETIS paper on Distributed Learning Environments (DLEs) [1]. The level of co-operation around data-sharing developing in the project is enabling a step-change in communications between universities and employers – the first steps in building a new environment for collaboration, which is exactly what the regional economy needs.

References
Building the ePortfolio City in Augusta, Arkansas

Darren Cambridge

George Mason University, United States of America

This presentation will describe the goals and design of the Augusta Community Portfolio (ACP) project and its future plans. The ACP is a digital portfolio that represents and cultivates the literate activities of the residents of Augusta, Arkansas, USA, a small, rural, and economically depressed town. Sponsored by the University of Arkansas, it builds on two years of print-based community literacy work. The work has yielded significant results: The number of graduating high school seniors in Augusta going on to attend university has risen from 3 to 23.

Unlike many local or regional ePortfolio initiatives, such as those showcased in the regional track of the ePortfolio 2008 conference, this project does not focus on using individual portfolios to promote learning or provide access to services. Rather, it seeks to represent the identity, achievements, and aspirations of the whole community, much as an individual portfolio represents these things for a single person.

Very much a work in progress, the ACP was launched in the summer of 2009 with three primary purposes: First, the portfolio showcases the impressive activity already underway, providing a sense of validation. Second, through engaging citizens of Augusta in its design and use and through providing a way to share natively digital texts, the portfolio develops twenty-first century literacies. Finally, and most significantly, the portfolio facilitates community-wide reflection about what Augusta is, what it has done, and where it wants to go. In face-to-face events, the portfolio serves as a conversation piece to mediate community reflection. Online, the social features of the portfolio allow it to serve as a space for reflective dialog in its own right.

In its current form, the portfolio consists primarily of digital representations of texts created as part of the numerous literacy projects conducted in Augusta over the last two years, presented through a Google Maps interface, along with video reflections on their production, and simple social functionality enabled by Google FriendConnect that allows for reflection and interaction.

The Augusta@College component of the site is the first natively digital section. University students from Augusta are blogging and posting video of their experiences away at school both as a way to connect back to a support system in the local community and as a way to share their experiences with younger students considering entering higher education.

We plan to expand the portfolio through a sequence of media composition and community reflection activities. We will begin with a community photography initiative using the PhotoVoice methodology through which community members will develop a shared archive of photos of life in Augusta. Participants in a digital storytelling initiative will then draw on this shared archive to tell stories of their experiences in and hopes for the future of the town. Both the photographs and stories will be used to spark conversation in community reflective events, which will be documented through a participatory video initiative. All the resulting materials, including reflection on them, will be incorporated back into the portfolio and will be available for further discussion online.
CLICK-MyCareer

David Paul Sowden, Tracey Heath, Nick Hooper

University of Hull, United Kingdom

CLICK-MyCareer is a strand of a JISC funded project within the Capital Programme - ‘Institutional innovation projects in lifelong learning and workforce development’ at the University of Hull. Forming part of a project entitled ‘Personalised systems supporting IPD and CPD within a professional framework’. CLICK MyCareer, based upon the concept of an ePortfolio, is being developed by the Centre for Leadership, Innovation and Change through Knowledge Transfer (CLICK) in the Faculty of Health and Social Care at the University of Hull.

The role of and requirements for CPD in health and social care have been undergoing review and revision. The White Paper ‘Trust, assurance and safety – The regulation of health professionals in the 21st Century’, published by the Department of Health in 2007 set out proposals to strengthen the systems in place to assure continued fitness to practice. There are 13 health and social care regulators in the UK. Each oversees the health and social care professions by regulating individual professionals. The ability to evidence CPD and ongoing competence to practice forms a key part of this process, an ability that has been emphasized by both the Chief Medical Officer for England’s 2008 report ‘Medical Revalidation – Principles and Next Steps’ and the Academy of Royal Colleges guidance on revalidation.

Regulation of professional groups (The NHS has identified 300 roles undertaken by its staff) is not uniform in its nature and has progressed at different rates. A complex array of processes are currently in place to support revalidation and assurance of fitness to practice, processes supplemented by employing organisations at both a national (For example, NHS Knowledge and Skills Framework) and local level (mandatory training requirements) as part of governance and workforce development strategies.

The concept behind the project is to integrate systems that support personalised IPD/CPD, applicable to professional frameworks. CLICK-MyCareer will allow the professional to control their personal ePortfolio-type technologies and share the content within them with whom they choose. Professionals will record and reflect on their personal and professional development achievements on an ongoing basis, and share these with employers, professional bodies, peers and educational institutions as they choose.

CLICK-MyCareer will allow individuals to collect, collate, access and transfer any information relating to their professional career by ensuring interoperability between the various systems which initiate and hold the information. An integrating tool will allow individuals to access records relating to their career. Using this learner-centred system, an individual will be able to allow selected organisations to see certified copies of relevant parts of their professional records.

Competency, knowledge, skills and assessment frameworks will be supplied by an external framework service. This service will extend the existing functionality contained with core external products allowing for future enhancements such as competency analysis. This service will be accessible using a set of documented web-services for querying and retrieving frameworks and framework elements. These services will be implemented in such a way that the framework service can be added to and supported by additional links.

Once the professional has given permission, the information will be able to be input directly into systems used by professional bodies, employers and other relevant organisations. For example, a record of a certified CPD session might be notified to a regulatory body and added to an employment record.

The workshop will explain the concept and application of CLICK-MyCareer and demonstrate the tool using a beta version. Participants will contribute to the workshop by raising issues, offering examples of its application and suggesting specific learning communities, which might benefit from future extensions of the project.
Kenteq has participated in several employability projects where the ePortfolio played a role in the centre between labour market and education. In that period the ICT infrastructure and applications have increased and meet the requirements to enable the citizen to manage his personal data.

To move forward from here employability providers should join forces to enable digital services in a safe and secure way. Tuning is necessary to implement employability portfolios in a competitive and successful way.

The use case of Dirk shows that a coherent approach leads to result: Dirk knows he is being made redundant in 6 months’ time. But he also knows that NL employability services can help him to move from work2work. By using standards-based ePortfolios, secure and safe exchange of personal data becomes accessible and technical barriers are evened out. Pilots and initiatives such as those being conducted for the EC FP7 project TAS3 are demonstrating that employees, employers and service providers can all benefit from new networks, privacy and security solutions and standards. Dirk can be supported from work2work: pilots and initiatives are delivering the blueprint and the advice.

The message now aimed at governments and policy makers is: how can these instruments be used to improve the connection between labour market and education on one side, and employers and employees on the other? No longer in pilots, but in “real-live” environments?

To reach lasting and stable results for all those concerned in labour and education market: employees, employers, governors, educational organisations, employability providers and policy makers.

A large-scale project answering to the name “Let’s connect!” is being executed in the next few years in the Province of Limburg (NL). A group of companies, schools, universities and knowledge centres are collaborating in a project which aims to both provide every citizen in Limburg with an ePortfolio and to create a lifelong regional ICT infrastructure to support employability data exchange for all connected partners, independent of their chosen ePortfolio provider.

As a result, the education sector will be able to anticipate and plan to fill the actual or expected gaps between offered competences and required competences in a sector in a way that is not currently possible.

The project aims to provide solutions to the problems of the proportional increase in the ageing population, the mismatch between supply and demand in the educational and labour markets and to keep professionals within the province of Limburg. Partners include: Brainport, TOMTOM, the Province of Limburg, Automotive Technology Centre, Tilburg University, UWV national employment service, DAF Trucks and Kenteq.

The project will create the infrastructure able to connect thousands of actors in the field of employability, able to exchange specific data and complete ePortfolios. The results will be of great importance for wide-scale implementations in the whole of Europe.

Implementing ePortfolios and the appropriate infrastructure cannot be done without the commitment and support of (local) governments. All involved parties must take their responsibility to pave the road to success.
SAMSON & PIOP3: Working with ePortfolios to Liberate Learner Data

Sandra Winfield, Kirstie Coolin, Stuart Wood, Tom Kirkham, University of Nottingham, United Kingdom

Introduction

Collaboration in service orientated environments is focused on processes and data. Applications that hold the data act as storage points: further, new applications are then formed by shared processes across collaborative domains. These collaborative applications facilitate a new generation of functionality for learners in processes such as lifelong learning.

Background

The Shared architecture for Employer, Student & Organisational Networking (SAMSON) project is a collaboration between the two Nottingham HEIs (the University of Nottingham and Nottingham Trent University) and is developing a service orientated environment to support lifelong learning, building on emerging technologies and standards used to integrate ePortfolio data. This allows liberation of the data for use in more flexible and dynamic applications focused on collaboration around processes, rather than depending on the specific characteristics of the ePortfolio itself. The project is also running Benefits Realisation activity in collaboration with the University of Derby and a major regional employer.

Objectives

Use of Open Standards is core to the service-based approach used in designing the SAMSON project infrastructure.

A major objective of SAMSON technical work is to promote the application and development of ePortfolio-specific standards. The University of Nottingham team at the Centre for International ePortfolio Development has been involved for some time in project work to develop the emerging JISC-sponsored Leap2A ePortfolio interoperability standard; requirements emerging from SAMSON have surfaced a business case for developing its use in new methods of learner data retrieval.

Furthermore, as a direct outcome of the project, both partner HEIs have now successfully submitted proposals for JISC-funded PIOP3 ePortfolio interoperability mini projects to develop Leap2A functionality further in specific settings. These will in turn mean that the HEIs involved in SAMSON can supply the architecture with Leap2A standardised ePortfolio data.

Implementation

The SAMSON interface uses portal technology to aggregate data from a variety of ePortfolios. The portal is made up of widget-like components which can both stand alone and be deployed elsewhere. These read information from other systems which are integrated in the SAMSON ecosystem: Restful web services have been developed for the PebblePad, Mahara and ePET ePortfolio systems to allow data to be accessed and displayed securely through the portal.

As an example, SAMSON and PebblePAD integration utilises the OAuth secure authorisation protocol and the Leap2A XML ePortfolio interoperability standard via the following process:

- Initial connection is made between SAMSON and PebblePad, instigated by the user sending information through the ‘send to employer’ function within PebblePad
- PebblePad accesses a Restful SAMSON web service, passing OAuth and user detail parameters
- PebblePad exposes users’ work behind OAuth protocol via Leap2A XML standard
- SAMSON stores passed parameters and assigns user to employer’s group
- Employer accesses SAMSON to check student progress
• SAMSON accesses PebblePad Leap2A XML through OAuth protocol
• SAMSON reads Leap2A XML and displays to employer.

By using common data standards to exchange information, this process could easily be applied to any ePortfolio system which uses Leap2A. We hope to explore this with further systems in future work.

Results
The University of Nottingham is working with Pebble Learning (used at the University of Derby) to develop an OAuth method for seamless data retrieval via SAMSON. This is enabling work to be carried out with a private vendor system to support both the Benefits Realisation activity and the UK ePortfolio community.

Nottingham Trent University is working with Desire2Learn, a Canadian-based vendor, to map their ePortfolio structures to LEAP2A and perform import/export of data. This brings a non-UK vendor into trialling of the standard, as well as facilitating use of NTU data within SAMSON.

The University of Derby is working with Pebble Learning on a separate project trialling use of Leap2A to export data from their eAPEL system into a PebblePad ePortfolio. We hope that this development may be able to be incorporated into the SAMSON ecosystem.

Conclusion
We have found that employers are reluctant to have to engage with too many different systems. The type of integration offered by SAMSON will allow them to view data from a variety of sources via a clean, consistent interface, regardless of the institutional system that their students are using.

SAMSON and PIOP3 have made a significant contribution to promoting the adoption and use of open standards in the UK ePortfolio domain. Standards such as Leap2A are proving to be effective components in the delivery of a next generation of distributed learning applications supported by projects such as SAMSON.
Essential Skills ePortfolio

Don Presant, Learning Agents, Canada

In the province of Manitoba, Learning Agents is collaborating with partners in Canada and the UK to adapt an existing Essential Skills portfolio program for delivery as an ePortfolio program for employability. The chosen technologies are Mahara and Moodle working in tandem, also known as Mahoodle.

The client for this ePortfolio program is WPLAR, a non-profit partnership of business, labour and government which oversees workplace RPL activities in Manitoba and helps promote and support the development of Essential Skills for employability.

The Essential Skills ePortfolio responds to increasing demand in the original program for flexible learning delivery and “Web 2.0 friendly” portfolio presentation options. It also adds new ICT curriculum to the program which will enhance the computer skills of learners. This program, embedded in Canadian practice, will be also informed by international practice disseminated through the EifEL ePortfolio conferences.

This flexible learning environment meets the immediate needs of WPLAR’s clients, making the portfolio program more accessible and “Internet aware”. It will be built for robustness and scalability, in terms of size, reach and scope. Its vision is to accommodate thousands of learners across Manitoba, and evolve to become a community platform to serve the needs of other programs and learning partners across the province.

BACKGROUND

Essential Skills are Canada’s version of the key competencies: the skills needed for work, learning and life. They provide the foundation for learning all other skills and are the cornerstone to lifelong learning. Since 1994, the Government of Canada, has surveyed more than 3000 Canadians in workplaces in all sectors and of all types and sizes of organisations. The result has been the identification of nine workplace Essential Skills:

- Reading
- Document Use
- Numeracy
- Writing
- Oral Communication
- Working With Others
- Thinking
- Computer Use
- Continuous Learning

WPLAR has developed a portfolio program to help learners become more employable using Essential Skills. The program helps different groups of learners take stock of their “employability assets”. These are knowledge, skills and attitudes, connected to an Essential Skills framework, which have been gained in diverse contexts in their lives. The program is designed to facilitate the self-reflection required to bring these employability skills to light and to instill the confidence and expertise to communicate them effectively to employers.

There is increasing demand for flexibility in delivery for the basic program, specifically to:

- Provide a part-time option
- Provide a self-directed option
- Provide an e-learning option for broader reach
Learning Agents and Keystone Adult Learning are now working with The Development Manager in the UK, a Mahara Partner and Moodle expert focused on workplace learning, to develop the online curriculum and load it into an online environment for WPLAR. The program is planned to be launched in the fall of 2010.

Basic development principles are to:

- Create an e-learning course that can be delivered as a self-directed course with some facilitator support or as a blended program
- Use WPLAR’s current Essential Skills portfolio curriculum as a base
- Adapt publicly available Essential Skills tools from HRSDC and elsewhere as appropriate
- Learn from other ePortfolio curricula such as MOSEP and Helen Barrett’s self-directed program

Supplement the program with ICT skills that support the creation of an ePortfolio:

- Finding and evaluating labour market information on the Internet (building on the original curriculum)
- Building one’s own digital identity and online reputation
- Using Web 2.0 applications such as LinkedIn, Twitter and YouTube
- Using multimedia hardware tools
- Use the affordances of ePortfolios to best advantage (ie. exploit the medium, don’t just scan paper documents)
- Use the integrated open source platform of Moodle/Mahara for maximum flexibility now and in the future
- Use the Moodle LMS for sequenced course delivery, but Mahara ePortfolio for course deliverables to encourage ongoing use of Mahara as much as possible
- Use the principles of productive inquiry, making it more about the learner’s assets rather than their deficits
- Provide a basic “101” level for the computer-challenged and an enhanced version (additional resources, activities) for high achievers and the highly motivated
- Provide templated views in Mahara to model assignments and jumpstart learners on their own showcase portfolios
- Provide ongoing space and support for learners after they complete the program:
- Be mindful of the potential for this learning system to provide a community-based partnership environment for learning providers and employers to share.
European Initiative for the Promotion of Informal Learning.

Most learning in the workplace occurs informally through working with other employees, clients, customers, suppliers and reacting positively to their feedback. Much of this learning goes unrecognised by the employer and also by the individuals themselves. This initiative seeks to promote the recognition, validation and accreditation of this informal learning in the workplace.

Phase 1a. (Completed in 2007). A simple framework was developed and trialled with a number of companies across France, Germany, Latvia, Spain, Sweden and the UK as part of a Leonardo Da Vinci project (www.inflow.eu.com). Participating businesses from the tourism / hospitality sector ranged in size from 6 to 223 employees and were found in all six countries.

Informal learning was identified within companies. Its impact on their business performance was identified as were other business benefits. Support was offered to company staff for the internal management of strategic and operational processes to enhance it. Successful companies were awarded a pan-EU Quality Mark and individuals achieved qualifications rewarding their capacity to up-skill in the workplace through informal learning.

• Phase 1b (On-going). Hotels are continuing to use the framework as part of on-going activities. (http://www.eipil.net/pages/course.htm)

• Phase 2. (Start date 2008)

Funded under the Lifelong Learning Programme of the EU, this phase will adapt and transfer the model, framework and instruments developed under Phase 1 into:

• Three new countries – Greece, Poland and Romania
• Two new sectors – Retail and IT Service.

Cultural differences between Member States and Sectors will be identified and suitable adaptations made to the originals. These will then be piloted across the partnership.

This phase will also seek to support work towards the implementation of a single framework for transparency of competencies and qualifications by supporting the use of common validation instruments such as the European CV and a common e-portfolio.

This will extend both the concepts and implementation of the validation and accreditation methodologies developed under Phase 1 and will incorporate managerial competencies as well as those of other workers.

To achieve this, research will be carried out to identify emerging practices and technologies that will play a key role in the recognition of competencies acquired informally in the workplace. Based on this State of the Art report, a prototype will be identified for further work within this phase. This prototype will take into account interoperability standards and multilinguality.

Based on the knowledge gained during piloting in phase 2, a document compiling updated specifications of the prototype will be produced to be used by publishers and implementers of technical infrastructures in future developments.
Teacher education
Abstract
In this paper we will share findings from students in a teacher education program who have all created a professional ePortfolio (a dynamic website that interfaces with a database of student work and related experiences stored as artefacts) that points to new spaces for learning drawing on program content, but ultimately informed by the students who see themselves as agents of a complex system. Data from seminar instructors assigned with the responsibility of administrating the ePortfolio (eP) process is also used to inform the development of the eP process. The eP was set up to value the students’ reflective, active and deep learning as well as creating a process of program self-renewal. A critical focus of our ePortfolio practice is to examine how the concept of assessment-as-learning can create conditions for the complex learning that can be nurtured within a teacher education program. The paper addresses the research question “What influence does an ePortfolio have on the teacher development of students?” The paper will conclude with speculation from a complexity thinking perspective (Davis & Sumara, 2006) on how an ePortfolio practice can support the renewal of traditional teacher education programs.

Introduction: Why do we need ePortfolio in teacher education?
As others have commented, too often teacher education programs promote fragmentation between courses, maintenance of a theory-practice divide, research that does not connect to the “real world” of school (Cochran-Smith & Lytle, 1999; Munby, Russell, & Martin, 2001), with innovation in teacher education too often “nullified by the structural fragmentation and competing agendas that typify traditional programs of teacher education” (Wideen, Mayer-Smith, & Moon, 1998). In Hopper & Sanford (2009) we used an action research methodology to report on the first five year evolution of the ePortfolio (eP) process in our teacher education program, commenting on the competing agendas, resistance to technology and gradual development of pedagogical practices to draw on the potential of the ePortfolio (Wetzel & Strudler, 2005). In this paper we present our initial findings of a three year study of ePortfolio practice focused on eP entries from 45 pre-service teachers (PTs) and selected insights from eight instructors using the eP practice in their seminar courses.

Traditional teacher education programs offer a narrow instrumentalist approach that emphasizes the “how to,” the “what works,” and the mastering of the “best” teaching methods (Segall, 2002, p. 13). It is well documented that in such programs prospective teachers will not be able to recognize or challenge their assumptions, “talk to their school experiences, consider alternatives, and contextualise theory within practice and practice within theory” (Russell, McPherson, & Martin, 2001, p. 44). In short, teacher education programs tend to create a transmission model that reinforces the message that teaching is about knowing a discrete body of knowledge that can be “mastered”. This process has been maintained by a focus on external assessment, usually a grade (assessment of learning), of students’ ability to master these discrete bodies of knowledge. This model silences teacher candidates’ voices and lends no warrant to the authority of their own experiences.

Based on these assumptions we have purposefully developed an ePortfolio practice to create spaces for PTs to articulate their own experience, in light of professional competencies to be certified as teachers, creating the situation where PTs can become more self-confident about their practice (Zeichner & Wray, 2001). As such, our ePortfolio is focused on an assessment as learning approach where evidence is selected by the PTs themselves to address program competencies and teacher certification (Barrett & Wilkerson, 2004). As noted by Earl (2003), assessment as learning focuses on a self-assessment account of learning where students are given the opportunity to collect data on their progress that they can then synthesize to understand how they are learning. Applying this concept to ePortfolios means that PTs are supported to develop increasing autonomy over the content, form and insights for their ePortfolios (Barrett, 2007). From this perspective, ‘portfolio’ as an assessment instrument has been identified as a tool for deep and durable learning, supportive of environments of reflection and collaboration; portfolios are particularly
effective for bringing about performance and learning-related change (Bork et al. (1997), with ePortfolios encouraging deeper learning through the use of multi-media artifacts as richer forms of literacy to express understanding (Lambert, DePaepe, Lambert, & Anderson, 2007; Stansberry & Kymes, 2007). However, as noted by Barrett and Wilkerson (2004), the eP represents a paradigm shift in how learning is valued and as we have noted elsewhere (Hopper & Sanford, 2010) leads to considerable resistance from PTs when they frame the eP as more work within a “jumping through hoops” perception of taking courses.

Portfolios in an electronic form have the potential to capture large amounts of data on PT learning that can be manipulated easily and shared with others. The electronic medium for portfolio development has several advantages: (1) it is easier to keep and review large amounts of material; (2) they are considered to be more flexible and dynamic, enabling artifacts to be presented in more integrated ways; and (3) electronic portfolios give individuals the opportunity to develop and demonstrate their technology skills integrating text, digital media, illustrations, data sheets, audio, and video recordings (Heath, 2003). The ePortfolio offers a vehicle for alternative ways to assess student learning, building on opportunities within traditional teacher education courses and therefore serving multiple developmental purposes. In this paper we consider two questions. (1) What influence does an ePortfolio have on the teacher development of students? (2) How can an ePortfolio practice support the renewal of traditional teacher education programs?

Program self-renewal as a complexity system

The eP offers a way of creating what Goodlad et al., (2004) and Sarason (1997) have referred to as a self-renewing process within a teacher education program. The electronic format allows ongoing access by students to their developing eP as they progress through the program. Instructors and mentor teachers in schools can see the types and quality of work students have been completing in their courses. Program coordinators and Faculty can examine what assignments from classes are emphasizing particular teaching standards and where there are omissions or weaknesses. In this way the eP creates new open channels for communication across a teacher education program, for students, mentor teachers, instructors and program coordinators (Goodlad & McMannon, 2004). The students’ ePs allow a way of mapping progress, counseling where appropriate, and celebrating those that exceed expectations, as well as noting where the program connects or does not connect to professional standards for qualification in the teaching profession. In this way the ePortfolio creates insight on “learning how to teach,” creating a self-renewing program.

Teaching is a highly complex activity, however its complex nature as responsible for a system of learners has often been ignored or overlooked in contemporary theorizing. Learning to be a teacher is often seen as an individual process of becoming rather than a transformation of a person, in light of their collective experiences, in relation to fellow teachers and learners they encounter. Drawing on complexity thinking we are considering how the key components of complex learning systems such as emergence, self-organisation, non-linearity, redundancy, adaptive and distributed control (Colliers, 1998; Davis, 2004; Davis, 2008; Holland, 1998) are features that are both evident in eP interactions and have the potential to extend our theorizing about teacher education and teacher development.

We note that typically the core features of most university courses and by extension teacher education programs rely on a reductionist approaches to learning. Implicit in these approaches is learning an objective body of knowledge and being tested upon that knowledge. The reductionist assumptions about learning suggest that it has to be broken down into simplified parts and then internalised from an external source through repetition, rehearsal and application in controlled situations such as written tests, labs or practicing of techniques on peers. This assumption implies a behaviorist (focused on observable and recordable) linear learning of content followed by increasingly more challenge content and so on. Also implied is a cognitive mentalist (internal process to understand learning and thinking) mechanical learning involving “internalising or inputting information, storing and processing knowledge, expanding one’s database, and outputting ideas” (Davis, Sumara, & Luce-Kapler, 2008, p. 96). The intent in all cases is on a correspondence approach to learning, a correction approach to the idealised model with the computer operating as the metaphor for effective learning.

Context

In our teacher education program the ePortfolio was used for students to systematically collect evidence on how learning experiences (assignments, task, related life experiences, field experiences) shaped their ‘becoming’ as teachers, enabling them to begin the task of recognizing and shaping their identity as
‘teacher’. For each piece of evidence, students were asked to reflect on why the particular piece of evidence or artifact was chosen, what they have learned from including and reflecting on the artifact, and how the artifact contributes to their understanding of teaching and learning as they continue to shape their teaching identity. Over a three year period PTs were expected to complete at least 24 eP entries addressing the competencies identified by the institution and required for teacher certification.

The teaching seminar courses embedded in the programs are responsible for supporting and connecting PTs’ learning in coursework and field experiences using the eP structure. The UVic Competencies required that PTs demonstrate knowledge, skills, and aptitudes in three broad areas:

Professional knowledge – referring to the type of knowledge a teacher is expected to know about subject matter, child development, learner psychology, cultural understanding, curriculum documents and education systems, and professional understandings behind different approaches to teaching.

Professional practice – referring to personal experience of different practices associated with teaching such as planning, assessing learning, analysis of teaching experiences, creating productive and safe learning environments and the ability to create meaningful connections to within schools, community and home.

Professional commitment – referring to the professional attitude of teaching as a life-long career with ongoing connections to professional groups and organisations to develop teaching ability, sustained and worthwhile connections with peers and community members, and ongoing practice of teaching as an ethical practice.

It is important to note that three professional seminars and three formal practicum experiences are embedded in Elementary Education regular program (4 year degree with last 3 years in Education). Each seminar affords course instructors an opportunity to review the development of the PTs’ learning through their coursework and practicum experiences. The practicum experiences are viewed as opportunities for PTs to implement the learning that has been gained over the previous terms. In addition to the Faculty of Education preparing PTs to address the Competencies through programmatic experiences (coursework, field experience, seminars), the eP structure acknowledges that PTs have a wide-ranging set of prior and ongoing experiences that enable them to become professional educators, therefore, spaces are created in the eP to enter learning artifacts from experience prior and outside of the teacher education program.

Data Collection

To address the research question, “What influence does an ePortfolio have on the teacher development of students?” the following two data sources were considered:

(1) The ePs from 45 PTs, five males and forty females, were selectively read and coded. One researcher read the entries of every third PT on the list from the 2007-2010 cohort. The reader initially looked for entries that stood out to her, for example, those that were creatively written, about unusual experiences, or that demonstrated learning for the PT. In this preliminary read the researcher noted entries that showed how the PT used their eP reflections as a tool to further their learning. Once she found an entry, or part of one that caught her eye, she copied it to a separate table. In this table she made notes on the PT’s entry, the location in the eP the section was from, and any reflections or comments she had about the entry. The researcher also viewed the artifact associated with the entry. In some cases the artifact helped solidify her decision that the entry was a special one. The sorted data was then entered into NVivo where it was coded by key phrases. The NVivo program helped to further organise the entries chosen, allowing themes to emerge that were then discussed further with the research team. The entries were read numerous times and some key phrases ended up with multiple codings, as they fit into different themes, such as “ecological thinking” and “thinking like a teacher” (see Figure 1). Upon completing the coding stage the research reader went back and read each group of phrases that had been given the same code, in order to respond to the similarities and differences within the group. She also noticed a variety of learning stages coming out in the PTs’ writing that were graphically noted in the Figure 1 chart.

(2) Interviews with eight instructors (6 female, 2 male) were conducted after they had completed teaching the seminar course. These interviews were approx 45 to 60 minutes long with semi-structured questions long. Each interview weas transcribed and coded for common themes. Four of the instructors were graduate students and four were either retired teachers or sessional instructors. They had varying experience (3-34 years) teaching in elementary, secondary, or alternative education settings. All but one were certified teachers with the BC College of Teachers and all had varying teaching experience (1 term –
20 years) with the university teaching seminar and other courses. For this paper the instructors’ insights on how PTs perceived the eP was considered.

Findings from instructors

Though the seminar instructors varied in their acceptance of the ePortfolio process, one commented that she felt a hardcopy version was better, all commented that the purpose of seminar classes was to help PTs connect their learning experiences in program, answer questions in regards to field experiences, guide the collection of evidence for certification and to develop a professional attitude to reflecting in the role of teacher. Some of the instructors were not comfortable with technology and relied heavily on the computer technicians to solve and address issues with the eP software. However, some instructors (particularly the graduate students) embraced the eP software, created their own ePs as a means of teaching the process of reflection and developed peer assessment processes using the platform.

All the instructors noted that the PTs’ attitude to the eP greatly affected their approach to the process. If they embraced the eP for themselves to help them grow as teachers they greatly benefitted from the process. If PTs focused on the eP as a way of getting a job, as someone’s research project or as just another assignment for an instructor, then they resisted the process. As noted in Figure 1, PTs who minimized reflections saw learning as content to be recalled and only did work for marks, engaged in a process of “studenting.”

Figure 1 Matrix of how instructors; described PTs’ attitude to the eP

<table>
<thead>
<tr>
<th>Approach to using technology</th>
<th>“Fear of it”</th>
<th>“Figure it out”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makes me look stupid</td>
<td>Play with it to find out</td>
<td></td>
</tr>
<tr>
<td>Technology does not like me.</td>
<td>Like the challenge</td>
<td></td>
</tr>
<tr>
<td>Can do by hand just as well</td>
<td>Excited by what possible</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approach to be a student</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Studenting”</td>
</tr>
<tr>
<td>Do minimal Entitlement.</td>
</tr>
<tr>
<td>Effort = Ability Marks as capital</td>
</tr>
<tr>
<td>Ego focused</td>
</tr>
<tr>
<td>CONTENT Focus</td>
</tr>
<tr>
<td>Why do this when not for marks</td>
</tr>
<tr>
<td>Do last minute.</td>
</tr>
<tr>
<td>Entries short and focused on technical material such as lesson plans and unit plans</td>
</tr>
<tr>
<td>Do what is needed.</td>
</tr>
<tr>
<td>Experiment with some interesting ideas but write minimal reflection.</td>
</tr>
</tbody>
</table>

This student-to-teacher thinking continuum also operated with their attitude towards technology. Some PTs could not embrace the challenge of learning from experimenting in order to figure it out and often expressed frustration saying, “Technology does not like me.” At times bugs in the software, or problems with the campus server did cause issues, but generally the platform was stable. However, PTs who showed an attitude of “playing with it” and “excited by the possibilities” used the platform to express their learning through video, images websites and Smartboard artifacts. As one instructor commented:

As teachers, it’s valuable for them to remember what it’s like to struggle through the process of learning, what did it look like, felt like, how was it broken down, how was it resolved.

The greater the ability of the instructors to guide the PTs through this matrix to see learning as a struggle, to embrace new ideas, to develop confidence with technology and to embrace an assessment as learning approach, the more successful the PTs were at developing as teachers. As one instructor commented:

Assessment philosophy comes into play as the eP becomes a new way of assessing development and learning... it puts it back on them as teachers-to-be. This represents another learning opportunity for them as they’ll challenge their preconceived notions of how assessment works.

Findings from PTs’ ePortfolio entries

Analysis from PTs’ eP entries revealed a general trend of development for PTs who were able to embrace the eP as a tool to enable their development as teachers. Figure 2 maps out this development over six phases of the three-year program. Down the side are key domains that were used to classify PTs’
reflections on the artifacts they selected for their ePs. Across the top are locations of the artifacts that were included in their ePs.

**Figure 2 Outline of PTs' general teacher development reflected in their ePs entries**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Program experience</th>
<th>1 Prior Experience</th>
<th>2 Course-based naive</th>
<th>3 First Field Experience</th>
<th>4 Course based insight</th>
<th>5 Second Field Experience</th>
<th>6 Final field experience and inquiry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude as learner</td>
<td></td>
<td>Independent</td>
<td>Safe to try with friends</td>
<td>Nervous tend to revert to how taught</td>
<td>What I do not know</td>
<td>Community of professionals</td>
<td>Self-referencing</td>
</tr>
<tr>
<td>Focus as student</td>
<td></td>
<td>Be “good” student</td>
<td>Grade focused value experience</td>
<td>Learning to think like a teacher</td>
<td>Link learning to past &amp; future teaching experiences</td>
<td>Bring knowledge from prior experiences to forefront</td>
<td>Role of professional Own it</td>
</tr>
<tr>
<td>Focus as Teacher</td>
<td></td>
<td>Scared of not being able to control class</td>
<td>Aware of lack of knowledge</td>
<td>Sense of self as teacher</td>
<td>Student becoming teacher</td>
<td>Done it Teacher see diverse learners</td>
<td>Student centered focus</td>
</tr>
<tr>
<td>Focus of teaching</td>
<td></td>
<td>Control</td>
<td>Control, with student participation</td>
<td>Survival and satisfaction</td>
<td>“Role” identity</td>
<td>Done it, more than classroom</td>
<td>Ecological thinking</td>
</tr>
<tr>
<td>Understanding of learning</td>
<td></td>
<td>Mechanistic</td>
<td>Focus on getting an “A”</td>
<td>Energy that makes a difference</td>
<td>Looking for insights on complexity of teaching</td>
<td>Learning is about the students not them</td>
<td>Articulate learning as sought by employers</td>
</tr>
<tr>
<td>Teacher knowledge</td>
<td></td>
<td>Fixed</td>
<td>Confidence for content in integrated experience</td>
<td>“I learned so much”</td>
<td>What I need to know</td>
<td>Developing teaching philosophy is shaping teaching</td>
<td>Connect teacher knowledge to actions as teacher</td>
</tr>
</tbody>
</table>

As the series of quotes below taken from PTs reflections suggests the progression noted in the chart. First of all prior experiences were important in helping PTs move from external or not them notions of being a teacher make transitions between focusing on themselves as students to seeing themselves as having the potential to become teachers as they had already experienced the role:

The fact that I was able to care for 10-12 young children and provide them with a safe place to be, can translate into the teaching world. I feel that the skills that I learned at camp about creating safe learning environments for children will allow me to create a safe and supportive learning community for my future classrooms.

Early course experiences provided opportunities for PTs to recognize the potential value of new knowledge and to consider alternatives to previously formed notions of themselves and the role of ‘teacher’:

Throughout my elementary and secondary education, I had not been a very open person. As a result I really didn’t put much stock into taking a drama course unless it was required of me. In fact, I never felt that drama was that necessary in education. I was very apprehensive in taking a drama course because of this belief, but after a few days in the class I was amazed how my opinion of drama changed. My teaching philosophy has changed because I now believe that drama gives the students a chance to get rid of any excess energy, channeling it into activities that activate their imagination and thrust them into a world of their choosing. As a teacher, I have learned that including drama into the classroom gives the students a chance to express themselves in a way that they might not ordinarily get to do.”

PTs place great value on their practicum experiences as places where they can begin to embody their beliefs about teaching. It is in the school that they begin to experience thinking, acting, and feeling ‘like a teacher’, experience that is important to their ability to open themselves to new knowledge, insights, and understandings of themselves:

Flexibility is key when you are a teacher and I learned this first hand through this practicum. At times, I would have a perfect lesson planned and for one reason or another, I would have to adjust it (ie. simplify,
extend or revise parts of it). One of my lesson plans - a felt board story - was scrapped all together as the children were too young for the story I had chosen.

Following practicum experiences, the PTs had further opportunities to gain new knowledge, discuss their classroom teaching experiences, and to reflect upon their development as teachers. Recognizing themselves as teachers is important to their sense of selves as ‘teacher’ and their increasing confidence in their ability to fulfill the role successfully. The opportunity to review evidence, in the form of artifacts and reflections included in their ePs, was critical to the recognition and articulation of their developing understandings and skills. As one PT explained talking about responding to a teachable moment allowing a dance to be taught to the whole class that two quiet girls had created.

I believe it is clear that I created a safe environment because if the two girls who made up the actions had not felt safe and comfortable in the classroom, I believe they would have not wanted to make up the actions and share them with the rest of the class. It is very important to acknowledge the teachable moments that happen in your class, and take advantage of them as a teacher. However, I think that as a teacher you would only be able to do this once you are comfortable with the class, and once you have created and maintained a safe and challenging environment in your classroom.

Reflective and autobiographical writing in courses subsequent to practica enabled PTs to further hone their beliefs about themselves as competent teachers. Additionally, these opportunities enabled further in-depth examination of their experiences in light of dialogue with instructors and peers, re-viewing of artifacts collected and created, and revising of earlier, often naïve, posted artifacts.

My experiences revealed within this writing help to explain why I believe in empathy and breaking away from all judgments, and those beliefs have been carried forth into my approach to teaching. Thus, writing this autobiography allowed me to analyze my past experiences, and as a result of this personal reflection many of my experiences with teachers and my own teaching experiences were revealed to me in a new light.

Final practicum experiences often served to consolidate PTs’ growing knowledge, understandings, and skills in relation to working with groups of children. They were more open to sharing ideas with others, asking questions of mentor teachers, and drawing on previous (explicit and tacit) experiences.

I think this lesson ran so smoothly and was one of my best because I had collaborated with my mentor teacher as well as another student teacher. We came up with so many great ideas and I appreciated the brainstorming time with my colleagues. I also felt the lesson ran smoothly because I was so prepared for the lesson.

A critical insight offered by the PTs completing the program and looking back over their experience was their shifting attitude to learning as they moved from a student mindset, i.e., completing assignments for marks, to a teacher mindset, i.e., selecting experiences for how they will help them to learn how to best provide successful learning experiences for all of their students.

Conclusion

Although assessment-as-learning is seldom seen in postsecondary institutions, it is a critical aspect of professional programs, where the ultimate goal is to develop skills and attitudes that will enable the best-prepared teachers for their future students. Students preparing to become professionals must learn to determine their strengths and areas needing further development for them, rather than relying on an external authority to direct their future learning. Assessment-as-learning teaches learners to shape further learning experiences for themselves, in order to continue their professional development. A significant aspect of eP development is the self-selection of artifacts and discussion of the meaning of the particular artifact in relation to the PT’s developing sense of self-as-teacher. The eP transcends the size and duration of artifacts, allowing for representation of visual images, video-clips, websites, and lengthy or bulky documents, enabling variation in evidence of learning. Additionally, ePortfolios give students the ability to sort their artifacts in diverse ways, allowing them to show new and different connections, for different purposes and for different audiences. The collection of artifacts are products that become reframed as part of the process of learning, suggesting an ongoingness to learning as a professional, the need to continually look back to move forward. As students develop their ePs, they become better able to reflect upon where they need to grow in their learning in order to continue to enhance their abilities and understandings, and to more explicitly identify their sense of self as ‘becoming’ teachers as they recognize the need to know themselves in order to develop as teachers.
The eP offers a way for PTs to learn through a more recursive, self-referencing and organic way as they are continually informed by experiences they have selected in order to challenge their development as teachers. We propose that ePs offer the potential to develop a learning process framed by complexity thinking. Complexity thinking describes the ways in which systems, ranging from large-scale economies to the human brain, learn. Such systems are comprised of a collective of interrelated dynamic structures that cannot be reduced to discrete parts (Colliers, 1998; Davis, 2004). Our eP offers feedback loops to our teacher education program, showing from which sources PTs select artifacts and how they understanding their learning. If we can shift PTs and instructors notions of learning away from core content to cover, the “best practices” model and more to interrogating learning from experiences, then we believe we can create a teacher education program that adapts, self-organises and allows learning to emerge from the rich teaching landscapes created.

References


Dynamic Learning Maps

Paul Horner, Simon Cotterill, John Peterson, Gordon Skelly, Newcastle University, United Kingdom

Background

Newcastle University have long-standing experience in the field of ePortfolio interoperability having demonstrated several ePortfolio standards at previous Eifel conferences and ‘plugfests’, including IMS-LIP [1], IMS-ePortfolio[2], Leap2A[3] and Europass[4]. During the EPICS-2 project[5], we investigated the use of XCRI[6] for transferring course related information, and were key partners in the development of the Leap2A standard for ePortfolio interoperability[7].

Through the Dynamic Learning Maps (DLMs) project[8], our focus on interoperability has changed. Our focus is now using standards such as Leap2A, XCRI, Atom and RSS for different systems to interact ‘on the fly’. The previous focus, now reaching maturity, was on the serial transfer of portfolio data from one system to another, at points of transition. Standards such as Leap2A and XCRI lend themselves favourably to this approach as they can be used to provide feeds of data that can be easily manipulated by external systems.

Dynamic Learning Maps

The DLMs project is producing web-based navigable maps, which are a fusion of formal curriculum maps, personal learning records and community learning. The DLMs tool utilises existing technologies and standards to provide access to information from curriculum databases, ePortfolios and other established sources. This approach provides a unique resource for learners, teachers and curriculum managers alike by providing a detailed and usable way of accessing the formal and informal curriculum.

The DLMs project is being piloted with first and second year medical students at Newcastle University, and initial feedback has been positive. This pilot will be extended during the current semester to be trialled by undergraduates in Psychology and Speech Therapy, and will be made available to the entire medical programme at Newcastle during the 2010-2011 academic year.

Key to the success of DLMs will be the interface with the student’s existing institutional ePortfolio. Leap2A was chosen as the method of transferring ePortfolio records for its relative simplicity. The basis of Leap2A is Atom, and therefore naturally lends itself to being replicated in the format of a feed. Therefore, providing a feed of ePortfolio entries for a particular topic to be displayed in DLMs was straightforward.

Future Direction

Our initial work in this area has allowed learners to add portfolio records into their ePortfolio, and to retrieve records added to the particular point on the map that they are currently viewing. However, we felt that it would be more appropriate to formally document our approach and allow others to implement a similar web service. This would benefit the DLMs project by allowing learners and other institutions to plug-in other ePortfolio systems, and ultimately enable us to benefit from the expertise of others involved in Leap2A.

We have a JISC funded PIOP3[9] project to develop this web service further so that other institutions can adopt it. This work will make the web service more robust by including things like authentication, and ensuring that it fits more closely within the Leap2A specification. In collaboration with Nottingham University and Pebble Learning, we are developing this web service further using the expertise and requirements of each organisation to provide something that will be usable by the entire ePortfolio and e-learning community.

Conclusion

The DLMs project aims to make the formal and informal curriculum more transparent to those involved, whether teachers, learners or curriculum leaders. The lessons learnt in this project by integrating diverse information from disparate systems will be applicable to many other systems hoping to deliver a similar
aggregation of data, and the standards that we are utilising, enhancing and documenting will inevitably enable the integration of ePortfolios into many other systems.

Over time this approach could be used to better enhance the learner experience with ePortfolios, with better integration with other systems relevant to an individual's learning and development. Longer-term scenarios building on this could include individually selected portfolios/Personal Learning Environments and ‘cloud’-based ePortfolios, with institutional and personally owned ePortfolio clients drawing upon the same data sources.

References
5. http://www.epics.ac.uk
8. http://learning-maps.ncl.ac.uk
The paper will explore the potential of Teacher Portfolio to make the teachers aware of their professional knowledge. This exploration examines the materials from the TP of some teachers who attend a master course at the University of Macerata.

The new Didactical Research that started in the 90s (Shulman, Damiano) reverses the researcher-teacher relationship: the first is no longer the theoretician who processes theories and proposes them to the second one, who puts them into practice, but he gives voice, or put into words (Damiano), the teacher's knowledge.

It is in the New Didactical Research perspective that we place the following question: which is the sense that teachers give to the disciplinary knowledge (contents) they teach?

Since the reply to this matter is personal, its emergence can be facilitated by the TP, through the reflection on their professional path.

“How teachers relate to the disciplines’ history and epistemology?”

“How they, in the class activity, adapt scientific knowledge so that it can be learnt by students?”

From the above mentioned questions, our intent is to make teachers aware of the personal sense that they give to disciplinary knowledge.

The word “sense” is polysemous: “sense” can be conceived as a network constructed by connecting the individual meaningful experiences (Barbier), but “sense” can also mean purpose, that to which a value is given.

In teaching, the way teachers relate to knowledge, “re-contextualise” it, transform it, mediate it (Damiano) to “adapt” it to their students, conveys both explicitly and implicitly values and the concept of person you want train (Develay “axiologisation” and “didactisation” process). The values and the idea of the person/citizen subtending the cultural objects schooling process (Damiano) are some indicators of the sense of teaching for teachers. The explanation of this sense by the teachers can help them to build their professional identity, thanks to the researchers support in providing the tools to “tell the knowledge” (Vinatier).

The Teacher Portfolio promotes the emergence of the teacher educational philosophy, the experiences that were meaningful to him and affect his way of dealing with (in the sense of adapt to) knowledge. The reflection on his own career, about meaningful events in the construction of his own professionalism, can promote awareness about the idea of person that he wants to trained. This awareness may imply a revision of teacher’s thought and action or their confirmation.

The contribution is then sent to discover whether and how the teachers who have produced a TP are favorites, through that reflection, in revealing and being aware of their professional knowledge, that is not only a knowledge of methods, procedures, routine, etc, adopted in the didactical action and largely resulting from teachers experiential and formative background, but also an awareness of values and conceptions of the purpose of teaching that such background conveys.

More in details, the contribution will analyze the various parts of the portfolio produced by the teacher to try to show how meaningful experiences that have led their educational philosophy affect their choices (a participant in addition to the TP has also exposed a didactical path created in school) and how significant experiences, educational philosophy, educational paths are – as mentioned - carriers of values and ideas about the type of person to be trained: in other words, a teacher sense of their teaching.

Finally, we bring attention to the impact that this awareness has had on the involved teachers. Two methods will be followed: first, taking advantage of the comparison between the interviews offered to the students at the beginning of the course (related to their concept of effective teacher and the way they plan their courses) and what they wrote at the reflection phase; then asking them directly if and how the new
awareness that could emerge from this comparison has made them reflect on the validity of the way they process the knowledge and adapt it for the students or on the need to revise this “professionalism model”.
Hellenic Teachers’ Life-Long Learning Skills Validation via Interactive ePortfolios (HeTeLeSeP)

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The acquisition of knowledge and its relation to competencies (hereafter skills) in order to discover aspects of our identity has been suggested to be the major change in education in the 21st century to manage the transition between the post-industrial world to the information-based world. Within a changing technological world, most Communities of Practice (CoP) can authentically evolve by interweaving members’ resources to produce the community knowledge-base. This is not only created by mere information exchange but also by critical discussion and reflection on members’ exchanged practices. Consequently, CoP’s knowledge certification cannot cover the lifelong learning requirements as the skills validation is missing. In the Hellenic educational reality, such research provides a solution to the current crucial problem of Hellenic Teachers CoP (HeTeCoP) evaluation and self-evaluation requested by the educational authorities. Other than self- and HeTeCoP evaluation, it provides systematic and innovative pedagogical frameworks derived from identifying and combining in-situ practices with recent pedagogical approaches to support continuity within a teacher’s lifetime progress. Also the use of ePortfolios advocates the This project also explores the possibility of validation of HeTCoP’ Life-Long Learning Skills via Interactive ePortfolios (HeTeLeSeP). HeTeLeSeP makes visible, captures, defines and refines the best pedagogical methodologies, providing frameworks for skills acquisition, certification and validation via building Interactive ePortfolios. HeTeLeSeP also makes visible the individuals who can actually work on a 45 degrees accountability angle (Wenger, 2010) and be the key persons to lead organic and evolving change in the Greek educational system. Moodle implemented ePortfolio is also enhanced with tools to provide and socio-cultural environment needed for learning as well as tools to structure the unstructured data. This project will be presented as work in progress as it is in the initial implementation stage.
ePortfolio for development of teaching identity: Identifying learning stages

Katherine Sanford, Timothy Hopper

University of Victoria, Canada

In this paper we will share findings from students in a teacher education program who have all created a professional ePortfolio (a dynamic website that interfaces with a database of student work and related experiences stored as artifacts) that points to new spaces for learning drawing on program content, but ultimately informed by the students who see themselves as agents of a complex system. Data from seminar instructors assigned with the responsibility of administrating the ePortfolio (eP) process is also used to inform the development of the eP process. The eP was set up to value the students’ reflective, active and deep learning as well as creating a process of program self-renewal. A critical focus of our ePortfolio practice is to examine how the concept of assessment-as-learning can create conditions for the complex learning that can be nurtured within a teacher education program. The paper addresses the research question “What influence does an ePortfolio have on the teacher development of students?” The paper will conclude with speculation from a complexity thinking perspective (Davis & Sumara, 2006) on how an ePortfolio practice can support the renewal of traditional teacher education programs.
The use of ePortfolios to support Initial Teacher Training

Matt Wingfield1, Janette Mills2

1TAG Developments; 2Pilgrim Partnership

This paper, and the accompanying presentation, will case study one particular implementation of a web services based ePortfolio solution and how this has been used by an initial teacher training organisation in Bedfordshire, UK, called The Pilgrim Partnership to support the delivery, management and assessment of Higher Education student teachers and Continued Professional Development (CPD/PDP).

The chosen ePortfolio (MAPS 3 from TAG Developments) combines a range of online and offline collaboration and evidence capture tools that enable students to capture, track, collate, manage, self-assess and submit work that evidences their skills and capabilities in relation to tasks and activities that they have been set by their tutor. These evidence capture methods have included mobile phones, enabling the students to capture photos, videos and voice recordings that illustrate/describe their work and capabilities in relation to the Qualified Teacher Status standards, which can then be instantly sent via SMS text to their ePortfolios. This flexibility has enabled the students to capture evidence ‘on the fly’ as they work, and in situations where access to the internet is limited – for example whilst on teaching practice.

The case study will illustrate how the ePortfolio has enabled tutors to more effectively manage the delivery and assessment of the Qualified Teacher Status standards and has provided an intuitive framework for supporting student and practising teachers in the classroom.

The accompanying presentation from The Pilgrim Partnership will illustrate how the ePortfolio has been embedded in their practice and developed into a robust system used by students, lecturers, mentors and assessors. It will demonstrate how their students find the system simple to use, and how they value the ability to tag evidence directly to the QTS Standards. It will also illustrate how the system has been adapted and improved over the last two to meet the specific needs of an HE training organisation delivering initial and on-going teacher training.
Integrating ePortfolio in an Online Platform for Teacher Professional Development: Design and Expectations

Albena Todorova, Ludwig-Maximilians-University Munich, Germany; Danny Arati, Thomas Osburg Intel Corp.

Introduction
As a collection of digital evidence of a person’s learning and abilities, electronic portfolios (ePortfolios) integrate various functionalities, which can facilitate teachers’ professional development. The teacher ePortfolio can record teachers’ instruction, promote reflection on their teaching practice, and enhance their knowledge management. As a tool for learning during professional development programs, ePortfolios can be used for recording learning activities, supporting reflection on the learning process, assessing learning and planning next steps, but also for recognizing learning achievements, for validating learning and for presentation of the personal development. This paper presents a work in progress on the integration of ePortfolio functionality in an online training platform within the most recent development of the program Intel® Teach – Advanced Online for professional development of teachers in the use of technology for teaching and learning.

ePortfolio in Teacher Professional Development
A key advantage of using an e-Portfolio as an ongoing, accessible record of professional development activities controlled by the teacher, is the potential for demonstrating growth over time (Barrett, 2000). Recent literature identifies various additional benefits of ePortfolios in professional development, such as contributing to the developing of skills for self-assessment and reflection, for collection and selection of information and for communication; facilitating collaborative practices and sharing of experience; fostering transference between theory and practice; and cultivating pedagogical beliefs and knowledge regarding the teaching profession and practice (Anderson & DeMeulle, 1998; Barrett, 2000; Darling-Hammond & Snyder, 2000; Harland, 2005; Jafari & Kaufman, 2006). Among the benefits from ePortfolio use for learning, empirical evidence emphasizes also the dialogic functions embedded in digital portfolio systems, such as the possibility for sharing ideas and for receiving prompt feedback, which can support a learning community (Jafari & Kaufman, 2006). Furthermore, ePortfolios provide a system for teachers to plan their development against professional standards, which can be of particular value for school leadership and education authorities.

Beside the advantages for supporting the process of professional learning and growth, using an e-Portfolio system for learning, self-assessment and reflection, and for interaction with other teachers can be expected to enhance the quality of teaching, and consequently, to impact the learning and learning achievements of students. At the same time, issues regarding some technical and pedagogical aspects of using ePortfolios in teacher professional development are still unresolved. Therefore, introducing an ePortfolio component into a program for professional development can significantly strengthen its potential for a positive impact on teachers’ competencies, professional growth and teaching practice, but also can pose difficulties in terms of technical implementation and pedagogical integration.

In the case of the program for teacher professional development Intel Teach – Advanced Online, the initial design included ePortfolio functions supported by the online platform of the program, however, these functions were not explicitly recognized as components of an ePortfolio. The most recent development of the program is focused on providing an open source solution and aims to organize the professional development process through a Moodle-based online platform integrating an ePortfolio system. The implementation of this goal however is related to various obstacles, questions and expectations.

The Intel® Teach Program
The teacher professional development program Intel Teach is part of the Intel® Education Initiative of Intel Corp, towards advancing education through the use of technology. The program is aimed at training classroom teachers to effectively integrate technology in instruction to enhance student learning. The
program provides courses targeting different aspects of integrating technology in classroom teaching to elementary and secondary school teachers. Different modules of the program have been implemented in over 50 countries around the globe since 1999. In Europe the program started in 2000 with the offering of the basic course for technology use Intel® Teach Essentials (named Intel Teach to the Future). In 2004 the Intel Teach - Advanced Online (Intel® Lehren – Aufbaukurs Online) course was designed in Germany and implemented to offer professional development in a blended-learning format through an online platform and to emphasize methodological competencies for integrating new pedagogies and technologies. In 2009/2010 a new offering, which implements the main features of the advanced course through a new, Moodle-based online platform was launched or is being prepared for release under different titles in several countries: Intel® Lehren Interaktiv in Germany, iCPD Online in UK, Pairform@nce in France and localized versions in Portugal and Spain.

**Intel Teach - Advanced Online**

The concept for the advanced course was developed by the Academy in Dillingen belonging to the Ministry of Education in Bavaria, Germany (Ganz & Reinmann, 2007; Todorova & Osburg, 2009). The program was based on a blended learning format of face-to-face meetings and individual and collaborative learning supported by an online platform, which enabled self-paced on-the-job professional development. The “train-the-trainer” approach enabled a high degree of support, through the presence of mentors in the schools and communities of the participants in the program. Participants in the program were guided and assisted in the training process by mentors (Master Teachers).

A typical course of the program was initiated by an interested teacher, who received training to become mentor and presented the program to his or her colleagues in the school. Teachers, who decided to participate in the program, formed one or more groups. Supported by the mentor they chose a pedagogical approach or technology tool to learn about, and subsequently worked collaboratively to develop a unit plan, implement it in their classroom practice, evaluate it and enhance it for further use.

This pedagogical framework is called ‘Learning Path’. Every learning path is either driven by its pedagogical approach or by the application of specific technology, e.g. data handling and data analysis; using ICT to allow students to work collaboratively online. The intended distribution of time for completing a Learning path was 8 hours for introduction to the concepts, methods and technology, 12 hours for working on a Learning path collaboratively with other teachers, and 20 hours of individual learning using the available online resources and tools.

The online platform was design to support and drive all steps in the process. Using the training platform was flexible and teachers had the choice to participate in the training from home or from school, depending on their preference and technology availability. Teachers also could access the platform after they have completed the program and use the available resources, ideas, unit plans and materials for self-directed learning.

The Intel Teach – Advanced Online program was implemented in the United Kingdom in partnership with the Specialist Schools and Academies Trust (SSAT) - an independent, non-profit membership organization with a network of over 5,600 schools and organizations. The trust works with headteachers, teachers and students for developing and sharing new and effective teaching and learning practice, with the purpose to raise standards and levels of achievement of schools.

**Moodle-based Online Platform**

After the successful implementation of the program Intel Teach - Advanced Online, it is being currently expanded and transformed into an offering, which provides more opportunities for collaboration and for integrating teacher contributions to the program. The new program offers more opportunities for collaboration between teachers, peer coaching, and more self-directed professional development based on teachers’ needs. It is expected that through this approach, teachers will not only develop skills for integrating technology in class, but also their social competencies and personality characteristics, such as being more proactive and more responsible for producing educational content and using technologies.

The new platform of Intel Teach - Advanced Online is a customised application built on the Moodle 1.9 platform. The codebase is written in PHP and supports the MySQL or PostgreSQL databases using Moodle’s standard database abstraction layer. It can run on many servers, including Linux and Windows based servers. Key customisations to the Moodle platform include:

- Major re-theming of the look and feel
Integration of an ePortfolio system in the Online Platform

The new platform of Intel Teach – Advanced Online is bundled with the Mahara ePortfolio application which adds resource sharing and additional social networking elements to the platform. This has been enabled using MNET (Moodle networking) to set up a 'Mahoodle' environment. Mahara is an open source system comprising electronic portfolio, weblog, résume builder and social networking system, which connects users and creates online communities. An advantage of Mahara for the professional development program is that it offers teachers control over the items and information other users see.

Despite the technical integration of the ePortfolio system in the demo platform of the new program, the localization of the design and content for implementation in different countries has raised many issues. Most difficulties come from the specific needs and requirements in every country, some redundant functions and lack of integration of the technical functions of the ePortfolio system in the pedagogical concept of the professional development process. For instance, a teacher needs to set up separate profiles, avatars, friend lists, etc. on the two systems; creating and updating one’s ePortfolio is not regulated in the requirements of the program and it is unclear to what degree is would be used by teachers. Another issue concerns the skills and competencies necessary for designing and using an ePortfolio and whether teachers would need additional support. Due to these issues, for instance, the inclusion of e-Portfolio system in the Spanish version of the platform is under discussion, whereas in the German version the specific integration of the ePortfolio is postponed till the release of Moodle 2.0 with improved integration of Mahara.

The implementation of the new program in the United Kingdom is fully integrated in the SSAT online platform, which will offer a different ePortfolio system within the Virtual Leadership & Innovation Academy. This "Active Portfolio" will not only store evidence of performance, but will be driven by a dynamic profile, smart use of meta-data and automatically harvested evidence of achievement.

Expectations and Implications

The implementation of an explicit ePortfolio system in the Intel Teach – Advanced Online platform aims to expand the opportunities for collaboration and sharing between teachers and to promote the creation of teacher professional identity online within a networked community of practice. Due to the school-based implementation of the initial version of the program and the predominant face-to-face collaboration between teachers, the intended establishment of an online network of teachers was not realised. The new platform with ePortfolio functionality is expected to contribute to the development of such network, to provide improved support to school-based communities of practice, and to enable easier sharing of effective practices and online resources.

Concerning individual learning and professional development, the ePortfolio system is expected to enhance the learning process through the opportunities for reflection, feedback, planning, identifying knowledge gaps and self-validation. Furthermore, it is expected that through gaining experience with ePortfolios for learning, teachers will become more aware of the learning process, will develop skills and appreciation for it, will understand the challenges and frustrations of being a learner better and will be more inclined to apply the concept of student portfolios in instruction (Milman & Kilbane, 2005).

In order to integrate digital portfolios in the Intel Teach – Advanced Online professional development concept and to support teachers in developing ePortfolios as a tool for professional growth and learning, it is necessary to understand the factors for successful implementation. Teachers need to be open for the concept of using ePortfolios for professional development. For instance, if the conditions in a school or an educational system do not support reflective practice, teacher community or sufficient availability and access to information and communication technology, the effectiveness of these functions and overall
impact on teachers' learning and practice will be limited (Kankaanranta, 2002). Another condition for implementation of ePortfolios as a strategy for professional development is that teachers possess basic skills and confidence for using computers and the internet. A further essential part of ePortfolio development is collaborative reflective practice and teachers need to be willing to share their experiences with others to enable peer support and peer review as methods for scaffolding teachers' reflection and making connections to pedagogical practices (Kankaanranta, 2002).

In conclusion, it can be argued that ePortfolios can be a powerful tool in teacher professional development in the use of technology, however, more efforts are needed for their effective implementation on a large scale. The integration of an ePortfolio system in the online platform of Intel Teach – Advanced Online and the implementation of the program in different contexts will shed light on the practical implications of various ePortfolio functionalities. The planned evaluation of the program will provide more evidence for the use of digital portfolios in teacher professional development and will identify areas for improvement.

References


Darling-Hammond, L., & Snyder, J. (2000) Authentic assessment of teaching in context, Teaching and Teacher Education/16/5-6, 523-545


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The role of an ePortfolio in enhancing employability for Masters students in publishing

Mary Ann Kernan, City University London

Introduction

This case-study paper aims to evaluate the role of an ePortfolio in enhancing employability for MA students in publishing at City University London, located in a global employment centre for the publishing industry. It reviews definitions of employability in both generic and sector-specific studies, and compares these to the formal and informal ePortfolio activities and assessments in the MA in Publishing Studies at City University London. The author, who won a City University London award in 2009 for Enhancing Student Employability, also reports on a pilot self-efficacy study conducted with the 2009-10 cohort relating to their confidence gains through the taught modules in skills related to personal development, work transition and employability; and concludes by suggesting avenues for future research as well as indications of success criteria for the design of future programmes.

Background

The MA in Publishing Studies at City University is a one-year, 180-credit Masters programme with 20 weeks of teaching, a five-week compulsory placement, and a research- or project-based dissertation. The programme recruits from a wide base including overseas and mature students. Roughly half of the students come straight from a first degree, alongside mature students who hope for career change or career enhancement. In 2006-7 there were 17 completing students on the programme, 16 in 2007-8, 17 in 2008-9, and 25 in 2009-10.

The job market in the publishing sector is traditionally very difficult to enter; those who gain experience can often subsequently move between companies and sectors to develop their careers. One of the aims of the programme, appropriate to the branding of City University London as ‘The University for Business and the Professions’, is to better equip the students to identify their career focus and have the knowledge and skills to succeed in interview for appropriate roles, including demonstrating competencies relevant to those roles.

Case study: Eportfolio implementation and programme assessment

The ePortfolio system PebblePad has been increasingly integrated into the MA programme delivery and assessment since 2006, to encourage the students to reflect on their learning and development throughout the programme. The programme elements for which students were required to deliver work through the ePortfolio in 2009-10 were:

- **Placement blog (group):** a formative element towards the Placement Report which supported the students on their five-week full-time placements; assessment credit (see below) was available for at least a weekly ‘diary’ blog post about their achievements and experience.

- **Placement Report (individual):** a ten-credit module, with a Pass-Fail formative component (a Term 1 Learning Reflection) and a summative submission via the ePortfolio which required a critical analysis of personal achievements on placement plus a report on the London Book Fair 2010, with reference to appropriate theory and examples.

The application of the ePortfolio in this programme incorporates many of the features identified in the 2008 JISC report *Effective Practice with e-Portfolios: Supporting 21st century learning:*

> ‘The primary aim of an e-portfolio may be to collect evidence for summative assessment, to demonstrate achievement, record progress and set targets – as in records of achievement and individual learning plans (ILPs) – or to nurture a continuing process of personal development and reflective learning...’ (JISC 2008, p.6)
Assessment processes

In 2009-10, the reflective skills required to develop a reflective, evidenced ePortfolio were developed in a formative assessment, a Term 1 Learning Reflection, which a Pass-Fail component of the Placement Report module. As a further formative activity, during their compulsory five-week MA placements (internships) in February and March 2010, the students were also required to contribute to a formative, shared group blog, by posting diary entries about their tasks and experiences.

The Placement Report, a ten-credit assignment, was delivered as a personal webfolio via the Eportfolio software PebblePad, made available via the university’s Web CT home page. The advised marking criteria were:

- Inclusion and analysis of specific examples of what you did (projects, meetings, database work, contributing to the decisions or function of marketing/editorial/rights/sales/an agent/contracts...), and how your placement experience relates to them; including 1 weekly blog post + 2 comments on others’ posts
- Evidence of your understanding of publishing roles, with reference to models and theories (eg the industry competencies and readings used in [other modules])
- **London Book Fair report:** Evidence of your understanding of the function and activities of a Book Fair
- Evidence of the progression of your learning through the placement and how you will apply this knowledge in the future, including comparison of your placement goals with the outcomes of your placement
- Evidence of critical reasoning and evidenced argument, including reference to models and theories as well as presentation and logical argument
- Appropriate and innovative capture and use of media

The conference presentation assesses these activities in light of definitions of employability as well as a self-efficacy pilot study.

**Employability attributes and self-efficacy**

The second section of this presentation reviews 1) research-based definitions of employability and 2) the theoretical basis of the self-efficacy pilot research carried out with the 2009-10 student cohort.

Research carried out with employers in the UK in 2006 identified these generic ‘employable attributes’ for graduates (Pedagogy Research Group, 2006, p.4):

<table>
<thead>
<tr>
<th>imagination/creativity</th>
<th>good oral communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>adaptability/flexibility</td>
<td>communication in writing for varied purposes/audiences</td>
</tr>
<tr>
<td>willingness to learn</td>
<td>numeracy</td>
</tr>
<tr>
<td>independent working/autonomy</td>
<td>attention to detail</td>
</tr>
<tr>
<td>working in a team</td>
<td>time management</td>
</tr>
<tr>
<td>ability to manage others</td>
<td>assumption of responsibility and for making decisions</td>
</tr>
<tr>
<td>ability to work under pressure</td>
<td>planning, coordinating and organising ability</td>
</tr>
</tbody>
</table>

A government-sponsored UK organisation called Skillset, which promotes training and development across a range of industries, in 2009 a carried out survey and focus-group research into the skill needs of the publishing industry, broadly defined (ie including newspapers and magazines in addition to books). They quoted their industry panel’s conclusion that that the ‘Skills increasingly required…’ by the publishing industry were (Skillset 2009, pp.77-78):

- collaborative skills
- hybrid skills
- multi-skilling
- self-directed learning
- personal attributes.
They also identified these associated personal attributes:

'a cluster of personal attributes describe the attitude of mind required for a successful career in the Publishing sector, including flair, confidence, capability, ambition and vision.' (Skillset 2009, p.78)

**Self-efficacy**

A pilot study was carried out by the presenter in 2009-10, to test the potential relevance of applying self-efficacy research methodologies to assess any employability impact of vocational Masters teaching. This research approach was based on the theoretical work of the psychologist Albert Bandura, who with colleagues (Bandura, Woods and Beyer 1997: p. 126) defined ‘Efficacy expectancy’ as ‘the conviction that one can successfully execute the behavior required to produce [a desired outcome]’. From the same source, they defined the potential to enhance individuals’ ‘expectations of personal efficacy’ through:

- ‘Performance accomplishments’
- ‘Vicarious experience’
- ‘Verbal persuasion’
- ‘Emotional arousal’.

More recent studies identify positive self-efficacy effects within higher education in supervisor-supervisee relationships, as well as in supervisory relationships in the workplace; and encourage further research to investigate different occupational domains ‘with respect to self-efficacy and how they relate to general efficacy’ (Schyns and Collani 2002, p.237). The aim of the pilot study report was to test whether any specific self-efficacy effects linked to skill areas related to employability could be identified, with the premise that if so these could be of lasting benefit in graduates’ job successes in the highly competitive workplace of publishing.

Of the 25 completing students, 17 completed questionnaires in Weeks 1 (September 2009) and 20 (May 2010), including this baseline confidence measure:

Please reflect on your personal expectations of your programme and how it may relate to your current or future work. Please circle one of the numbers on a 10-point scale, as in this example:

<table>
<thead>
<tr>
<th>Overall confidence that your learning here will significantly improve your job performance</th>
<th>Very Low</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Very High</th>
</tr>
</thead>
</table>

The ten specific questions also invited an assessment on a ten-point scale, eg:

'Indicate on 10-point scale your personal competence in:

1. Identifying publishers to apply to for placements
2. Identifying roles within the publishing industry to apply to for placements
3. Identifying which type of publishing organisation should form the focus of your future job hunt…'

The initial results, which are awaiting further analysis, include these responses to three of the items in comparison with the baseline measure (see above):

**Pre/post: 3 Identifying which type of publishing organisation should form the focus of your future job hunt**
With acknowledgement of the limitations of this pilot study, the presentation considers the potential benefits of applying a self-efficacy research framework to future research into employability gains in higher education.

**Conclusion**

Though these learning gains cannot however be isolated from the learning experiences and gains throughout the MA year as a whole, both formal and informal, Mary Ann Kernan argues that the assessment criteria on the MA in Publishing Studies, including for the ePortfolio, encourage the students to evidence employable attributes, and support durable and transferable learning gains by developing an awareness of the function and importance of these attributes in the workplace.

**References**


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Education
Using a Capstone ePortfolio to Encourage Integration across a Degree Program

(Work in Progress Paper)

R J Lawson, University of Technology Sydney
C. Bajada, University of Technology Sydney

The Bachelor of Business Program in Faculty of Business at the University of Technology Sydney has been undergoing a review process over the last twelve months. As a result of this process the Undergraduate Review Panel (URP) noted various areas for improvement in the degree including:

- A clear set of graduate attributes for the Faculty from which the learning goals and learning objectives for the degree may be derived;
- A greater integration of cross-disciplinary knowledge;
- The inclusions of the themes such as creative thinking, ethics and sustainability.

In order to address this, the panel recommended embedding the themes of creativity, ethics and sustainability in an integrative manner across the whole degree.

To achieve this, students will be required to collate evidence and reflections on the ongoing themes throughout their degree in a capstone ePortfolio, which will form part of their final subject’s assessment. Students will also be engaged with the graduate attributes, using the ePortfolio as a mechanism for showcasing best examples of each of the competencies students are expected to develop. This paper is a work in progress outlining the philosophy behind these recommendations and the proposed steps to achieve them.

The reasons for introducing ePortfolios in the Bachelor of Business were numerous and varied. The process will drive students to explore their own competence and achievement, it will lead to a more fulfilling learning experience through providing a mechanism to understand the integration of themes and disciplines, and it will also provide a process of selecting and recording samples of one’s own work, reflecting on experiences and assembling them into an ePortfolio which is seen as profoundly important to students whilst at university and in their lifelong learning.

The ePortfolio will act as a vehicle for promoting integration across subjects, as well as a record of the students’ capability for employment opportunities. Student support for developing ePortfolios will be introduced in the foundation subject when students complete a weekly reflective posting. This support will continue through the core subjects and majors when students will be guided to develop their portfolio, in subjects that cover the ongoing themes. This evidence will form an e-portfolio where students self assess their progress in order to submit their best examples of competence, understanding and critical reflections. This process will be encouraged throughout all the core subjects and within each of the majors. The completed ePortfolio (referred to as a Capstone portfolio) will then form part of the “real life” activity assessment within the Capstone subjects.

The Capstone portfolio will also identify an important connection with extra-curricular activities. Throughout the degree students will be encouraged, and supported where possible, to gain relevant practical experience to better prepare for a career in business. Students will be able to further develop their knowledge and skills that complement activities directly related to the curriculum, from which experiences can be recorded in the Capstone portfolio.

ePortfolios can be defined as a purposeful collection of student work that illustrates efforts, progress and achievement in one or more areas over time. It is appropriate to define portfolios as a process, rather than just a product or a technological system. An electronic portfolio uses digital technologies, allowing the portfolio developer to collect and organise portfolio artefacts in many media types (audio, video, graphics, text). When working with ePortfolios in an educational context, it is important to not only introduce the method (and an appropriate tool), but to also implement ePortfolios as an overall concept. Tutors need strategies to support students in creating and maintaining their ePortfolios, and in evaluating the outcomes. For the students, the challenge is to acquire the necessary skills to build a portfolio and, more
fundamentally, to develop the ability to reflect on and accept greater responsibility for their own professional development.

An ePortfolio will be used in the bachelor of Business to promote the continuity of the skills and themes across the degree program as illustrated in Figure 1. Using an ePortfolio process, students will be required to compile a portfolio which contains two dimensions: (i) evidence to demonstrate best practice in each of the degree Learning Objectives (not assessed); and (ii) a reflective element based around the common themes within the degree. This process will be encouraged throughout all the core subjects and within each of the majors. The completed ePortfolio (referred to as a Capstone portfolio) will then form part of the assessment within the Capstone subjects, which will include reflective pieces based on each of the ongoing themes and will then be used as a vehicle for completing the “real life” activity assessment.

![Figure 1 – Integrating the Major through the Capstone](image)

The portfolio will be promoted in the core of the degree, initially as a record of the students’ capability in each of the graduate attributes for employment opportunities. Student support for developing e portfolios will be introduced in the foundation subject when students complete a weekly reflective posting. This support will continue through the core subjects and majors when students will be guided to develop their portfolio, in subjects that cover the ongoing themes (See Figure 2). It will act as a vehicle for promoting integration across subjects where the need for these reflective pieces to complete the capstone assessment will be emphasised throughout the degree.
The Capstone portfolio will comprise of a five-stage approach:

1. Aims that are appropriate to an individual student or groups of students (aligned to the degree’s Learning Goals);

2. Initial assessment to establish the student’s starting point;

3. Appropriately challenging Learning Objectives (self assessment implemented in evidence selection process);

4. Ongoing recognition and recording of progress and achievement during the course (formative assessment linked to ongoing themes);

5. End of subject or course student self-assessment; tutor summative assessment; review of overall progress and achievement (embedded within the Capstone assessment).

The staged approach will:

- focus on and promote the needs and interests of students;
- take account of students’ diverse and sometimes multiple purposes in learning;
- encourage students to reflect on and recognise their own progress and achievement, thus increasing their confidence;
- promote and support informed student self-assessment, peer assessment and dialogue, about learning and achievement between students and tutors/lecturers;
- enable both the achievement of planned Learning Objectives and learning outcomes not specified at the outset to be recognised and valued;
- promote good practice in teaching, learning and assessment;
- enhance providers’ quality assurance and improvement practices.

The Capstone portfolio, as illustrated in Figure 3, identifies an important connection with extra-curricular activities. Throughout the degree students will be encouraged to better prepare for a career in business. One possible avenue for this will be through the Beyond-UTS International Leadership Development (BUILD) program. The BUILD program is a non-academic, extra-curricular program that provides opportunities for students to gain leadership and networking skills from a global perspective. Students will be able to further develop their knowledge and skills that complement activities directly related to the curriculum, from which experiences can be recorded in the Capstone portfolio.
This process for using an ePortfolio to integrate across a degree is proposed to be implemented in 2011 and at present teaching teams are working together to develop their practice to make this an effective mechanisms for developing students.
Self-Evaluated Effects of Web-Base Portfolio Assessment for Various Student Motivation Levels

Chi-Cheng Chang, National Taiwan Normal University, Taiwan, Republic of China

Abstract
The purpose of this study was to explore the self-evaluated effects of a Web-based portfolio assessment system on various categories of students of motivation. The subjects for this study were the students of two computer classes in a Junior High School. The experimental group used the Web-based portfolio assessment system whereas the control group used traditional assessment. The result reveals that the Web-based portfolio assessment system was more effective or useful in the most of self-evaluated learning effects for low motivation students.

Keywords: Portfolio, Portfolio Assessment, Web-based portfolio, Effect, Motivation

Introduction
The Internet has been the source of knowledge for the 21st century. Under such virtual environment, acquiring useful information from the internet or how to use and manage information has become required. Its application in teaching could support self-learning as well as self-evaluation or peer-evaluation, which further promotes the outcomes of learning. An ePortfolio is the storage of authentic and multiple evidences, representing the demonstration and reflection of personal learning process and the result within a period of time. The most often used media for ePortfolios are the Web and Internet (Barker, 2006). The Internet technology has decreased the limits of conventional paper-based portfolios significantly and enhanced the functions of a portfolio. The enhancements comprise, for examples, storage space, access convenience, multimedia demonstration, and user interaction (ePortfolio Consortium, 2003). Through the Web or Internet, the content demonstration, creation, storage, and access of a Web-based portfolio are made possible (Chang, 2001a). A Web-based portfolio resembles an abundant online museum, other than providing a platform for the students to save and show their learning results, it is also a convenient way for the teacher to check student’s outcomes and supply online feedback (Dennis, Hardy & White, 2006). This will promote the quality of teaching and learning from teachers and students. A Web-based portfolio used as an evaluation tool is so called Web-based portfolio assessment. Setting up a Web-based portfolio assessment system in the network is a concrete approach of integrating technology with the learning outcomes (Bergman, 2000).

In the progress of creating a Web-based portfolio, the effects of improving learning outcomes and abilities, self-evaluation, setting achievement goal, and promoting professional development can be observed (Barrett, 2000). Singh & Ritzhaupt (2006) argued that effects of using a Web-based portfolio comprise elevating information technology capability, increasing feedback from teachers and peers, fostering reflection, demonstrating professional abilities, promoting writing ability, inspecting learning process, and enhancing learning outcome. Data in a Web-based portfolio must have the evidences to reflect on personal achievements and abilities (McLoughlin & Luca, 2006) in order to know whether or not the goal set up by the learner is reached. Emden, Hutt & Bruce (2003/2004) believed that a portfolio is more than showing personal ability but emphasizing on self-promotion and growth. Creation of a Portfolio can stimulate active planning for students, outcome sharing, use of information technology, and make oneself responsible for the goal and achievements set up by him/her (ePortfolio Consortium, 2003). Dennis, Hardy & White (2006) believed that not only portfolio demonstrate the evidence for professional development, but also have the effect of elevating professional growth and ability. In summary, self-assessment, reflection, goal setting, data gathering, inspection, improvement, feedback, and writing can be treated as the rubrics for portfolio assessment effect.

There have been many studies confirming that the use of Web-based portfolio may increase student motivation (Lee, 1999; Chang, 2001b). There also have been many studies confirming that impact of student motivation on e-learning effect, viz., the effect of e-learning on high motivation students is higher than that on lower motivation students. However, it does not imply that e-learning is more effective for high
Motivation students than low motivation students. A few studies demonstrate e-learning is more effective or useful for high motivation students than that of low motivation students. Unfortunately, few of those kinds of studies for e-learning are conducted. Also, a fewer studies are conducted to explore the use of Web-based portfolio assessment is more effect for which kind of motivation students. Therefore, this issue is a core question of this study.

In this study, the effects of implementing a Web-based portfolio assessment were summarized to nine evaluation rubrics. These rubrics of effect include goal setting, work, reflection, self-assessment, peer-assessment, peer interaction, data gathering, continuous improvement, and problem solving. The rubrics can be used to prepare questionnaires for evaluating the effect of implementing Web-based portfolio assessment. The research is aimed to explore the self-evaluated learning effects of implementing a Web-based portfolio assessment system on various categories of students of motivation. Research questions are as follows: For high motivation students, is there a significant difference in self-evaluated learning effects between the group using portfolio and group not using portfolio? For low motivation students, is there a significant difference in self-evaluated learning effects between the two groups? Is the Web-based portfolio assessment system effective or useful for high or low motivation students?

Literature Reviews

Portfolio Assessment

The purpose of creating a Portfolio is to collect student’s work. These works could demonstrate student’s effort, progress, and learning. Besides student’s work, its creation also includes self-reflection writing, content planning and design of assessment rubrics. Portfolios can be used for many different purposes, especially as an assessment tool for student’s learning (Barker, 2006; ePortfolio Consortium, 2003). Portfolio assessment was to utilize portfolio as an evaluation tool to inspect the progress and outcome of student learning (Tsou, 2000). The data in a portfolio, collected and organised by the learner, was requested by the teacher according to the teaching objectives and syllabus. Lee (2001) argued that portfolio assessment changes the traditional concept of teaching where the class teaching uses student-centered approach. Student portfolio, designed and created by the learner, collects information on certain topics, which demonstrates the learning process and outcomes of the learner. It also serves as a tool for teacher to assess student’s learning process and outcomes.

The usefulness of a Web-based portfolio is not concerning how to create it or the multimedia demonstration associated with it but to gather the evidences of professional development as well as to write authentic reflection and make improvement (McLoughlin & Luca, 2006). The data collected in the portfolio should demonstrate the learning progress and outcomes in order to show its merit for assessment. Ever since the active promotion of portfolio assessment by Vermont State government of the United States in 1990, student self-evaluation and reflection have become critical for portfolio assessment (Wu, 2005; Korets, Stecher, Klein & McCaffrey, 1994). Web-based portfolio assessment (Chang, 2001a) enables real-time information collection and management to decrease the space-time limitation in conventional portfolios. It also has benefits in accessing, demonstrating, and searching portfolio information and serving as a platform for students and teachers to share or inspect peer information which increases chance of interaction and learning. Besides, its characteristics may comprise reducing the creation time, decreasing the resources needed, keeping records, elevating convenience, and being easier to create and demonstrate the evaluation result (Chung, 2001).

Web-based portfolio assessment fosters personal ability, particularly the ability of computer and Internet application (Liang, 2000). In the study of application and impacts of Web-based portfolio assessment on English course for primary school’s students, Chan (2004) argued that implementing a Web-based portfolio has the advantages of stimulating active learning, setting learning goals and promoting English proficiency for students. Sun (2003) noted that Web-based portfolio assessment has the effects of promoting student’s abilities, such as problem solving, self-reflection, active learning, presentation, interaction, communication, revision, technology application as well as elevating the opportunity for communication and sharing. In the study of design and application of Web reflection portfolio, the extent of reflection as well as the final grade of course for the experimental group using learning journal, self-assessment and peer-assessment activities are higher than those of the control group without involving these activities (Cheng, 2002). As the result, abilities such as problem solving, self-reflection, active learning, presentation, interaction, communication, revision, and technology application can be used as the rubrics for portfolio assessment effect.
Motivation Factor

Motivation can be an outcome of using a Web-based portfolio or a factor affecting its effects. For being an outcome, learner motivation may be increased by the Web-based portfolio. Lee (1999) and Chang (2001b) argued that portfolio assessment could stimulate the advancement of learning motivation of a learner. Lan, Sun & Chang’s (2007) study demonstrated that language e-learning program may promote reading motivation of learners. Traynor (2003) further stated that e-learning may increase learner motivation by providing a context which is challenging and stimulates curiosity. Moreover, the nature of learner-controlled choices in an e-learning program contributes to motivation. He also further illustrated that an e-learning program may enhance student learning by affecting cognitive processes and increasing motivation, which in turn elevate student learning. This idea further demonstrates that motivation may be not only an outcome of Web-based portfolio or e-learning but also a factor which increase their effects.

On the other hand, for being a factor affecting Web-based portfolio effect, learner motivation may increase its effect. Generally speaking, high motivation students have higher learning effects by using Web-based portfolio or e-learning program than those of low motivation students. A study of Traynor (2003) found that regular education students made greater pretest-posttest gains in learning than special education students (with learning disability) using an e-learning program (ANCOVA test, p < 0.0001). However, this kind of result can not necessarily reveal that the e-learning program makes a greater effect on regular education students than special education students.

While the motivation factor or outcome contributing to e-learning have been well established in the past literatures, there is a lack of data based study showing the effect or usefulness of e-learning on various types of motivation students. Furthermore, there is a much more lack of research demonstrating the effect or usefulness of implementing a Web-based portfolio assessment on various categories of students of motivation.

Method

Subjects

The subjects for this study are the students of two 11th-grade level computer classes randomly selected from a junior high school. There are 30 students in each class where one is treated as the experimental group and the other one is treated as the control group. Both groups have the same mean of age 14. The experimental group uses the Web-based portfolio assessment system whereas the control group uses general assessment approach of non-portfolio. Both groups’ students had never accessed to the same or similar Web-based portfolio system prior to involvement in the study.

The experimental time is 20 hours that is 2 hours per week for a total of 10 weeks. The feature of the computer class is work production that is proper for demonstrating works and implementing assessment with Web-based portfolio. Therefore, “animation production using PhotoImpact” and “Web page production using Dreamweaver” are selected to be the learning materials for both groups. The works of the two units of the course are the critical items collected in the student’s portfolio for the experimental group.

Research Design

This study utilized a quasi-experimental research design with pretest-posttest on nonequivalent-group. Shown as Table 1, the test of prerequisite - motivation was conducted for both experimental and control groups before the treatment. After the treatment, the test of self-evaluated learning effects was applied to both groups.

Table 1 Quasi-experimental research design of pretest-posttest nonequivalent-group

<table>
<thead>
<tr>
<th>Groups</th>
<th>Students</th>
<th>Pre-test</th>
<th>Treatment</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>30</td>
<td>Motivation</td>
<td>Web-based portfolio assessment system</td>
<td>Self-evaluated</td>
</tr>
<tr>
<td>group</td>
<td></td>
<td></td>
<td></td>
<td>learning effects</td>
</tr>
<tr>
<td>Control group</td>
<td>30</td>
<td>The same as experimental group</td>
<td>Traditional assessment</td>
<td>The same as experimental group</td>
</tr>
</tbody>
</table>

Regarding to statistic method used, ANOVA was used to identify the difference in the self-evaluated learning effects for high motivation students between the two groups. If there is a significant difference, it means that the impact of the Web-based portfolio assessment system on self-evaluated learning effects is higher than that of traditional assessment for high motivation students. Similarly, the same statistical method was used for low motivation students. If there is a significant difference, it means that the impact of
the Web-based portfolio assessment system on self-evaluated learning effects is higher than that of traditional assessment for low motivation students. Based on the results derived from the methods described above, the usefulness of the Web-based portfolio assessment system for high or low motivation students might be verified. This study is not to identify the difference in the self-evaluated learning effects between the two categories of students of motivation for the experimental group and control group. Therefore, two-way ANOVA is not applied.

Self-evaluated learning effects have nine aspects including learning goal setting, works, reflection, self-assessment, peer-assessment, peer interaction, data gathering, continuous improvement, and problem-solving.

Procedure of Treatment

- Preparation stage (1st week): The instructor explained the meaning of portfolio, reflection writing skills, and assessment method to the students of the experimental group. The instructor demonstrated the Web-based portfolio assessment system and the students try out the system. For the control group, the instructor described the teaching plan but no extra activity was performed. Tests of prerequisites were given to both groups.

- Stage of implementing the first unit (2nd to 5th week): After the students of the experimental group understood about the system, the instructor taught the first unit of the course. After class, the students did the online activities in the Web-based portfolio assessment system, such as setting goal, submitting works, writing reflection, etc. The students also participated in portfolio review, self-assessment, peer-assessment, feedback, and online discussion. On the other hand, general teaching and assessment approaches of non-portfolio were conducted for the control group. The works were not submitted online but used traditional approach of paper-based submission. Instead of self-assessment and peer-assessment, they were only given assessment from instructor and teaching assistant.

- Stage of implementing the second unit (6th to 9th week): The second units were taught in this stage and the activities involved in the second stage were repeated.

- Stage of implementing learning effect assessment (10th week): The students of both groups were given the test of self-evaluated learning effects by the instructor.

Anonymous Portfolio Assessment

View and Emulate Peer Portfolio before Assessment

Prior to assessment, instructors could enter the portfolio assessment area of the Web-based portfolio assessment system and examine student portfolio content, and students could view their own portfolios or the portfolios of their classmates. At that time, portfolios permitted for viewing and emulating were not anonymous. Portfolio menu had the following seven selection buttons: personal data, learning goals, reflection, project work, instructor feedback, peer feedback and online participation records.

Anonymous Assessment

Topping (1998) indicated that peer assessment should consider the issue of fairness and avoid situations in which learners give high scores to good friends or low scores for classmates they did not like. To avoiding these scenarios and generate authentic assessment results, this research adopted anonymous portfolio assessment.

The third day (set by the Web-based portfolio assessment system) after the project deadline, the student names in the portfolio assessment area were automatically presented by numbers such that the students could not identify the numbers for classmates. The word “self-assessment” appeared next to the numbers. After clicking on the number of a peer, students could enter the portfolios for self-assessment or peer assessment. In addition to seven selection buttons for entries in the portfolio prior to the initial assessment, one additional button was provided for scoring. The basic information selection button was locked and could not be selected, thus, student identities could not be accessed. The other selection buttons remained the same as before assessments. For the scoring selection button, there was a window with the portfolio assessment form on which instructors and students could write comments. Each student could evaluate five peers that would not result in a heavy loading based upon the consistent comment between the instructors and the students. This anonymous peer assessment could be conducted based upon random grouping and reciprocal evaluation between the members of two groups. Each group consists of five
Data Gathering and Reliability and Validity

The questionnaire for perceived motivation and self-evaluated learning effects was developed by reviewing relevant literature. It was then refined after several reviews and revisions by the instructors and experts. As the result, the validity of the content is promoted. The perceived motivation is measured by two questions based on Likert’s five-point scaling approach. The five questions are as follows:

․ I am interested in learning and study.
․ I would pay attention on listening to teacher lecture at classrooms.
․ I would actively ask questions for teacher or classmate at school.
․ I would actively study and learning after class or at home.
․ I would actively find information regarding course.

The self-evaluated learning effects includes goal setting, works, reflection, self-assessment, peer-assessment, peer interaction, data gathering, continuous improvement, and problem solving. Each aspect consists of five measuring questions that add up to 45 questions in total. The questions are presented based on Likert’s five-point scaling approach. For example, the effect of peer-assessment is measured by the questions as follows:

The effect of peer-assessment:

․ I would try to comment on the works of classmates in order to comprehend the merit and drawback.
․ I know how to comment on and distinguish from the merit and drawback of the works of classmates and address the comments and suggestions.
․ I would make effort according to the comments and suggestions from classmates and adjust my way of learning.
․ I think that reciprocal commentaries with classmates are helpful to improve my learning and works.
․ I think that it is helpful to find out the merit and drawback of my own works through reciprocal commentaries, and improve the quality of the works.

The effect of data gathering and organising:

․ I would try to collect, organise information related to the creation of my works.
․ I know how to collect, organise information related to the creation of my works.
․ I would make efforts towards finishing the works according to information after my collection and organisation, and adjust the way of gathering and organising information.
․ My behavior of information collection and organisation is helpful to improve my learning and the works.
․ I think that it is helpful to find out the merits and drawbacks of my works through information from my collection and organisation.

Shown as Table 2, the overall Cronbach’s $\alpha$ values of the questionnaire of self-evaluated learning effects for the experimental group is 0.977 whereas the overall value for the control group is 0.8657. High reliability of the survey is hence demonstrated for both groups. This implied that the questionnaire has high degree of internal consistency. The Cronbach’s $\alpha$ values of motivation for both groups are all greater than 0.7, meaning that the reliabilities of motivation aspect in the questionnaire for both groups are adequate.

<table>
<thead>
<tr>
<th>Table 2 Cronbach’s $\alpha$ value of questionnaire of perceived motivation and self-evaluated learning effects for two groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Overall effect</td>
</tr>
</tbody>
</table>
The results of factor analysis of the questionnaire for both groups are also conducted for further confirming its validity. The KMO (Kaiser-Meyer-Olkin) values for both groups are all greater than 0.5, implying factor analysis is allowed to be applied. An approach of factor analysis, PFA (Principal Factor Analysis), may be reasonably adopted to verify validity of the questionnaire. The method of Oblique Rotation is used to make the relationships existing among the factors (or detailed effects in the study). Accumulated variances for explaining the self-evaluated effects are all greater than 0.7, revealing that each self-evaluated effect of the questionnaire has a high validity.

Findings and Discussions

Usefulness of the Web-based portfolio Assessment System for Various Motivation Students (for Overall Effect of the System)

Students are automatically categorized into high and low motivation by using SPSS category function. Shown as Table 3, for students with high and low motivation, the variances of overall self-evaluated learning effects of both groups are all close, which meet with the condition of using ANOVA. As shown in Table 4, there is no significant difference in the overall self-evaluated learning effects between both groups for students with high motivation. For students with low motivation, however, a significant difference exists in the overall self-evaluated learning effects between the two groups. The estimated sizes of overall self-evaluated learning effects for low motivation students are higher than that for high motivation students.

Table 3 Test of homogeneity of variance of two groups' overall self-evaluated learning effects for various categories of motivation

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Homogeneity of variance</th>
<th>Experimental group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F Sig.</td>
<td>Mean SD</td>
<td>Mean SD</td>
</tr>
<tr>
<td>High</td>
<td>1.271 0.277</td>
<td>4.20 0.56</td>
<td>3.64 0.14</td>
</tr>
<tr>
<td>Low</td>
<td>1.214 0.301</td>
<td>3.79 0.67</td>
<td>3.17 0.55</td>
</tr>
</tbody>
</table>

Table 4 ANOVA of two groups' overall self-evaluated learning effects for various categories of motivation

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Variance</th>
<th>F</th>
<th>Sig.</th>
<th>Estimated effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Between groups (Assessment method) 3.863 0.068 0.159</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within group (Error)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Between groups (Assessment method) 7.723 0.008** 0.205</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within group (Error)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p < 0.01

These results above reveal, for the students with low motivation, the implementation of the Web-based portfolio assessment system has a bigger impact on the self-evaluated learning effect. In other words, the usefulness of the Web-based portfolio assessment system for low motivation students is higher than those of high motivation students. A student’s reflection in his portfolio stated that:

“My motivation was always low for any class before this semester. However, I felt interested in the assessment method the instructor provided in the class this semester. Using the Web assessment system did raise my interest. This kind of assessment method might allow us to view and emulate peer works. Moreover, we might also assess our own works. Finally, we were allowed to revise our final works before submitting, which was not possible before. I like this kind of assessment.”

From the student’s reflection above, viewing, emulating and assessing peer works as well as revising himself/herself works are an attraction to the student and may increase his/her motivation in learning.
Usefulness of the Web-based portfolio Assessment System for Various Motivation Students (for Eight Detailed Effects of the System)

As shown in Table 5, there is a significant difference in the peer-assessment effect between the experimental group and control group for students with high motivation. However, no significant difference exists in the peer-assessment effect between both groups for high motivation students. The estimated sizes of the peer-assessment effect for low motivation students are higher than that for high motivation students. The result above reveals, for the students with high motivation, the implementation of Web-based portfolio assessment system has a bigger impact on the peer-assessment effect. In other words, the usefulness in increasing the peer-assessment ability from the Web-based portfolio assessment system for high motivation students is higher than that of low motivation students.

There are significant differences in five effects between both groups for low motivation students. The five effects, according to the order of their estimated effect sizes from high to low are self-assessment, continuous improvement, goal setting, data gathering, and peer interaction. However, no significant difference exists in the five effects between both groups for high motivation students. The estimated sizes of the five effects for low motivation students are all higher than those for high motivation students. The result above reveals, for the students with low motivation, the implementation of Web-based portfolio assessment system in increasing the five abilities for low motivation students is higher than those of high motivation students. The right column in the Table 5 demonstrates the usefulness in increasing detailed effects for low or high motivation students.

Table 5 ANOVA of two groups’ self-evaluated learning effects for various categories of motivation

<table>
<thead>
<tr>
<th>Effects</th>
<th>Motivation</th>
<th>F</th>
<th>Sig.</th>
<th>Estimated effect size</th>
<th>Usefulness for low or high motivation students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal setting</td>
<td>High</td>
<td>2.232</td>
<td>0.156</td>
<td>0.130</td>
<td>Low motivation</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>6.606</td>
<td>0.014*</td>
<td>0.139</td>
<td></td>
</tr>
<tr>
<td>Work</td>
<td>High</td>
<td>2.735</td>
<td>0.119</td>
<td>0.074</td>
<td>Neither low nor high motivation students</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.265</td>
<td>0.078</td>
<td>0.154</td>
<td></td>
</tr>
<tr>
<td>Reflection</td>
<td>High</td>
<td>5.394</td>
<td>0.035*</td>
<td>0.137</td>
<td>Both Low and high motivation students</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>6.515</td>
<td>0.015*</td>
<td>0.264</td>
<td></td>
</tr>
<tr>
<td>Self-assessment</td>
<td>High</td>
<td>3.500</td>
<td>0.081</td>
<td>0.134</td>
<td>Low motivation</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>6.353</td>
<td>0.016*</td>
<td>0.189</td>
<td></td>
</tr>
<tr>
<td>Peer-assessment</td>
<td>High</td>
<td>6.012</td>
<td>0.027*</td>
<td>0.286</td>
<td>High motivation</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>0.004</td>
<td>0.949</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Peer interaction</td>
<td>High</td>
<td>1.337</td>
<td>0.266</td>
<td>0.082</td>
<td>Low motivation</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.438</td>
<td>0.041*</td>
<td>0.098</td>
<td></td>
</tr>
<tr>
<td>Data gathering</td>
<td>High</td>
<td>1.660</td>
<td>0.217</td>
<td>0.100</td>
<td>Low motivation</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>5.233</td>
<td>0.027*</td>
<td>0.113</td>
<td></td>
</tr>
<tr>
<td>Continuous</td>
<td>High</td>
<td>2.614</td>
<td>0.127</td>
<td>0.101</td>
<td>Low motivation</td>
</tr>
<tr>
<td>improvement</td>
<td>Low</td>
<td>4.586</td>
<td>0.038*</td>
<td>0.148</td>
<td></td>
</tr>
<tr>
<td>Problem-solving</td>
<td>High</td>
<td>3.863</td>
<td>0.063</td>
<td>0.159</td>
<td>Neither low nor high motivation students</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3.065</td>
<td>0.087</td>
<td>0.070</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05

“I never experienced the use of Web-based portfolio assessment. During the implementation of the Web-based portfolio assessment system in the class, I have ever experienced the activities such as setting learning goal, writing reflection, portfolio review, self-assessment, peer-assessment, gathering and organising data, and continuous revision in works. After these activities, I felt that I know much more about how to set learning goal, write reflection, self-assess, peer-assess, gather and organise data, and continuously revise works. Also, I felt my abilities in these tasks mentioned above. As a result, my interest in the course was raised.”
From the student’s reflection above, the use of the Web-based portfolio assessment system may increase his/her abilities in setting learning goal, writing reflection, self-assessing, peer-assessing, gathering and organising data, and continuously revising works.

Lee (1999) and Chang (2001b) argued that portfolio assessment could urge motivation. The results described above can further explain that portfolio assessment can elevate more motivation for low motivation students than that of high motivation student; and as a result, enhance more learning effects for low motivation students than those of high motivation students. As Traynor (2003) states, the e-learning program may have served to elevate student learning by increasing motivation. This is perhaps the reason why that a significant difference in an overall self-evaluated effect exists between the experimental group and the control group for low motivation students, however, no significant difference exists between the two groups for high motivation students.

Conclusions and Implications
These results integrated together indicate that the implementation of Web-based portfolio assessment system is more effective on the enhancement of the most of self-evaluated learning effects for low motivation students than that of high motivation students. That is to say that the usefulness of the Web-based portfolio assessment system for lower motivation students is higher than those of higher motivation students. Among nine detailed effects, five effects are easier to be improved by using the Web-based portfolio assessment system for low motivation students than those of high motivation students. Only one effect (peer-assessment) is easier to be improved by using the Web-based portfolio assessment system for high motivation students than that of low motivation students.

The results found in this study are consistent with past researches. Therefore, the Web-based portfolio assessment system used in this study has been shown to be more effective or useful in increase the learning of low motivation students. It may be considered by educators whose goal is to enhance various types of student learning, especially for low motivation students. One of the limitations of this study is that the course employed in this study is skill based courses. Portfolios can be expected to work better for such courses, while the results of this study on other types of courses (eg. language, maths, etc) are not probably applied. Furthermore, that 10-week test period in this study is not long enough might be a limitation for getting past novelty effect. The further work based on this study is to apply the Web-Based assessment system in other types of courses over a longer experimental period.

References


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Effects of Learners’ Reflection Category and Performance on Learning for Web-Based Portfolio Assessment

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Abstract

This study examines the effects of reflection category and performance on learning during Web-based Portfolio assessment. Experimental subjects consist of thirty eight-grade students in “Computer Application” course. Through the Web-based portfolio assessment system, these students write reflection, and join self-assessment and peer-assessment. The Phrase Processing System is used to distinguish phrases in students’ reflections, and finally, students’ reflections are classified. Research results show that the reflection category has no significant effect on learning performance, while reflection performance has significantly positive effects on work, test and attitude. Regarding the comparison of the effect sizes, the effects of the reflection category and performance on the three learning performances are arranged in different orders.

Keywords: Portfolio, Portfolio Assessment, Reflection, Learning Performance

Introduction

Portfolio Assessment is a formative process based on the content of an individual student’s portfolio. It relates to teaching in conjunction with students’ learning progress, results and continuous reflection activities, mainly aiming to review the achievement and capability which students have obtained from their learning to assist students in solving the difficulties they encounter during the learning process. Grant, Vermunt, Kinnersley and Houston (2007) use portfolio assessment in reflection activities of medical college freshmen. Eppink (2002) proposes that portfolio assessment may enhance a student’s self-reflection and promote the development of meta-cognition. Rees, Shepherd and Chamberlain (2005) use a reflective portfolio for assessing a medical college student’s professional development and encouraging his/her reflective thinking. Therefore, portfolio assessment helps develop a student’s reflective thinking skill and diversified intellectual activities, and provides students with more effective and practical evaluation.

Chang (2008) argues in his study that the implication of portfolio assessment should involve a learner’s reflection, with an intention to allow the learner to review his/her own learning process and identify a learning method that best fits his/her learning by reflecting his/her failure experience and thereby promote his/her lifelong learning capability. According to Barrett (2004), an ePortfolio without reflection is just a media document file, a magic electronic resume, or a digitalised clipboard. Therefore, we can create a reflection-focused portfolio by adding appropriate reflection and feedback, such as learning journal, self-assessment, peer-assessment and feedback, into Web-based portfolio assessment.

Reflection can be categorized into reviewing process, contemplative process, comparing process and judging process (Santos, 1997). By degree, the performance of reflection can be evaluated and classified into “unmatchable,” “basic,” “good” and “outstanding” (Morgan, 1999). To sum up, most people agree with the importance of reflection as well as the categorization of reflection by level and type. Learners will show different reflection performances in accordance with different levels and types. However, what are the levels or categories of reflection occurring to learners during the course of Web-based portfolio assessment? How will reflection be categorized? How is the reflection performance during Web-Based portfolio assessment? How can it be measured? Is there any difference in learning performance between different categories of reflection? Is there any difference in learning performance between learners with different reflection performances? Does better reflection performance mean better learning performance? These are issues worthy of study and concern.

In terms of effectiveness of learning performance promoted by reflection, reflection, for instance, can boost a medical college junior’s performance on the skill test of clinical diagnosis (Blatt et al., 2007). Besides, reflection may also increase a business school freshman’s self-regulated learning ability and academic performance (Masui & De Corte, 2005). Writing a reflective journal may develop higher scientific literacy of pre-service teachers (Gibson, Bernhard, Kropf, Ramirez, & Van Strat, 2001). Reflection may facilitate a
student's review and correction of his initial ideas and therefore leads to more acceptable work (Davis, 2000). In promotion of attitude and meta-cognition, students who gradually understand their learning role during the course of reflection can have an insight into their thinking process and their characteristics, attitude, attention, dominance, persistence, and other fundamental responsibilities (L. Campbell, B. Campbell and Dickinson, 1998).

Most of the studies on the effect of reflection as discussed above involve the comparison between learners with reflection and without reflection and have nothing to do with the effect of performance and categories of reflection on learning performance. These studies stress resultant impact or benefits; few of which demonstrate learning effects with test and work. Most reflections are observed in the classroom, without involving the use of a portfolio, not to mention the use of Web-based portfolio assessment. If we classify reflection into some levels and then use statistics to compare the difference in learning performance between learners with different categories of reflection, we may judge whether the categories of reflection have any effect on learning performance. Alternatively, if we assess and classify reflection and then use statistics to compare the difference in learning performance between learners with different reflection performances, we may judge whether different reflection performances have any effect on learning performance. However, during the course of Web-based portfolio assessment, is there any difference in learning performance between learners with different reflection performances? Does a learner with better reflection performance also have better learning performance? Is there any difference in learning performance between learners with different categories of reflection during Web-based portfolio assessment? These issues are the ones the study intends to explore.

Based on the foregoing context, this study is designed to examine the effect of learners’ reflection behavior (category and performance) on learning performance during Web-based portfolio assessment. The research questions are as follows:

1. Is there any significant difference in learning performance (work, test, and attitude) between different categories of student reflection?
2. Is there any significant difference in learning performance (work, test, and attitude) between different reflection performances?

**Literature Review**

**Web-Based portfolio assessment and Online Reflection**

A Web-based portfolio assessment system developed by Chang (2008) includes goal setting, reflection writing, work uploading and demonstration, self-assessment, peer-assessment, and teacher assessment and feedback, etc. Wielenga, Ritzen and Kosters (1999) developed a Web-based portfolio assessment system for an experiment with pre-service teachers. The system has functions like personal profile, work storage, self-assessment, work demonstration, portfolio browsing, and online records. From the foregoing discussion, it is found that the Web-based portfolio assessment system must include learners’ reflection on learning, writing a learning journal, peer discussion, peer-assessment and feedback, self-assessment, and dialogs between teachers and students to encourage reflection of students (Eppink, 2002), so as to match the implication of Web-based portfolio assessment.

The interaction between teachers and students or between peers and feedback may serve as reference for self-reflection and correction for achieving the learning goals. Online reflection is crucial for Web-based portfolio assessment; it can increase reflection ability (Coomb & Barlow, 2004; Avramidou & Zembal-Saul, 2002; Morris & Buckland, 2000); increase a learner’s critical thinking ability; facilitate writing, storage, modification, browsing and inspection of reflection; facilitate an instructor’s and learner’s inquiry, review and comparison. From the argument given above, online reflection is not only convenient for learners to proceed with reflection but also helpful for learning.

**Effects of reflection**

Regarding the effects of reflection on learning achievement, Costa and Kallick (2000) argue that a learner who is more likely to proceed with reflection will better control his/her thinking and inference and will therefore have better communications with peers and teachers. The inference performance has also been proven in other studies. Murphy (2004) selects nursing school freshmen as study subjects and finds that the inference performance of students with reflection activities is superior to that of students without reflection activities. Yancey (2001) suggests that the reason why advocates support the selection of portfolio is they
believe a learner can review how he/she overcame learning difficulties when writing reflection and therefore can improve an individual's learning performance. In conclusion, reflection is helpful for thinking, inference, diagnosis and learning.

Regarding the effects of reflection on attitude and meta-cognition, Saito and Miwa (2007) found in their study that the experimental group with reflection activities is superior to the control group in data collection. Gama (2004) developed a solution for environmental issues with algebra and incorporates e-reflection assistant. According to his study, reflection provided by the e-reflection assistant can improve learning performance, time management skill, and knowledge application ability. These studies show that reflection may enhance data collection performance, time management skill, knowledge application ability, learning ability, and learning attitude, etc.

From the discussion provided above, reflection has a wide range of effects which can be observed from some aspects. This study assesses reflection effects from three aspects: work, test and attitude. Work is a necessary item in a learning portfolio; test can indicates a student's learning achievement; and attitude shows a student's meta-cognitive abilities.

Assessment of Reflection

Chirema (2007) analyzed reflective journals to determine the three categories of reflection: non-reflection, reflection, and critical reflection. Wood (2000) also proposed three categories of reflection: pre-reflective thinking, quasi-reflective thinking, and reflective thinking, which may be used to differentiate between learners with different levels of reflection. These studies unveil that the reflection levels of senior high school students concentrate on pre-reflection. The categories of reflection also show pros and cons of reflection.

By the nature of reflection content, Wang (2002) classifies reflection into descriptive reflection, dialogic reflection, and critical reflection. Lee (2002) further explores the nature of learners' reflection. Wood (2000) also noted that reflection is a psychological activity of meta-cognition and can be divided into three types: cognition, comparison, and evaluation. By characteristics, Lin (2004) divides a learner's reflection into emotional reaction, cognition and combination. In her study, Lin also found that learners would express their feeling and emotion by selecting terms which they frequently use. Therefore, it is possible to further explore a learner's reflection by characteristics of his/her behavior (i.e. status of cognition, evaluation, memory, or emotion). With different study purposes, study processes, inductive methods and learner level, the designations of categories of reflection are not the same; however, there are several common designations such as emotion, memory, cognition, contrast, evaluation, and combination, which can serve as the basis for categorization in this study. The contrast category of reflection indicates the comparison, contrast and review of learning between the learner himself/herself versus his/her peers. The evaluation category of reflection indicates comments, measurement and criticism in addition to comparison, contrast and review. As evaluation includes the implication of contrast, we may incorporate the category of contrast into the category of evaluation in case of few study subjects.

Method

Subjects

This study targets at 30 eighth-grade students (18 males and 12 females) as subjects who study a course of “Computer Application”. Through the Web-based portfolio assessment system, these students write reflection, and join self-assessment and peer-assessment. Their teachers conduct reflection teaching and various activities such as review and assessment of student portfolios. These students have sufficient computer operations and Internet skills.

Learning contents are based on two units “Computer Animations” and “Time Axis Control” in the textbook, and works are created by Photoimpact and Dreamweaver MX. As learners have to submit their digitalised works, the Web-based portfolio assessment system is ideal for review of the works and learning processes.

Research Framework

This study conducts phrase processing for the reflection content with the Phrase Processing System developed by the Institute of Information Science (2007), Academia Sinica and then proceeds with arrangement and categorization based on the results of phrase processing, and ultimately uses MANOVA to test whether there is any significant difference in learning performance (work, test and attitude) between learners with different categories of reflection and different reflection performances, and further verifies the statistical results by the reflection in learners’ portfolios. Research framework is shown as Figure 1, while research variable are as follows.
1. Categories of reflection, which are obtained from phrase processing results and analysis. They include emotion, memory, cognition, evaluation, and combination. The emotional category of reflection represents the learner's description of his/her learning or his/her peers' learning; it is simple emotional reaction without in-depth descriptions. Mnemonic reflection means only the learner's description of his/her learning or his/her peers' learning, without further review. The cognitive category of reflection indicates the learner's review of his/her learning or his/her peers' learning, without no further comment or criticism is made. The evaluation category of reflection indicates the learner's comment or criticism on his/her learning or his/her peers' learning. The combination category of reflection includes the two characteristics described above. These categories of reflection do not involve the merits and demerits of reflection and are classified as nominal variables in statistical application.

2. Reflection performances are rated based on the content of reflection.

3. Learning performances include scores of work, test and attitude. The scores of a learner's work and attitude are average scores given for those two units and are measured by the questionnaire of portfolio assessment in the Web-based portfolio assessment system. The score of test refers to the score that a learner earns in the paper test at the end of the course. The scores of a learner’s work and attitude are average scores given for those two units and are measured by the questionnaire of portfolio assessment in the Web-based portfolio assessment system. The score of test refers to the score that a learner earns in the paper test at the end of the course.

Figure 1 Research framework

Procedure and Activities

Preparation State (1st week)
The teacher teaches the concept, assessment methods and reflection writing skills of a portfolio to the students in the classroom. Besides, the teacher also demonstrates the use of the Web-based portfolio assessment system and the questionnaire of portfolio assessment. At the last part, learners may try using the system so that they may have an understanding of the system's functions and operations.

State of Course Unit #1 (2nd week to 5th week)
The teacher teaches Unit #1 (Computer animations) in line with the use of the Web-based portfolio assessment system. Learners may take advantage of spare time to participate various activities, such as individual portfolio creation (setting learning goals, online uploading works, and writing reflection, etc.) by form filling, viewing peers' portfolios, self-assessment, peer-assessment, and online discussion etc., in the Web-based portfolio assessment system. This process is known as portfolio assessment. Besides, the teacher and the online assistant use the questionnaire of portfolio assessment developed by Wu (2008) to evaluate the students’ learning performance (including work, reflection and attitude) based on their portfolio contents and online behavior performance at the end of the unit. The student, together with a number of peers assigned by the teacher, uses the questionnaire of portfolio assessment for anonymous peer-assessment. Moreover, the teacher will offer guidance and answer questions raised by students regarding the use of the portfolio assessment and system on the discussion board within the system and during class.
Stage of Course Unit #2 (6th week to 9th week)
At this stage the teacher teaches Unit #2 (Time axis control) and repeats the activities described in Unit #2. Prior to the beginning of the stage, the teacher gives further guidance on the problems which learners have faced in the previous stage such as setting learning goals, writing reflection, uploading works, self-assessment, peer-assessment, use of portfolio assessment questionnaire.

Stage of Test (10th week)
The teacher designs and develops test questions at this stage and there will be a test at the end of the course.

Procedure of Writing Reflection
During the course of the experiment, learners have to create their portfolios (including setting learning goals, uploading works, and writing reflection), and proceed with portfolio viewing and sharing, self-assessment, and peer-assessment, with the assistance of the Web-based portfolio assessment system. The procedures for writing reflection are provided below:

1. The teacher explains the outline of reflection in the system to learners to help them write reflection.
2. Regarding the sequence of creating a portfolio, a learner first sets learning goals. After finishing the work, the learner writes reflection in accordance with outline of reflection provided by the system. The outline of reflection includes reflection on learning goals, reflection on learning outcomes, reflection on learning attitude, reflection on performance of viewing peers’ portfolios, and reflection on feedbacks.
3. When a learner writes “reflection on learning goals”, he/she may review his/her learning goal established initially in the “Portfolio Creation” area, based on which the learner can write reflection.
4. When a learner intends to write reflection for “reflection on performance of viewing peers’ portfolios”, he/she may browse their portfolios in the “Portfolio Assessment” area, view their online participation record and browse self-assessment, peer assessment and teacher assessment in the “Portfolio Scores” area; after comparison with peers’ performances, the learner can write reflection.
5. When writing reflection for “reflection on feedbacks”, a learner may think peers’ comments or browse peers’ feedbacks in the “Portfolio Assessment” area in advance.
6. When finishing writing reflection, the learner may click the “Send Data” button, and the system will automatically save the reflection in a personal portfolio. The learner may go to the “Portfolio Assessment” area to browse his written reflection or peers’ reflection. In addition, the learner may repeat the previous actions to write reflection for different thinking or outlines, if he/she feels that the content of reflection should be supplemented or re-written.

Research Instrument
Web-Based Portfolio assessment System
This study uses a self-developed Web-based portfolio assessment system for conduct of an experiment. Functionality of the system includes: 1. Guidelines for portfolio creation; 2. Portfolio creation: filling basic information, setting learning goal, online uploading works, writing reflection, and other content creation (e.g. anecdote, Website sharing, e-document sharing, testing outcomes, or other entries, etc.); 3. Portfolio assessment: (1) may be distinguished by the student’s name, work title, or work sample; (2) can be divided into teacher assessment, self-assessment, and peer-assessment, by the log-in ID, all of which use the same portfolio assessment questionnaire; and peer portfolios can be also browsed; 4. Portfolio scoring: including scores of self-assessment, scores of peer-assessment and comments, scores of teacher assessment and comments, overall mean (teacher may set up the rate of teacher assessment, student self-assessment, and peer-assessment); excellent works are highlighted; 5. Course descriptions: including the names of course units, syllabus and teacher profiles, etc.; 6. System management; 7. Online discussion board (including course discussion and portfolio discussion); 8. Bulletin; and 9. Personal profile maintenance.

Questionnaire of Web-Based Portfolio Assessment
The teacher and the online assistant use the Web-based portfolio assessment questionnaire developed by Wu (2008) to assess students’ learning performance based on portfolios created by the students. The questionnaire consists of six aspects that are portfolio creation, learning goals, works, reflection, attitude,
and other, and the score of portfolio assessment is equal to the sum of all the scores given for the six aspects. Learning performance (dependent variable) consists of scores of work, attitude and test that are marked by the teachers and online assistants. Reflection performance (dependent variable) is represented by reflection score marked by the teachers and online assistants as well.

**Scoring of Questionnaire**

The scoring method of the questionnaire is given based on the performance that learners have achieved: 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5 and 5; the higher the score, the better the performance of assessment items. The score grows by an increment of 0.5 point unit, instead of 1.0 point widely used in a five-scale approach, in order to avoid only five scores, 20, 40, 60, 80, and 100, when the point received is converted into a percentage. The gap between the five scores is excessively large, which would keep the scorers from scoring (Wu, 2008).

**Reliability of Questionnaire**

All Cronbach’s α values of the questionnaire on the two units of the course are larger than 0.9, suggesting high internal consistency between questions in the questionnaire. These results are quite similar to the reliability of the questionnaire measured by Wu (2008) (The Cronbach’s α value of the pilot questionnaire test was 0.9, while the Cronbach’s α value of formal questionnaire test was 0.923). Table 1 demonstrates Cronbach’s α values of the work, reflection and attitude assessment questionnaires in the portfolio assessment questionnaire.

**Table 1 Reliabilities of the aspects in the Web-based portfolio assessment questionnaire**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Unit #1</th>
<th>Unit #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>0.819</td>
<td>0.864</td>
</tr>
<tr>
<td>Work</td>
<td>0.914</td>
<td>0.970</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.969</td>
<td>0.960</td>
</tr>
<tr>
<td>Overall</td>
<td>0.972</td>
<td>0.980</td>
</tr>
</tbody>
</table>

Note: Cronbach’s α values of other aspects are not used and thus are not listed in this table.

**Validity of Questionnaire**

Values of KMO (Sampling proper measure of Kaiser-Meyer-Olkin) in each aspect of the questionnaire are larger than 0.7, reaching the standard for conduct of the factor analysis. Using its Principal Component Analysis (PCA) may establish validity and proceed with the orthogonal rotation using varimax method. Accumulated variances are all larger than 70%, showing there is a high validity in each aspect. The overall accumulated variances of the two units exceed 78%, which is similar to the overall accumulated variances (larger than 76%) of pilot test and formal test from Wu (2008). The questionnaire has a high validity, indicating its potential to effectively measure the quality of portfolios and learning performances of learners.

**Table 2 Factor analysis of the Web-based portfolio assessment questionnaire**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Unit #1</th>
<th>Unit #2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KMO values</td>
<td>Accumulated variances (%)</td>
</tr>
<tr>
<td>Reflection</td>
<td>0.89</td>
<td>84.51</td>
</tr>
<tr>
<td>Work</td>
<td>0.80</td>
<td>80.00</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.85</td>
<td>86.32</td>
</tr>
<tr>
<td>Overall</td>
<td>0.72</td>
<td>78.91</td>
</tr>
</tbody>
</table>

Note: Cronbach’s α values of other aspects are not used and thus are not listed in this table.

**Content of Questionnaire**

**Reflection Questionnaire**

The reflection questionnaire in the portfolio assessment questionnaire is used to assess the contents of learners’ reflection. The assessment items include (1) reflection on learning goals: proceed with reflection
for the learning goals set initially; (2) reflection on works: the ideas about the generation process and outcomes of works; reflection on learning outcomes: listing the learner's learning achievement, merits and progress; (3) reflection on learning attitude: merits/demerits of learning attitude, progress, and reflective thinking; (4) reflection on performance of viewing peers’ portfolios: self-expectations derived from the observation on peer performances; (5) reflection on feedback from teachers and peers, and proposing improvement or explanation; (6) overall performance on reflection.

**Work Questionnaire**

The work questionnaire in the portfolio assessment questionnaire is used to assess the contents of learners' works. The assessment items are the validity of work, appropriateness of work, integrity of work, difficulties of work, originality of work, the degree that learners understand learning contents, evidences of work creating process (e.g. ground plan of work, initial work, revised work, and etc.), and overall performance on work.

**Attitude Questionnaire**

The attitude questionnaire in the portfolio assessment questionnaire is used to assess learners' learning attitude and interaction with peers. The assessment items are online viewing, browsing, peer-assessment, and feedback; online resource and information sharing; online discussion, knowledge sharing, idea exchange, and problem-solving; overall performance on attitude.

**Test**

The test, including 10 multiple-choice questions, is used to measure the degree that learners understand the two units of the course. The ten questions are selected from the teacher's manual, five from Unit #1 and the other five from Unit #2. The Cronbach’s $\alpha$ value of the test is 0.71, suggesting the consistency between the questions. Shown as Table 3, item analysis is conducted to identify the discriminatory power and consistency of the questions. According to the result of the t-tests, significant differences are found between the high and low-score groups of each question, indicating that these questions can effectively discriminate students’ performances. Pearson's correlation coefficients between the questions and total scores are at the significant level, suggesting the consistency between the questions and the overall questionnaire.

**Table 3 Item analysis of test**

<table>
<thead>
<tr>
<th>Attribution of test content</th>
<th>t (Sig.)</th>
<th>Correlation (Sig.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill of axis control</td>
<td>6.01(0.00)</td>
<td>0.428(0.00)</td>
</tr>
<tr>
<td>Skill of animation</td>
<td>4.34(0.00)</td>
<td>0.386(0.00)</td>
</tr>
<tr>
<td>Skill of animation</td>
<td>6.35(0.00)</td>
<td>0.439(0.00)</td>
</tr>
<tr>
<td>Knowledge of axis control</td>
<td>9.42(0.00)</td>
<td>0.517(0.00)</td>
</tr>
<tr>
<td>Skill of axis control</td>
<td>7.12(0.00)</td>
<td>0.458(0.00)</td>
</tr>
<tr>
<td>Skill of animation</td>
<td>9.89(0.00)</td>
<td>0.462(0.00)</td>
</tr>
<tr>
<td>Knowledge of animation</td>
<td>8.75(0.00)</td>
<td>0.489(0.00)</td>
</tr>
<tr>
<td>Knowledge of axis control</td>
<td>4.01(0.00)</td>
<td>0.381(0.00)</td>
</tr>
<tr>
<td>Skill of animation</td>
<td>5.74(0.00)</td>
<td>0.407(0.00)</td>
</tr>
<tr>
<td>Knowledge of axis control</td>
<td>5.02(0.00)</td>
<td>0.401(0.00)</td>
</tr>
</tbody>
</table>

**Phrase Processing System**

This study uses the Phrase Processing System for phrasing the sentences in reflection. The lexical library in the system includes approximately 100 thousand words and phrases. With additional word types, term frequency, word frequency, and word-type frequency, this is the first phrase processing system that provides unknown word detection and syntactic category prediction. The system was awarded No.1 of the first phrasing contest held by the International Society of Computational Linguistic. Boasting relatively high accuracy (96%) and consistency (Chen and Bai, 2000), it is ideal for processing a whole bunch of reflection...
data in this study. In addition, the system can increase the reliability and validity and save labor and time on content analysis of reflection.

Besides, after phrasing sentences, the system will tag the words. Principally, words are divided into dynamic verbs, situation verbs, and other word types (such as conjunction, adverb, noun, and pronoun, etc.) (Institute of Information Science, 2007). As dynamic verbs are not suitable for categorization of mental state theoretically in psycholinguistics, only situation verbs are selected and serve as the basis for categorization of reflection.

**Result**

**Categories of Reflection**

This study applies the Phrase Processing System to summarize the situation verbs used by each learner in his/her reflection and the frequency. Afterwards, based on the frequency of four corresponding mental lexicons (emotion, memory, cognition, and evaluation) used, we conclude three types of reflection, namely cognition, evaluation, and combination (learners of "memory" and "emotion" do not exist). Table 4 shows the distribution of the number of learners for reflection categories, where the cognition category accounts for the largest percentage, which coincides exactly with the result proposed by Lee (2002) and Lin (2004).

<table>
<thead>
<tr>
<th>Reflection category</th>
<th>Number of learners</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognition</td>
<td>16</td>
<td>53.3</td>
</tr>
<tr>
<td>Memory</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Emotion</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Evaluation</td>
<td>5</td>
<td>16.7</td>
</tr>
<tr>
<td>Combination</td>
<td>9</td>
<td>30.0</td>
</tr>
</tbody>
</table>

**Effects of Reflection Categories on Learning**

Table 5 shows that the work and test scores of the cognition category of learner reflection are all greater than those of the other two categories of learner reflection. Likewise, the attitude score of the evaluation category of learner reflection is greater than that of the other two categories of learner reflection. However, Table 6 shows that their significant levels are all not reached, meaning that reflection category does not influence work, test and attitude. Moreover, among the three learning performances, the effect size of attitude is the greatest. However, the significant level is not reached.

<table>
<thead>
<tr>
<th>Learning performance</th>
<th>Mean (SD)</th>
<th>Cognition</th>
<th>Evaluation</th>
<th>Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>74.88(6.01)</td>
<td>73.60(3.36)</td>
<td>72.56(5.90)</td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>59.38(18.96)</td>
<td>53.00(14.83)</td>
<td>56.11(19.00)</td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td>63.12(7.94)</td>
<td>64.00(5.24)</td>
<td>57.67(9.80)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wilk's Λ</th>
<th>Learning performance</th>
<th>Variance</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.863 (0.702)</td>
<td>Work</td>
<td>Between groups</td>
<td>2</td>
<td>31.794</td>
<td>15.897</td>
<td>0.496</td>
<td>0.614</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>Within group</td>
<td>27</td>
<td>865.172</td>
<td>32.043</td>
<td>0.776</td>
<td>0.562</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>29</td>
<td>896.967</td>
<td>32.307</td>
<td>0.776</td>
<td>0.562</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>0.863 (0.702)</td>
<td>Test</td>
<td>Between groups</td>
<td>2</td>
<td>174.028</td>
<td>87.014</td>
<td>0.256</td>
<td>0.776</td>
<td>0.019</td>
</tr>
<tr>
<td></td>
<td>Within group</td>
<td>27</td>
<td>9162.639</td>
<td>339.357</td>
<td>0.256</td>
<td>0.776</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>29</td>
<td>9336.667</td>
<td>340.357</td>
<td>0.256</td>
<td>0.776</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>0.863 (0.702)</td>
<td>Attitude</td>
<td>Between groups</td>
<td>2</td>
<td>205.217</td>
<td>102.608</td>
<td>1.519</td>
<td>0.237</td>
<td>0.101</td>
</tr>
<tr>
<td></td>
<td>Within group</td>
<td>27</td>
<td>1823.750</td>
<td>67.546</td>
<td>1.519</td>
<td>0.237</td>
<td>0.101</td>
<td></td>
</tr>
</tbody>
</table>
Effects of Reflection Performances on Learning

Based on the quartile approach (Q1=65.5, Q3=79), the learner reflection performances were divided into high scores group (front 25%), middle score group, (middle 50%) and low score group (rear 25%) (Table 7). The result of MANOVA reveals (Table 8, Wilk’s Λ = 0.449 and p<0.01), there is a significant difference in at least one learning performance among the three groups of reflection performance. Furthermore, the difference in work (p=0.006), test (p=0.005) and attitude (p=0.025) among the three groups of reflection performance are all significant, meaning reflection performance influences work, test and attitude.

According to post multiple comparisons among different groups using Scheffe’s approach (Table 9), the work, test and attitude of the high score group of reflection performance are all greater than those of the low score group of reflection performance. This result reveals that reflection performance has positive effects on learning performance.

According to the effect sizes, the effects of reflection performance on the three kinds of learning performance in a step-down sequence are test, work, and attitude respectively. The three kinds of effects are all significant, while the effects on work and test are quite approximate.

**Table 7 Means of learning performance for different groups of learner reflection performance**

<table>
<thead>
<tr>
<th>Learning performance</th>
<th>Mean (SD)</th>
<th>High score group</th>
<th>Middle score group</th>
<th>Low score group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>78.56(4.36)</td>
<td>72.57(3.34)</td>
<td>70.86(7.24)</td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>72.78(17.87)</td>
<td>50.36(14.34)</td>
<td>51.43(13.14)</td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td>66.22(10.05)</td>
<td>61.93(6.01)</td>
<td>55.14(6.67)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 8 MANOVA of learning performance for different groups of learner reflection performance**

<table>
<thead>
<tr>
<th>Wilk’s Λ</th>
<th>Learning performance</th>
<th>Variance</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.449</td>
<td>Work</td>
<td>Between groups</td>
<td>2</td>
<td>284.459</td>
<td>142.229</td>
<td>6.270</td>
<td>0.006**</td>
<td>0.317</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>29</td>
<td>896.967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within group</td>
<td>27</td>
<td>612.508</td>
<td>22.685</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test</td>
<td>Between groups</td>
<td>2</td>
<td>3072.183</td>
<td>1536.091</td>
<td>6.621</td>
<td>0.005**</td>
<td>0.329</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>29</td>
<td>9336.667</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within group</td>
<td>27</td>
<td>6264.484</td>
<td>232.018</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attitude</td>
<td>Between groups</td>
<td>2</td>
<td>485.625</td>
<td>242.813</td>
<td>4.248</td>
<td>0.025*</td>
<td>0.239</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>29</td>
<td>2028.967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within group</td>
<td>27</td>
<td>1543.341</td>
<td>57.161</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01

**Table 9 Post multiple comparisons of learning performance among different groups of learner reflection performance**

<table>
<thead>
<tr>
<th>Learning performance</th>
<th>Post multiple comparisons (Sig.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>High score group &gt; Middle score group (0.023*)</td>
</tr>
<tr>
<td></td>
<td>High score group &gt; Low score group (0.013*)</td>
</tr>
<tr>
<td>Test</td>
<td>High score group &gt; Middle score group (0.007**)</td>
</tr>
<tr>
<td></td>
<td>High score group &gt; Low score group (0.033*)</td>
</tr>
<tr>
<td>Attitude</td>
<td>High score group &gt; Low score group (0.025*)</td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01

**Discussion**

Regarding the effect on learning performances, the reflection category has no significant effect on the three types of learning performance, but the reflection performance has a significant effect on the three learning performances (Table 10). On effect sizes, the effects of the reflection category on the learning performance,
in descending order, are attitude, work, and test; however, no significance is observed. The effects of the reflection performance on the learning performance, in descending order, are test, work, and attitude.

**Table 10 Significant levels and effect sizes of reflection on three types of learning performances**

<table>
<thead>
<tr>
<th>Reflection category</th>
<th>Work</th>
<th>Test</th>
<th>Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection performance</td>
<td>** / 2</td>
<td>** / 1</td>
<td>* / 3</td>
</tr>
<tr>
<td></td>
<td>N / 2</td>
<td>N / 3</td>
<td>N / 1</td>
</tr>
</tbody>
</table>

N: Not significant; *p<0.05, **p<0.001; 1, 2, 3: Effect size from high to low

The reflection categories concluded in this study are cognition, evaluation and combination. Because the attributes of cognition and evaluation are a little bit similar, it is comprehensible that the reflection category has no effect on the learning performance. In case of more categories, the reflection category may possibly have effects on the learning performance. According to the study by Lee (2002), there are significant differences between learners of different reflection categories in understanding of chemical concept. Whether it can be attributable to different reflection categories concluded by Lee requires further studies.

Reflection involves a learner's introspection and comments. Deeper reflection is helpful for learning. Therefore, it makes sense that reflection content, good or bad, has significantly positive effects on learning performance, which is consistent with results from other studies that might focus on different fields of discipline or subjects. In attitude, the use of portfolio assessment may strengthen the students' motives for learning (McAlpine, 2000). In learning performance, writing reflection journal can enhance scientific literacy of pre-service teachers (Gibson, Bernhard, Kropf, Ramirez, & Van Strat, 2001). Reflection will also boost self-learning effectiveness (Yancey, 2001). As a learner writes in his portfolio:

"While writing reflection, I think of whether there is a room for improvement on my learning situation, learning attitude, works, and test scores. After finishing the writing, occasionally I will try to improve myself based on the reflection, hoping to make my performance better than ever. Therefore, reflection is somewhat helpful for my learning."

**Conclusion and Implication**

Conclusions derived from this study are illustrated as follows. During the course of implementing the Web-based portfolio assessment, the reflection category has no significant effect on learning performance, while reflection performance has significantly positive effects on work, test and attitude. Regarding the comparison of the effect sizes, the effects of the reflection category and performance on the three learning performances are arranged in different orders. These results may serve as a reference for future researchers and teachers who are engaged in studies or teaching related to Web-based portfolio assessment. Through Web-based portfolio assessment, this study can also help learners boost their learning reflection skills so that they may become self-reflection practitioners in the future.

As the mental state of junior high school students is not yet ripe and they lacked experience in writing reflection in previous courses, the learners' reflection content is either insufficient or superficial or they use ambiguous words, although an outline of the writing has been prompted and demonstrated in advance. Since most learners had no experience of self-assessment and peer-assessment before, the teacher has explained the scoring method and precautions, despite that, there is still possible unfair assessment or inadequate assessment capability. Moreover, because there are quite a few questions in the portfolio assessment questionnaire, each student has to rate a number of his or her peers, resulting in a heavy burden to the students. These are limitations of this study, which need to be eliminated as far as possible in future studies.

It is found in this study that reflection performance will affect work, test and attitude; therefore it is necessary to reinforce the students' reflection writing capabilities. According to the recommendation proposed by Falls (2001), students may write reflection based upon assessment rubrics of reflection. In addition to convenience for writing reflection, it allows reviewing students' learning process and learning behavior easily from their reflections. Also, teachers may encourage students to review peer reflection as possible so they can observe and learn peers' reflection writing skills to improve their writing capabilities. Moreover, by reviewing peer reflection, the students may understand peers' learning processes and outcomes and serve as an apocalypse for learning.
Falls (2001) mentions that when students are writing reflection, the teacher should teach them how to write reflection and discuss writing skills, and students need more time to practice writing sophisticated reflection. From students’ portfolios, we find the content of their reflections is not profound enough, therefore the reflection activities require more refined demonstration, guidance and support from teachers. As Stone (1998) suggests, it is difficult for students to write reflection, because reflection is a process needing assistance and guidance.

Despite the Web-based portfolio assessment system provides outlines for writing reflection and teachers have explained reflection writing strategies, which have dramatically helped students write reflection, however, there are still a few students who use insufficient words when writing reflection or use inappropriate words in their reflection. If the system offers suitable or frequently used words or phrases, not only the wiring of reflection will be improved but also the quality of reflection will be further boosted.

This study induces categories of reflection simply based on the words and phrases in the reflection, without in-depth exploration of reflection through the content analysis or discourse analysis. What messages are shown in reflection? Do the messages reflect the students’ introspection? Can they reflect the students’ improvement in learning? These are all critical issues that should be addressed in follow-up studies.

References


Japanese case study on key-competencies for active citizenship by Internet Learning Communities

Yoshihiro Tatsuta, National Institution of Educational Research of Japan; Tomio Saku, Internet Learning Community for Citizen, Junnichi, Yamanishi, Toyama University

A. Framework of Key Competencies for Active Citizenship

1. Cultural Traits of KC - Similarities and Differences as one of Eastern culture

In this presentation, we assume Japanese traits of key competencies for active citizenship. There are Japanese traits such as competencies of unique vision of the world, narrative competencies in high social context, social competencies of Japanese sense of duty called ‘Giri’ relationship, co-existence with heterogeneity, and tool competencies of Japanese language, knowledge and skills with body and spirits, and harmonious technology with nature.

In real learning community, what factors influence Japanese active citizenship?

Especially many researchers on Japan, either Japanese or foreign ones, have stressed that there is unique concept in Japan called ‘Wa’ which means confusion or combination, or harmony with heterogeneous culture between human and nature, rationality and emotion, and human touch and technology, eastern and western cooking, etc. when we think about the core concept of key competencies, DeSeCo located the core ability to reflect. But in the case of Internet Learning Community, there are many innovations continuing to combine between human touch and technology, eastern and western, universal and indigenous culture, learning and the other sectors in the context of key competencies.

2. Regional and Indigenous culture

Social and historical backgrounds of the Internet Learning Community called Shiminjuku

There was the cultural tradition based upon long history of medical peddler in Japan. And we have traditional educational system called Juku. These two traditions have formed a new type of learning community in Japan.

Juku means flexible educational system in Japanese traditional education.

In Edo era, ‘Terakoya’ had proposed for popular people, where were more than 10 thousands small schools to teach literacy and numeracy. In the other hand, Samurai had learnt in schools proposed by each clan and general knowledge and skill to become great samurai as governer.

However Juku had been the intermediate school between them and proposed flexible programs from basic knowledge to advanced ones for many people.

In present days, private Juku has many roles in Japanese educational system and there are many type of Juku in Japan.

Second trait of Internet learning community is a peddler network of Toyama. Peddler network is a social network made by merchant and learning network is a social network by citizen themselves for all area of Japan.
B. Internet Learning Community for active citizenship

1. On Learning Community for Citizen

Learning Community called Internet Shimin-juku System is an active e-learning platform using the information and communication technology such as cellular phones, personal computers, PDA and so on. This citizen Juku had begun in Toyama prefecture as a co-operative research of citizen, local government, business and university.

Representative trait of this learning community is that these users can make their own lecture course and can become learner as well as teacher.

So this system have many functions such as eLearning, blog, lecturer-training courses, eMentor, SNS and CMS, etc, as using Internet, supporting civic lecturer and learning communities.

Citizens can hold their own course (virtual classroom) at anytime, anywhere and any style by this open learning community on the Internet. A lot of members in Japan, more than 100,000 members, participate in this system as a teacher and/or a learner who teaches and learns each other. "Relational knowledge extensive model" which is self-multiplication system extended to the various regions as an innovational lifelong learning model in Japan.

The Learning Community for Citizen is providing service in 12 each region in Japan. It spread to each place from Toyama. In Toyama, local government, universities, companies, NPO and so on manage cooperatively and support learning activities for citizen.

2. System

(1) Most importantly, it differs from a general e-learning system. Main different point of this system is the function to bring up a lot of citizen teachers. Learners in this system are given chances to have a role as teachers in the Web. They are learning through teaching as the following supports each other: supports for the teachers, support for the learners, supports for the operational staff members.

Teaching is the best action for learning. There are many devices that learners change their role as teachers.

(2) Learning in a community type of Learning Community for Citizen has a unique characteristic, which stress much of the informal learning and non-formal learning to deepen relationship with other person, not only skilling up of knowledge.

There are generally much ways of lectures by movie and participatory learning, drill type, and text learning type to learn Web teaching materials.
Internet citizen can learn by the other type as workshop type, joint research type, activity report type and so on. They can learn out of web. They gather in some area for face to face meeting as schooling and much communications each others.

As learning contents, there are a variety of themes. which exceed more than over 100 in one year at Toyama.

3. Case studies

Case 1. Ms. Shiori (free broadcaster, 41 age old)
She thought new stage in her life and opened her course on good communication continuing her regular work. She had a goals that all learner could be starring role. In her regular work, goals and themes are decided other staff. But in this course, she have to decide goals, curriculum and materials with her own management. So she had a feeling of heavy responsibility and learned many thing to teach. In her teaching process, she made an ingenious plan that learner could learn themselves. This job was new aspects which she had never experienced in her regular work.

One year later, her students have used learned result to their work and life and they had begun their own courses as lectures. So there are many baton relaying by learners. Her most outcome is that she can have high pride and new goals in her life.

Case 2  Ms. Nagomi  (part time worker, 51 age old)
To overcome her unintended result in office, she had learnt Ms. Shiori’s course. She had a good communication with many generations and many people.

Before participating Learning Community, she had felt imposed load at many studies. It was very hard to go schools with multitasking to work in office, at home and to play a role of parent. She felt a difficult learning on other learner's pace. In internet learning she could arrange her time and make her pace. Through Shiori’ s course, she had released her difficult sense of learning and brought her positive attitude for social activities.

After her course, she had begun new circle activity to support deep exchange with many people for her goal to social contribution. In this circle, she gathered same volunteer and expanded her activity to vitalize each others. So she challenges new learning of coaching and specialist for mental care to advance her communication skill.

She is sure that I had full of days of enjoyment of learning for the first time in my adulthood. This learning community is very different from other learning system.

Case 3. Mr. Yasuo (entrepreneur, 73 age old)
After retirement, he hoped to have interaction with some people and to get information by computer and learned skills to use it. Just learning it, his wife had heavy decease and he tried to learn health for curing her. When he had many knowledge and skills on health, he hoped to deliver them and became a lecturer. Planning his course, he learned more and deeper. Through his teaching, he felt his experience was useful for many people and he found a joy of teaching. His learners are aware of his positive life in old ages and his aging is a model for them. After teaching experience in learning community, he rose up new business on health. He said, ‘to keep on health need to learn and good communications give big energy to people’. He found a company in 71 years old.
4. Main functions of Internet Learning Community

A. New model of lifelong learning platform on the Web

This model functions resolutions of following tasks as ‘Relational knowledge extensive model’.
- Disparity of opportunities for social participation in lifelong learning
- Mutual learning and teaching model with citizens each other
- Impediment of access to increase the level of learning
- Promotion of self-support/self-multiplication learning

B. Management of learning community by citizen

In this system, there are many Shiminjuku in Japan. Those Juku are managed by citizen in each region autonomously.

C. Approach for regional problems

Support for youth to make independent on their job and life.
- Disaster prevention education
- Encouragement new businesses

D. Advancement of regional informatization

Encouragement for citizens' daily IT practice (learning participation at home)

Participation to social activities through the Internet

E. Scalability

It spreads to the various regions as a new model with citizen's participation. It has been spreading from Toyama to the entire nation. Learning communities were established by local government, universities, and enterprises in each area. Multiple regional sites run on the same network and thus cross-border learning activities are accelerated.

The following motivation is common to these citizen lecturers.

To learn through teaching: lecturers have to learn to construct their courses and have many communications with their student preparing their materials. So necessarily they need to advance their skills and knowledge as an expert.

To learn from their student and participants of learning community.

They are teaching and connecting with participants in wide generations, so they can get more knowledge and skills for learning and for their theme thorough learning communities.

To find their own selves through learning and teaching

When they manage their course and have a dialogue with their students, they can reflect themselves by their former experience and by other opinions from adult students.

To open for making their new goals to learn

Responding to learner's request, they can find and make a new goal toward new stage of learning.
5. Lecturer creates new lecturer for active citizenship

Internet Learning Communities are making human and social capital in each area. It means that this system contributes not only to propose learning opportunities but also to make human capital as new lecturers and to create community knowledge and community relationships as social capital.

In this system, many lecturers and learners have convinced that teaching is best way to learn. New citizen lecturer continues to rise out of participants. There is a relay of learning and teaching. "Relay of baton for learning" is born beyond generations.

So it is useful for creating a good communication with community people toward community activities such as community business, sustainable movement of community culture and environment, disaster prevention, partnership between school, family and community, etc.

6. Evaluation as key competencies for active citizenship

1) Effect of becoming a citizen lecturer from learner

To make a design of program is a good chance to reflect their experience, knowledge and skills. And many practices of contributing what parts of their courses, for whom and by how, are good resources for their developments to act autonomously. Participants of learning community have different backgrounds as generation, occupation and experiences. Lecturers have to understand the heterogeneous context and to teach with dialogue for them. So they can become problem solver.

2) Learning effect as community type

In community type of learning, they cannot help taking mutual learning style without one-way teaching. Through having communication with new participants, they always need to make a relationship and strengthen their soft skills. Drawing from tacit knowledge and know-how leads to add and combine new knowledge each other. Output from these exchanges leads trust and positive relations as social capital. Especially this process on internet is needed to use digital tools, too.

It shows in table 1 that these effects relate some competencies by interview research for participants of learning community in Toyama.

<table>
<thead>
<tr>
<th>competency</th>
<th>ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting in socially</td>
<td>To participate and have social meetings</td>
</tr>
<tr>
<td>heterogeneous group</td>
<td>To make better relationship in social network</td>
</tr>
<tr>
<td></td>
<td>To make cooperative relations</td>
</tr>
<tr>
<td></td>
<td>To bring up teamwork with community people</td>
</tr>
<tr>
<td></td>
<td>To solve problems in community</td>
</tr>
<tr>
<td></td>
<td>To understand heterogeneous cultures</td>
</tr>
<tr>
<td>Acing autonomously</td>
<td>To have a wider vision for community</td>
</tr>
<tr>
<td></td>
<td>To make and think new alternatives</td>
</tr>
<tr>
<td></td>
<td>To analyze social possibilities and risks</td>
</tr>
<tr>
<td></td>
<td>To make a strategy for social goals</td>
</tr>
<tr>
<td></td>
<td>To get resources of person, budget, knowledge</td>
</tr>
<tr>
<td></td>
<td>To manage a process for activity</td>
</tr>
<tr>
<td>Using tools</td>
<td>To have literacy skills in community</td>
</tr>
<tr>
<td></td>
<td>To have better dialogue</td>
</tr>
<tr>
<td></td>
<td>To have skills for tools and technology</td>
</tr>
<tr>
<td></td>
<td>To understand social context</td>
</tr>
<tr>
<td></td>
<td>To apply new tools and technology</td>
</tr>
</tbody>
</table>

It shows in table 1 that these effects relate some competencies by interview research for participants of learning community in Toyama.
### Table 1  Features of Learning Community for Citizen and effects of key competencies

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Effects shown in the Learning Community for Citizen</th>
<th>effect of ICT</th>
<th>effect to become a citizen lecturer</th>
<th>effect of community type learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advancement of soft skills and to understand others well</td>
<td>To improve of accessibility to learning without barrier in life and occupation. To progress ability to learn and teach To harmonize with other people and improvement of relationship</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Advancement of Self-awareness competency</td>
<td>To make a life plan and to evaluate To move a plan in action To get other supporter To have new goals for personal development To understand different perspectives and have an insight into other's thinking To learn by other participants To learn skills and knowledge of know-how for self-discovery through experiences</td>
<td>○ ○  ○</td>
<td></td>
<td>○ ○ ○</td>
</tr>
<tr>
<td>Upgrade of competency to use tools</td>
<td>To make materials digitalize To learn methods for instruction To learn a variety of learning method. To get other's cooperation for using many tools To draw out many idea in each other.</td>
<td>○ ○ ○ ○ ○ ○</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ●</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ●</td>
</tr>
</tbody>
</table>

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Towards successful implementation of ePortfolios in blended learning

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University of Zagreb, Faculty of Organization and Informatics Varazdin

Introduction

Within its E-learning strategy developed in July 2007, the University of Zagreb defined that it would establish and maintain the ePortfolio system at the University and/or at the faculties belonging to the University. According to the report of the Office for E-Learning at the University of Zagreb, 11 of its faculties have announced a plan for conducting other activities defined by the E-learning strategy, among which is ePortfolio. To date several researches within the Centre for E-Learning have dealt with certain professional aspects of ePortfolio, such as the functionalities of tools that support ePortfolio. However, comprehensive research has neither been conducted by the Centre nor any university in Croatia. Therefore, the ePortfolio experience at the Faculty of Organization and Informatics (FOI), which belongs to the University of Zagreb, represents a very valuable contribution to supporting and developing lifelong learning in Croatia. This paper presents the most important steps in the process of ePortfolio implementation at the Faculty of Organization and Informatics. In the paper all the key aspects are considered and shown for the first time as a concept in its entirety: from a pilot project to its successful implementation at the course level.

The pilot project

The first phase was initiated in the winter semester of the academic year 2008/2009, during which an ePortfolio system was implemented in a hybrid course Security of Information Systems and as support for an international Tempus project. For this pilot ePortfolio implementation the following goals were defined: 1. To choose which ePortfolio system would be the best to use at the Faculty regarding the course structure since most of the courses at the Faculty are organized in a similar manner; and 2. To introduce the ePortfolio concept to students and educators.

The students were given a quick tutorial on using the ePortfolio systems and were also given assignments which they had to complete simultaneously in both ePortfolio systems at the end of each week (see Table 1). Since this was the students’ first encounter with such a system, a lecture was given as an introduction to the concept of ePortfolio, as well to ePortfolio as a tool which they would use in the course. In addition, an agenda shown in Table 1 with stages of the ePortfolio implementation and its usage was given to students. Thus the students had a full insight into the entire process: they knew what their assignments were and what would be expected from them at any moment. In that same week they were given a quick tutorial on the use of the ePortfolio systems Mahara and ELGG in their laboratory classes. Further details about the pilot project execution can be found in Balaban (2010).

Table 1. Stages of the pilot project and instructions for students

| Stage | Title and description:
|-------|----------------------------------------------------------|
| 1     | Introduction to ePortfolio  
|       | 1. Introduction to the ePortfolio concept and systems; The need for an ePortfolio; Power of reflection  
|       | 2. Logging into the systems and artefact upload:  
|       | a. Upload course related artefacts: seminar, presentation, practical work  
|       | b. Personal artefact upload (4-5 artefacts) --> "Best of me" section  
|       | c. Tag the artefacts as follows:  
|       | i. All course related artefacts are to be tagged with SIS08  
|       | ii. Tag all personal related artefacts arbitrarily  
|       | 3. Fill in a personal profile (including the resume) and review at least 5 profiles of your peers |
| 2     | Reflecting on ePortfolio |
1. Monitor progress, problem solving …
2. Reflect by answering the questions according to the template:
   a. What have I learned about the ePortfolio?
   b. What was the most interesting thing about using the ePortfolio so far? Explain why.
   c. What was less interesting in the ePortfolio? Why?
   d. Where can I apply the ePortfolio in the process of my lifelong learning?
3. Split in groups. Make a view available only to peers from your group in which you will include the reflection made in Step 2. Use the ePortfolio systems to give feedback on reflections made by other peers within your group.

3 Using ePortfolio to make course related reflections
1. Monitor progress, problem solving …
2. Now a set of tasks has been created. Reflect on all 4 major units learned in laboratory exercises. For each of them, answer the following questions by using the given template:
   a. What have I learned in this unit?
   b. What was the most interesting part of this unit? Why?
   c. What was less interesting? Why?
   d. Where can I apply it in future?

4 Analyzing the results and evaluating the systems
1. Final conversation about experience and impressions.
2. Analyzing and scoring students’ work in ePortfolio.
3. Evaluating the ePortfolio systems used during classes.

Both goals were accomplished and in the course of the pilot project a comprehensive questionnaire (Balaban & Bubas, 2009) was also created to enable evaluation and comparison of different ePortfolio systems. Finally, the ePortfolio system Mahara was chosen as the default ePortfolio system at the Faculty as its interoperability enabled very tight integration with the Faculty’s learning management system Moodle.

Preparing the environment and the students
Based on the results from the pilot project, a second phase was initiated. For this phase a twofold goal was defined:

1. To install and provide support for the needed ICT functionalities; and 2. To prepare students to work with ePortfolio. Among the ICT-related issues it was necessary to decide on hardware and software requirements, study the possibilities of Moodle and Mahara integration and determine whether changes in the application interface would be needed. The process of introducing the ePortfolio concept to students through training tasks was conducted within the course Informatics

2. This course, which is taught in the summer semester, is enrolled by undergraduate students. They were introduced to the ePortfolio concept and its application in lifelong learning. In addition, Mahara ePortfolio was demonstrated to them with a detailed description of its functionalities and its particular support to lifelong learning concepts. Besides working with the application, students learned how to (self)-reflect and present their artefacts in different ePortfolio views.

ICT support
Before deciding which Web application to use as the official ePortfolio system it is essential to analyze the technical requirements and organizational issues related to ePortfolio implementation. From the technical perspective it is important that the system is reliable and that it does not require constant maintenance. The system should be able run on inexpensive hardware and it should be easy to scale in case of an increased load. Finally, one of the probably most important technical requirements is that the ePortfolio system should be both secure and easy to use.

Introduction to Mahara

Mahara (Derrin et al., 2010) is an Open Source ePortfolio and social-networking Web application (Wikipedia). What distinguishes Mahara from other similar systems is that Mahara puts a strong emphasis on the ePortfolio part of the system. Other similar applications like Elgg (Mayank, 2008) are primarily social-networking applications that can be configured to serve as a kind of an ePortfolio
solution. Mahara is an Open Source solution available under the GNU GPL v3 license (2010). Basically this license permits free usage and modification of the Mahara system by giving:

- freedom to use the software for any purpose,
- freedom to change the software to suit your needs,
- freedom to share the software, and
- freedom to share the changes you make.

It is developed using the well known and reliable Open Source technologies (Linux, PHP, Apache, MySQL/PostgreSQL).

Technical and organizational considerations

Although Mahara does not essentially support advanced horizontal scaling methods it can be scaled horizontally since it is built on standard Open Source technologies that offer a variety of plug-ins. As it is an Open Source application every potential security problem is quickly detected by community members and required patches are quickly available for download. During the last two years that we have been running Mahara, the system has proved itself to be reliable although more bugs were detected in the system than we initially anticipated. The bugs were usually of minor importance and were mostly related to system’s usability. After filling out the bug report the development community would quickly respond so patches were provided in a reasonable time. Since Mahara is a relatively new application that has gone through a few substantial code changes it is understandable that there bugs will occur in the system. However, it is important to note that there have not been any bugs that would lead to security breaches. It should also be mentioned that the number of bugs has decreased in recent versions of the system due to system maturity and achieving a stable code base.

Besides merely technical considerations it is important to consider organizational issues and the overall environment in which the ePortfolio will be implemented. Each student should be given its ePortfolio user account at the beginning of the first semester and students should have access to their ePortfolio until they graduate. Since ePortfolio is a collection of personal achievements students should be able to keep those records after finishing their study. Furthermore, besides tracking students’ personal achievement records an ePortfolio should be used in the everyday learning process so the teacher must have an option to give students assignments related to using the ePortfolio system. To make those assignments feasible, it is evident that the ePortfolio system must support an export functionality and that it should be possible to integrate it with the institution’s Learning Management System. Moodle, which is the Faculty’s official Learning Management System, and Mahara can be connected at the authentication level so users can switch from one system to another while having to enter their credentials in order to authenticate themselves only once. Moreover, Mahara version 1.2.0 supports import and export of ePortfolio data with LEAP2A support and static HTML export. By providing LEAP2A and HTML export support we can be sure that each student will be able to transfer their ePortfolio data after finishing their education. Owing to this we can roughly plan a maximum number of students as we are certain that we would be able to delete previous students’ accounts (and data) without having to plan long term data backups.

Integration and customization

Figure 1 shows the overall positioning of the ePortfolio system from both organizational and technical perspective. An ePortfolio system has to communicate with the LMS system, Digital Library and Student Information System. At present the only existing integration is the one with LMS, which only exists at the login level (Single Sign-On, SSO). Since Mahara currently supports the LEAP2A standard (Grant, 2010) there is not much that can be done regarding Mahara’s integration with LMS on the side of the ePortfolio application itself. For users to be able to export and import their data from LMS to ePortfolio, LMS system must also support exporting and importing data using the LEAP2A standard. Moodle 2.0, which will be published in July 2010, will fully support importing and, even more importantly, exporting of various data (snapshots of forums, assignments, etc.) to the Mahara ePortfolio system. So, given the SSO and import/export functionality to be provided by Moodle 2.0, full integration between ePortfolio and LMS will be possible. Nevertheless, the integration of Mahara with other systems like the Digital Library and Student Information System will be more difficult since currently no API for accessing internal Mahara data using the standard Web services technologies like SOAP, REST or XML-RPC is available. One option is to leverage the new Moodle 2.0 Web services and use a tight integration between Moodle and Mahara.
to control user data only on the Moodle side. Although this would make some segments of user administration easier it does not provide a solution flexible enough to support a wide range of desired functionalities. As a result, it is up to the development community to build Web services support to allow for a full integration of Mahara with external systems on the user level.

**Figure 1**

<table>
<thead>
<tr>
<th></th>
<th>e-Learning@FOI</th>
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<tbody>
<tr>
<td>LMS –Moodle</td>
<td>e-Potfolio - Mahara</td>
</tr>
<tr>
<td>Digital Library</td>
<td></td>
</tr>
<tr>
<td>Student Information System</td>
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Mahara has been designed to be easily pluggable and customizable and it is exactly for that reason that it is written in the PHP programming language. The entire Mahara architecture is organized around plugins (**3**, 2009), from content types to user authentication and each plugin can be modified and customized. Besides, Mahara's core is written in a framework-like fashion so it easy for developers to develop new functionalities/plugins on top of the Mahara core system. Since Mahara supports a wide range of functionalities not much configuration was required to fit it in the Faculty's e-learning process. The SSO integration with Moodle, also known as Mahoodle (2010), is well documented and it was easy to set up because Moodle provides support for integration from its side as well. Visual design is also easily customizable since Mahara uses a standard template system similar to products like Moodle, Drupal and Joomla. As for the time being there is no support for the Croatian language we are using the interface in English, although it is being translated into Croatian.

**Introducing ePortfolio to students**

The course Informatics 2 is taught in the summer semester and is enrolled by most of the students at FOI. This blended course is used to introduce the ePortfolio to students. For that purpose several lectures were delivered to students accompanied by ePortfolio materials explaining the ePortfolio, its purpose in lifelong learning along with potential benefits. These introductory actions were almost identical to stages 1 and 2 in the pilot project. In addition, laboratory sessions were held to make students familiar with Mahara as an ePortfolio application and its functionalities. After that, students had two weeks to try out the application, to explore the reflections segment and do their first task in ePortfolio. It consisted of making their own reflections about the ePortfolio following the questions provided in the template. The questions were the same as those in stage 2 of the pilot project (see Table 1, stage 2, task 2).

Other reflections were related to the remaining three main topics of the laboratory exercises: Linux OS, OpenOffice and Python programming. Students were asked to reflect on those topics according to the instructions provided in the template. The template for reflection was provided at the end of each topic.

At the end of the semester the students stated that they had found reflections very interesting. On the other hand, the teachers were given feedback about the topics and the attractiveness of the content, which enabled them to make slight modifications accordingly. In the course of the semester the students got familiar with ePortfolio and learned how to use the system. They also learned how to use ePortfolio as a pedagogical tool since their reflections were evaluated. Moreover, they were prepared to show their CV or to create a showcase ePortfolio to present themselves in different contexts. With all this, prerequisites were met for a comprehensive usage of ePortfolio in other courses.

**Full scale use in blended course**

In the fourth semester of the undergraduate study students enrol in the course Selected Chapters of Mathematics (SCM), which is quite a complex course consisting of six chapters. In addition to monthly tests, students have to work on many problem-solving exercises that imply using mathematical theory as well as ICT tools that support problem solving. The ePortfolio was therefore introduced in order to fulfil two goals: 1. To enable students to reflect on their progress in the course; and 2. To provide a tool
for the assessment of learning outcomes to be used by both students and teachers. At the end of the course, evaluation of ePortfolio implementation was conducted.

Course description

EPortfolio was introduced as a new element in continuous assessment of students’ coursework on the SCM course in the academic year 2008/2009. The course is taught in the fourth semester of the Information Systems study programme. It is generally considered as a difficult course and one not easy to pass because it covers a variety of mathematical topics and a certain level of mathematical pre-knowledge is required. Therefore, one of the goals of ePortfolio implementation was to investigate problems students encounter during the course and devise possible teaching strategies to overcome them. In order to do so, students were asked to write their reflections on the course itself (topics, the role of the course in the curriculum, possibility of usage and implementation of the course content, etc.), course activities and their performance. Furthermore, there is also a discussion on the accomplishments and difficulties arising during the course, involving clarifying the concepts within the course and its integration with other courses, as well as reflections on mathematical modelling and the role of mathematics in the IT profession in general.

The methodology of ePortfolio use

SCM is structured into six chapters, so students had to reflect on the issues they had learned, referring to the learning outcomes, for each particular chapter continuously. Students’ reflections in ePortfolio needed to be written within two weeks after the lectures on a certain chapter had finished. In doing so, the open source ePortfolio system Mahara was used. This system enables students to write their reflections in the form of a blog with six posts corresponding to each of the aforementioned chapters. This blog system is fairly functional because one can see the date of the last post editing and the attachments can be commented separately (i.e. feedback can be given to students for each attachment). Along with every reflection students also needed to attach an artefact (homework, solved test, solved midterm exam, solved exercise from lecture presentation, model, description of its possible application, organized lecture notes, computer experiment made, for instance, in Wolfram Mathematica, etc.) explaining why they had decided to attach that particular artefact. The work done in ePortfolio was not an obligatory condition for fulfilling their course requirements and getting the professor’s signature in their student’s transcript. However, by participating in it students were able to collect 6% of the total amount of points awarded for coursework in SCM (i.e., 6 points, or one for each chapter). In awarding these points, teachers used the following criteria: student understanding of the basic course concepts presented in the reflection, student achievement evidenced by the attached artefacts and creativity of their choice. The teachers’ motivation for introducing this new kind of assessment was to systematically gather reflections and evaluation of learning outcomes in working with a large group of students (approximately 250 students on SCM and only 3 teachers – 1 professor and 2 teaching assistants). In this teaching environment there is a significant number of students who do not have the opportunity to express their opinion and the teachers can hardly manage to monitor their individual achievements. The intention of using ePortfolio was thus to obtain a certain insight into the progress and work of each student. It is important to mention that the activity related to ePortfolio represents a contribution to the usage of technology in education and, on the other hand, serves in raising the students’ awareness about their own work and progress in the course.

Results

Since e-learning is implemented rather intensely at the Faculty of Organization and Informatics, it is common for a questionnaire on students’ satisfaction with the SCM course to be conducted at the end of the term, for which LMS Moodle is commonly used. The questions include those concerning the learning and teaching environment in SCM. Two new questions were added to the questionnaire in the academic year 2008/2009 concerning the ePortfolio activity: whether ePortfolio was useful to them and how much time they spent on average working on their reflections. In the sample, round 55% answered that ePortfolio was useful or even very useful to them, which is a good result considering the fact that ePortfolio was a novelty to them. Others were indifferent or not so favourable. We have to point out that among those examinees there were also students who had not participated in ePortfolio exercise. Students were also asked to provide quantitative analysis of the usefulness of ePortfolio based on which some improvements for next academic year have been prepared. Most criticism was pointed towards the fact that the portfolio exercise is very time consuming and that six reflections in one semester were too much to write. In the academic year 2009/2010 the results were better because 80% responded that e-portfolio
was useful or even very useful to them. It can be considered that better results are due to some organizational changes we introduced in that academic year. First of all, that student has to write their reflections only three times in one semester.

The following part of this section contains a more detailed analysis of students’ ePortfolio results and their relation to the total sum of course points awarded to students for their coursework (i.e., ePortfolio together with the all the other activities). In order to determine whether there is any relation between the two, the aforementioned data were shown in a graph.

**Figure 2. Relation between ePortfolio points and course total points**

![](image1.png)

To fulfill their course obligations and get the professor’s signature in the student's transcript, each student needs to collect at least 20 points out of a possible 100. Otherwise they have to enrol the SCM course again in the following year. Having collected between 20 and 50 points, students are entitled to take a regular exam. To pass SCM on the account of their coursework, which is continuously assessed, students need to collect at least 50 points. Consequently, there are two thresholds of interest: 20 and 50 points. In **Figure 2** it is evident that most students are grouped around those two numbers. Except this horizontal grouping, we also have vertical grouping: 55% of all students have 5 or 6 points, 25% have 1, 2, 3 or 4 points and 20% of them 0 points. Therefore this analysis indicates that students can be divided into 3 separate groups for further analysis: students who got 5 or 6 points for their ePortfolio activity (i.e., the “Upper group”), students who got 4,3,2 or 1 point for their ePortfolio activity (i.e., the “Middle group”) and those who decided not to do activities in ePortfolio (0 points for ePortfolio activity – i.e., the “Bottom group”). Figures 2, 3 and 4 show the relation between these groups.

**Figure 3. Score distribution in the “Upper group”**

![](image2.png)

The Upper group consists of students who devoted their time to writing reflections following the instructions and did so for every chapter (except perhaps one). They showed a certain level of understanding of the course matter. The results in **Figure 3** show that most of them are grouped around 50 points or more. The Middle group is quite different. The majority of students in this group are slightly shifted to the left, which means that most of them did not pass SCM through their coursework and are situated between 20 and 50 points (**Figure 4**). It can be assumed that they had intended to pass SCM through their coursework but the assignments turned out to be slightly too difficult for them at the time.
Finally, it is obvious that no-one from the Bottom group passed SCM through their coursework, the only exception being one student who succeeded in doing so due to additional exercises.

*Figure 4. Score distribution in the "Middle group"*

*Figure 5. Score distribution in the "Bottom group"*

Results in *Figure 5* suggest that the students’ goal was merely to reach 20 points so they would not have to take SCM again in the following year. The number of students in each group who eventually passed the course through their coursework is shown in *Figure 6*. It is evident that a great majority of students who passed the course in this way were in the Upper group. We can therefore use the ePortfolio analysis as a useful instrument to identify students’ competences and motivation in the course. As ePortfolio is associated with learning outcomes, it is reasonable to analyze the artefacts students attach (notes, short tests, midterm tests, homework etc.). It may be helpful to analyze the nature of their reflections as well (i.e. do they reveal understanding or are simply copy-and-paste definitions).

*Figure 6. Comparison between categories regarding the pass rate*
These issues provide a possible course of further research and more thorough analysis. Finally, we would like to emphasise the role of ePortfolio in the process of raising students’ awareness and critical thinking about their own achievements and motivation. This, along with self-monitoring their learning progress, has a vast influence on their study success.

Conclusion
This paper presents the process of ePortfolio implementation over almost 18 months starting from the pilot project and ending with its full scale implementation. Today more than 500 students are using ePortfolio at the Faculty of Organization and Informatics. This is the second year that ePortfolio has been used in the courses Informatics 2 and SCM. We intend to introduce ePortfolio in a few other courses, one of which is the Psychology of Teaching. In this course students will be taught how to use ePortfolio to set up their own goals and monitor their own progress in achieving those goals. It is obvious that, if the potential of ePortfolio is to be entirely exploited, students should also be introduced to lifelong learning and how ePortfolio supports its elements. We hope that in a few years we will be able to fully utilize ePortfolio capabilities not only as a pedagogical tool but as a concept embraced by students, educators and employers. That kind of a concept would enable students to not only become more effective and reflective learners, but also to present themselves to future employers and all the other stakeholders.

References
1. *** (2010) GNU LICENCES, HTTP://WWW.GNU.ORG/LICENSES/
Examining Learners’ selecting, organising, and integrating process in a knowledge management system

Yang, Fu-fen & Yeh, Hui-chin

Abstract

With the rapid development of technology, technology has played an increasingly significant role in all types of classrooms. For most language classrooms, language teaching websites or softwares have mushroomed to assist students to develop their language ability. However, what matters most is that most students, particularly non-English major, cannot actually benefit from the authentic and rich resources for their English deficiency. Thus, this paper intended to take the problems into account and develop a supportive authorizing system of web content management to assist learners in English learning and teachers in teaching.

The researcher attempted to develop this system for both teachers and students not only to make a web-based learning environment more inviting and effective but also to document students’ learning and knowledge management process in the system. The system will play the role of a virtual assistant to scaffold, support, and evaluate students’ learning outcomes. The system consists of the mechanisms embedded in the Student Interface, including: (1) Teachers’ guiding instruction in dialogue boxes, (2) New Vocabulary Folders, (3) Learned Vocabulary Folders, (4) Confusing Sentences, (5) Writing Outline, and (6) Writing Summary (7) Generating test items. In Teacher Interface, the teacher could monitor students’ learning and knowledge management process through the trace result in this system. The teacher first selects a student’s ID and then clicks the button “action details.” He will get a report presenting which articles the student has read, and which folders the student has organised. The system also provides the teacher with an overall statistics of the actions that students have taken in the system.

Grounded in the theory of cognitive processing proposed by Mayer (1999), SOL model (Select, Organise, and Integrate). This study intends to look into learners’ SOL process to understand how they manage their knowledge (SOI) through learning English through different online websites annotated by teachers. Selecting means how to help learners focus on selecting the relevant pieces of information. Organising means how to help learners organise the incoming information into a coherent representation. Integrating means how to help learners activate and use prior knowledge and activate and coordinate multiple representations of the materials. Based on the purposes of this study, three research questions will be addressed: (1) What is English as a Foreign Language (EFL) students’ learning and knowledge management process in the system? (2) What are the problems and solutions that EFL students have in using the system? (3) How are SOL model manifested in students’ learning and knowledge management process?

A sample of 110 EFL college students who enrolled in a “Multimedia Class” in a university of science and technology in central Taiwan participated in this study. They are engaged in different online tasks designed by the instructor. They are encouraged to use different Folders in the system to manage their knowledge and learning. It was found that students’ progress could be identified from their learning process in improving their organising and integrating strategies and their perceptions toward progress in the system. This study suggests that, rather than relying solely on an examination of students’ scores in comprehension test, there may be benefits for teachers to encourage students to actively and continually select incoming information, organise those information and further integrating what was learned.

Underlying the design of these mechanisms are constructivist principles that encourage learners to take initiative in their own learning and allow teachers to build an individualised system to realise remedial instruction. With the authoring system, teachers do not need to play the role of major instructors and evaluators. Learners can be guided in their processes of learning and take formative assessment on their own paces. In this way, learners are intrinsically motivated to learn with their own choices of web resources and have multiple accesses to the authentic learning materials through web content management assistance. This developing system makes it possible to turn teachers as authoritative figures into a virtual language learning assistant.
An ePortfolio system to assist teachers in evaluating students’ language learning

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According to Meyer, Arami, Wade, Aslan and Deault (2010), ePortfolios are designed for three purposes: showcase, assessment, and process. The showcase in the ePortfolio refers to the concept that students, while many ePortfolios have been contrived for students to upload and organise the information, drawbacks are still remained. First, the current ePortfolios do not offer students many supports when they are collecting and organising the knowledgeable information. Students might have few ways to recognize which information they shall store in their ePortfolios and how they can organise and make personal connections among the collected information in a meaningful way. As a consequence, the collected information become fragmented and disconnected (Elena, 2009). Second, without scaffoldings from the system, students might encounter the difficulty in identifying their learning goals since goal setting can be a complicated process in terms of specificity, closeness in time, difficulty or challenge, which will affect students’ learning motivations, affective reactions, and attentions (Bandura & Schunk, 1981; Zimmerman & Kitsantas, 1997; Zimmerman, 2000).

As new system, E-portfoilo, will be developed in this project. The system is designed based on three main learning theories. First, the self-regulated learning (Zimmerman, 1998, 2000) is proposed as the fundamental framework to develop the system, including the phases of forethought, performance, and self-reflection. Second, Mayer’s Selection- Organisation- Integration (SOI) model of text comprehension (1996) is adopted to provide students with strategies for their content management. Finally, a web-based learning community is also advocated because learning is more effective when students are situated in a social context where they can discuss with their teachers and peers about their ideas, experiences and perceptions (Brown, Collins, & Duguid, 1989).

Based on the research purpose to design an ePortfolio system to scaffold teachers in understanding learners, two research questions are proposed:

(1) How do teachers achieve their goals by the strategies of selection, organisation, and integration?
(2) How does the online system support teachers in scaffolding students’ reading?

Participants

Twenty to thirty pre-service teachers who register in a 3-credit graduate course entitled “Computer Assisted Language Learning” will be invited to participate in this study. These pre-service teachers have been learning English as a Foreign Language (EFL) for 10 years and are the first year graduate students in a Master program of English teaching. In this graduate course, the pre-service teachers will receive a teacher training program for five weeks to plan and implement a reading curriculum in this system.

Data collection

The collected data include questionnaires, interviews, and the actions of the trace result in the system. An open-ended questionnaire will be first designed to investigate teachers’ teaching strategy use, difficulty in teaching, and personal reactions toward the system. Follow-up interviews will be conducted for further clarification to explore how teachers overcome teaching difficulty to reformulate their teaching curriculum in teaching goals, materials, and teaching strategy use. The teachers’ actions of setting teaching goals, sharing the organised teaching materials, and monitoring students’ learning will be documented by trace results, so that the process data will be used to examine how teachers formulate and reformulate their teaching plans and objectives to scaffold their students.
Data Analysis

Data will be analyzed in terms of the trace results, questionnaires, and the follow-up interviews. Actions in the trace results will be used to analyze teachers’ goal setting, content management, and goal evaluation process. The open-ended questionnaire and follow-up interviews with twenty to thirty teachers will be used to explore the difficulties they had experienced in teaching and insights prospective teachers have generated to scaffold students’ reading.

The data will be analyzed by content analysis, including coding, categorization, description, and interpretation (Weber, 1990; Patton, 1990). From the trace results, the open-end questionnaires, as well as follow-up interviews, researchers will first identify the meaningful themes regarding the difficulties teachers have experienced, and insights they have generated to scaffold students’ reading (coding). Next, the meaningful themes will be assigned into different categories (categorization). In categorization, the researcher will compare similar categories by comparing and contrasting the properties of each category, and constantly refine and collapse the categories as stronger themes emerge. Then, the researcher will summarize the main ideas of each category to present teachers’ common difficulties and insights (description). Finally, the researcher will explain the main ideas of each category by offering exemplary cases, drawing conclusions, and making inferences (interpretation).
ELKOPOS – E-Learning-Kompetenzportfolio: presentation and evaluation of e-learning competencies

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Today’s university studies demand students to have competencies in media and e-learning. However, tutors claim that a number of students are lacking these competencies. Several e-learning courses approach this discrepancy and include e-learning specific skills and aptitudes as learning goals in their courses and provide an evaluation thereafter.

The article contributes first, a model of media and e-learning competencies, second, instruments to evaluate these competencies through self-assessment and assessment by tutors and third, a scheduled integration and individualisation of the preceding advances and instruments into an ePortfolio. Advances and obstacles regarding introduction and implementation issues are reported.

The model of media and e-learning competencies allows students as well as lecturers to describe knowledge, skills and attitudes that are related to media literacy, referred to as e-learning competencies. The model was formulated in the context of the E-learning-Label, a means of quality assurance developed at TU Darmstadt, which is introduced to indicate e-learning courses that satisfy predefined criteria and to meet the objectives stipulated in the Bologna Declaration. The integrated model follows the theoretical conception of competencies by Weinert and maps areas of competencies along three levels. According to this model lecturers are asked to specify the learning goals and the didactic potential of their courses. They can administer their courses online and use a web-based tool to generate a course-specific list of competencies and the certificates. In a student course evaluation the students review in how far the intended learning goals were subject of the course and how they estimate their achievement regarding these goals after having attended the course. Additionally a rather coarse-grained and general evaluation and certification on course level is conducted by the lecturer.

The next step of the project will be the integration of the described model and instruments into an ePortfolio following two long term goals: First, the ePortfolio aims at fostering e-learning competencies both explicitly and consciously and therefore at supporting lifelong and self-regulated. Within the ePortfolio students can not only reflect their individual achievement and collect the general certificates as described above, but also specify their competencies by linking them to their personal course work. Several courses at TU Darmstadt already use portfolios for different purposes, so a course in linguistics that uses an ePortfolio for documentation and assessment and a course in didactics of mathematics, that uses paper-based portfolios for learning and for oral examinations. Both examples are used to support the learning and teaching processes. However, they are still isolated in terms of the overall course of studying and remain tied to the specific subject. The project intents to provide an ePortfolio framework that can be used beyond a specific course and is accompanying a whole program of study. The framework is planned to be open for all courses which received the e-learning label and to be linked to CampusNet.

Second, the ePortfolio aims at contributing to the quality improvement in academic teaching and learning in so far as both the cooperation among students and between students and lecturers can be facilitated. Moreover, other forms of evaluation and learning, in particular peer-reviews and peer tutoring, can be promoted, Web 2.0 technologies can be integrated.

The first project phase is completed and advances could be observed in the previous semesters. Lecturers from seven different disciplines participate and consider the project as beneficial and valuable. Obstacles were found especially regarding the upcoming implementation of CampusNet and possible technical and data security issues. Another difficulty is to find a good, i.e. broadly accepted but still learner-oriented, balance between self-assessment and assessment by others in order to counter the assumption students might tend to attribute competencies arbitrarily. Another ongoing challenge will be to integrate portfolios reasonably and appropriately and to find assessment criteria that satisfy the intention of good ePortfolio-based learning.
References


Embarking on the Journey of ePortfolio Experience: A New Approach to Enhance Graduate Employability

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Introduction

In recent years, ePortfolios have been, and are being, introduced as a career development tool by many universities world-wide (Leece 2005). Indeed, our preliminary research results at the City University of Hong Kong (CityU) suggest that of the various types of ePortfolios, students see most value in those designed for job applications. Their role for transition into and across the employment sector and for initial and ongoing professional accreditation is also acknowledged by MacDonald, Liu, Lowell, Tsai and Lohr, who argue that “Knowing how to create an electronic portfolio is a beneficial skill in today’s job market” (2007: 52).

However, while ePortfolios are thought to be beneficial in providing evidence of a job applicant’s skills, there are concerns as to whether employers actually look at them. In Leece's (2005) survey (The University of New England, Australia), only one employer out of eleven had accessed a student portfolio online; another similar survey from the US reports that 16 per cent of companies used ePortfolios in the initial screening stage, and less than one per cent looked at them after the first interview (Ward & Moser: 2008). If ePortfolios are not likely to be viewed by potential employers, is there any intrinsic value in constructing one for employment purposes?

This paper investigates the above question and, based on our preliminary research findings, suggests that the process of creating an ePortfolio may enhance graduate employability by making students pay more explicit attention to factors which employers report they are looking for.

Background and research methods

Since December 2005, the Office of Education Development and General Education (EDGE, formerly known as the Education Development Office, EDO) and the English Language Centre (ELC) at CityU have been exploring the implementation and use of ePortfolios for learning. More recently, we have begun to focus on the relationship between ePortfolios and employability. Specifically, we aim to investigate the role ePortfolios play and could potentially play in the graduate recruitment process in Hong Kong, and to provide a perspective on how ePortfolio development may relate to the enhancement of employability skills.

The current paper addresses three main questions: 1) What are the attributes and skills employers are looking for in graduates? 2) In what ways might ePortfolios enhance graduate employability? 3) To what extent do/would Hong Kong employers consult ePortfolios as part of their recruitment and selection process, if a link to a job applicant's ePortfolio is/were provided?

Early this year, questionnaires were sent to over 800 local employers in order to gain a clearer picture of Hong Kong companies’ management practices and to collect employers’ feedback on the use of ePortfolios in the recruitment process. At the time of writing, we have received 32 responses. In addition, around 600 questionnaires were administered to students who have participated in ePortfolio related activities to collect their perceptions on the relationship between ePortfolios and employment. To date, three employers have participated in face-to-face interviews (See the table below) and in the coming academic year we will continue to invite employers from a variety of industries to focus group interviews.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Industry</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Chan</td>
<td>Human Resources Manager</td>
<td>Packaging</td>
<td>R-PAC Hong Kong Ltd</td>
</tr>
<tr>
<td>Mr Ip</td>
<td>CEO</td>
<td>Consultancy (HR and recruiting service; wealth management service)</td>
<td>Skyplan Group Ltd</td>
</tr>
</tbody>
</table>
Analysis and discussion

What attributes and skills are employers looking for?

Employers look for a specific set of attributes and skills from job applicants that match the attributes and skills necessary to perform a particular job. Beyond the job-specific requirements, numerous studies have shown that employers often seek more generic skills (e.g. communication skills, computer literacy, planning, problem-solving, creativity) that are fundamental to the modern work environment (Leece 2005; Vervenne 2006). The generic skills and strategies listed in the table below are some of those common to any ePortfolio setting. According to our earlier research at the course-based level (The Electronic Learning Portfolio Project 2007/8), skills such as identifying course requirements, evaluating one’s performance, etc. were often perceived to be enhanced (by CityU students). To find out the extent to which these skills overlap with the ones employers seek in job applicants, the employers were asked to indicate how important they judged these skills to be with respect to employee performance appraisal.

<table>
<thead>
<tr>
<th>Skills &amp; Strategies</th>
<th>n = 32 (See Appendix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting goals and planning accordingly</td>
<td>29</td>
</tr>
<tr>
<td>Recognising one’s strengths and weaknesses</td>
<td>28</td>
</tr>
<tr>
<td>Recording accomplishments</td>
<td>26</td>
</tr>
<tr>
<td>Identifying requirements and expectations</td>
<td>27</td>
</tr>
<tr>
<td>Evaluating job performance</td>
<td>26</td>
</tr>
<tr>
<td>A commitment to professional development</td>
<td>23</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>22</td>
</tr>
<tr>
<td>Presenting a positive image of oneself</td>
<td>21</td>
</tr>
<tr>
<td>Providing appropriate evidence for performance claims</td>
<td>21</td>
</tr>
</tbody>
</table>

Ms. Chan says that candidates’ application forms provide potential employers with the first impression of themselves. Neatly filled forms, can to some extent, suggest the candidates are well organised and plan ahead. Mr. Ip, who established his consulting business in Hong Kong after completing his studies in Canada, mentions two must-ask questions when he interviews candidates. They are:

- What are your career aspirations?
- What do you want to be in five years’ time?

The purpose is to find out whether the candidate has a planning and goal setting mindset. Ms. Tang confirms that she wants to find out the same information. In addition to checking a candidate’s planning and goal setting mindset, Ms. Tang believes that a good understanding of oneself can help potential employers match the candidate with the right position. She adds that planning ahead and being able to articulate clearly to employers is a critical strategy that can benefit students in their job-hunting.

Another must-ask question in job interviews, according to all three employers, is “what are your strengths and/or weaknesses”. Ms. Chan explains:

“When one knows his weaknesses, he is more likely to take actions to improve. When one knows his strengths, he can actively pursue a job or position that suits him best.” She goes on to say that if a job applicant can demonstrate this ability [recognising one’s strengths and weaknesses] in the interview, he/she is more likely to stand out.

In our interviews, we also asked the employers to rank the importance in the recruitment process of knowledge, skills and the attitude of candidates. All three considered attitude to be the most crucial factor for job applicants to succeed. Knowledge and skills can be acquired and trained whereas attitudes are more difficult to change. For Mr. Ip, those who are dedicated to the job and committed to continuous
professional development will stand out. Ms. Tang emphasises flexibility, because “the aviation industry is so new that it’s changing every day. We need people who can adapt to changes quickly and have a forward-looking mindset.” Ms. Chan, believes the critical qualities for determining the success of candidates are a can-do attitude, a willingness to learn, sincerity and passion for the job.

However, not many graduates possess such fundamental competencies and attitudes. When comparing fresh graduates with experienced staff, Mr. Ip says that the former do not seem to have the right attitude, possibly resulting from a lack of understanding of job standards and requirement (As we can see from the data above, 27 out of 32 employers regard identifying requirements and expectations as very important or important). Ms. Chan also finds that fresh graduates do not usually know what is expected of them; in other words, they are unaware of job standards. Mr. Ip also highlights a lack of ability to reflect among fresh graduates. He emphasizes the importance of constant reflection on one’s performance, such as asking oneself “Why did I get this result?” and “How can I do it better next time?”, which is crucial for professional improvement and growth. Ms. Tang feels that the young generation are less able to take criticism and are “not as persistent as the old one”. She says: “When encountering problems, young people easily go to their supervisors for solutions or give up altogether.” This view is also echoed by Ms. Chan who says that today’s graduates are “unable to face difficulties and endure hardship”.

How might ePortfolios enhance students’ employability skills?

It is generally accepted that ePortfolios can guide students to develop desired graduate attributes or skills (Leece 2005). As MacDonald, Liu, Lowell, Tsai and Lohr argue: “The processes of deciding upon the portfolio’s purpose, analysing its audience, examining and selecting artifacts to be included, and designing and constructing the electronic interface, all serve to create new knowledge based on old experiences” (2007: 53).

Our preliminary research findings show a promising correlation between the attributes and skills valued by employers and the skills and strategies students think they have developed through the creation of ePortfolios. In other words, certain attributes and skills that employers look for may be developed and enhanced in the process of creating ePortfolios.

Take goal setting and planning as an example. The ePortfolio-creation process provides students with opportunities to reconsider career goals in light of their own reflections and feedback from others. One student we have interviewed elaborates by drawing an analogy between creating an ePortfolio and counseling:

“When you talk to a counselor, what you have just said would bounce back to you. It opens up oneself to understand the matter in a different perspective. When I consider what to put in my ePortfolio, I think about my study and life. I write things down, reorganise them, shuffle them around, I then realize I may want to do that!”

The student explains how developing his ePortfolios has helped him to explore his potential and to set new targets for learning. Another student, after developing three different types of ePortfolio, felt he had found “the perfect tool” to keep him focused through goal setting and planning. He says:

“Life is not always smooth, but I have a clear direction in mind. ePortfolio reminds me of the goals that I have set and ways to achieve these goals, and brings me back on track when I have rough times in my life.”

One of the most significant features of the ePortfolio development process is the assumption that the process ought to enable a job applicant to better articulate his/her competencies and experiences to potential employers. This assumption relates to several skills and strategies that employers value, such as recording accomplishments, recognising one’s strengths and weaknesses and providing appropriate evidence for performance claims. The evidence-selecting-and-collecting process enables students to communicate more confidently about their experiences and achievements. This enhanced communication ability, argues Leece, is supported by multi-literacy skills, reflective journal practices and the ability to critically assess experiences (2005: 77).

The University of Iowa ePortfolio project has demonstrated that as developers compose their ePortfolios, the act of composition itself encourages multidimensional thinking by connecting the evidences of their performance to the established standards (Jun, Achrazoglou & Coghill-Behrends 2007: 45). This can only be successfully achieved if the requirements and expectations of potential employers have been identified first. The project further argues that unlike the linear path of paper portfolios, the interconnectivity of
artifacts across pages in an ePortfolio can promote a deeper understanding of the relationship between standards and performance, promoting a sense of professional efficacy (ibid.)

**Do employers consult ePortfolios?**

We have just argued that the development of ePortfolios may contribute to the enhancement of employability skills (at least from a student perspective), well aware that such skills can be developed in other ways, not necessarily with ePortfolios. Whether employers actually consult ePortfolios is a vital motivating factor (or discouragement if they do not) for students to develop them. Although the literature cited earlier in this paper suggests employers seldom look at job applicants’ ePortfolios, our survey results report a potentially more encouraging finding. Given the chance to click on a link to an ePortfolio within a job application, 27 out of 32 employers report that they would “mostly likely” or “likely” do so. Prior to our visit, all three employers admitted to having little knowledge of ePortfolios, but expressed favourable views about them after being shown a few examples. They commented positively on the “lively and detailed information about the candidates” and felt the ePortfolios were “visually attractive”. Ms. Tang saw the ePortfolio as “an action CV”.

Despite the unanimously favourable views towards ePortfolios reported by our three interviewees, none of them has actually received any ePortfolio links from job seekers, though Ms Tang does recall being highly impressed by a “digital CV” she received on a CD-ROM. And, here it seems, we encounter a negative reinforcement cycle possibly explaining why ePortfolios are not yet a widely accepted and expected feature of the job application process: applicants either do not develop, or do not send links to employment ePortfolios in the belief that potential employers will not take the trouble to look at them. We have yet to verify these assumptions.

Indeed, it may be argued that ePortfolios could be too time consuming for employers to utilise in the recruitment process. Employers we interviewed do admit that they would probably view an ePortfolio in the later stages of the recruitment process rather than during the initial screening. Since “if the candidate’s background doesn’t match the job requirements, there is no point to go through his ePortfolio”. On the other hand, “if a candidate is shortlisted, I don’t mind spending a few minutes on reading his ePortfolio”, says Ms. Chan.

One student we interviewed included his ePortfolio link in his cover letter for a post as supervisor in a students’ residence. Out of 400 applicants, he was one of nine selected. The student thinks that his ePortfolio probably impressed the employer: “I don’t really know if employers read our ePortfolios or not. But if you do send your ePortfolio, you have a bigger chance to stand out than those who don’t.” Another student applying for an internship sent a CD which contained an off-line version of his ePortfolio. When he was offered the job, he was told by his employer that “your CD was very creative. We liked it.” These examples suggest that negative perceptions may be changing and that in the current Hong Kong context potential employers may view ePortfolios given the opportunity.

**Conclusion**

We have argued that the development of ePortfolios can help students develop a set of skills and attributes that employers are looking for. The primary value of ePortfolios, as Leece (2005) also points out, lies within the process of creating them rather than in the end product. We also note, however, a seemingly untapped potential for students to ‘stand out from the crowd’ given the reported willingness by some employers to use ePortfolios as part of the selection process.

**Bibliography**


### Appendix - Employers Surveyed

<table>
<thead>
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<th>Position</th>
<th>Company*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO / President / Chairman</td>
<td>City Entertainment Corporation Ltd</td>
</tr>
<tr>
<td>HR officer</td>
<td>HR officer City Entertainment Corporation Ltd</td>
</tr>
<tr>
<td>HR manager</td>
<td>Hong Kong Aviation Group (Metrojet Ltd &amp; Heliservices)</td>
</tr>
<tr>
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</tr>
<tr>
<td>HR officer</td>
<td>The Economist Group (A/P) Ltd</td>
</tr>
<tr>
<td>HR manager</td>
<td>UDL Holdings Ltd</td>
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<tr>
<td>HR manager</td>
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<tr>
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<td>HR manager Skyplan Group Ltd</td>
</tr>
<tr>
<td></td>
<td>Union Business Machines Co. Ltd</td>
</tr>
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</table>

* Some employers did not provide their company names in the questionnaire.
Strategy of Implementing ePortfolio at the Siberian Federal University

Olga Georgievna Smolyaninova
Siberian Federal University, Russian Federation

The idea of realisation of multiple-aspect authentic assessment of educational results with the help of ePortfolio and transition from “Assessment of Learning” to “Assessment for Learning” technology is very popular in Western universities and rather novel for Russian universities. The existing system of quality assessment does not satisfy the students’ and teachers’ needs at Russian universities, especially in the context of the Bologna process and the two-level system of professional training.

In this article we describe the 3-year long period of disseminating the idea of using ePortfolio method among students and teachers at the Institute of Education, Psychology and Sociology (IEPS) by introducing it to academic courses, work with students in the field of professional orientation, projecting workshops with teachers.

The innovative ePortfolio technology entered the academic process at the IEPS in 2007. We presented the opportunities of ePortfolio method to Bachelor degree students within one of the courses. We aimed at implementing the authentic system of assessment and career planning skill developing. As opportunities of one course are too limited we faced the following problems: low motivation among students, lack of cooperation with teachers of other subjects. As a result this technology did not receive support from Bachelor degree students. ePortfolios contained only extended resumes and several students’ works, mostly in Word format.

Having analyzed the problems of the first stage and after a thorough analysis of our American and European colleagues’ experience during the second stage in 2008 we presented the extended strategy of ePortfolio technology. We started implementing ePortfolio in the program of the 4 courses within IT block of disciplines for Bachelor and Master degree students.

At this stage we checked the stability of innovative changes, possibility of extending ePortfolio technology to different disciplines, prospects of integrative assessment. We assessed the competences of the staff responsible for technical support, risks and deficits of the method, practiced the sections “Start” and “Presentation” of ePortfolio. ePortfolio was launched for Bachelor degree students during the professional orientation activity that had been worked out by the teachers of IEPS for students in order to help them identify their educational and scientific priorities. By the end of the second stage we formed a team of 6 teachers. We also came to clear understanding of ePortfolio structure for Bachelor and Master degree students and prepared a model for the personal ePortfolio, 24 ePortfolios of Bachelor degree students and 9 ePortfolios of Master program students presented on the web-site of our university.

Within this research experiment we developed an organisational and methodological model for introducing the ePortfolio technology in the academic process; made the detailed description of ePortfolio structure for Bachelor and Master degree students and worked out the scheme for organising reflection process and presenting it in ePortfolio materials.

Apart from that we faced many questions to answer in future: How to include ePortfolio artifacts in the reflection development processes? How can Master degree students effectively use ePortfolio for career planning and development outside university? What is the place of teacher’s ePortfolio in the information environment and what may it contain?

During the third stage we managed to receive financial support from IREX. Our Project was devoted to developing organisational and methodological scheme for using ePortfolio in the teachers’ assessment system (assessment scheme development, motivating teachers’ professional development, auditing the existing resources, quality assurance). Teachers while working at ePortfolio take reflective position, increase their self-esteem, and define their professional problems and deficits. At present our the Institute web-site contains 68 ePortfolios of Bachelor degree students, 42 ePortfolios of Master degree students and 34 teachers’ ePortfolios.
At this stage we attracted administrative resource for working out the system of assessing the artifacts presented in the ePortfolio, the system which will be stimulating for teachers and students.
Introduction of University-wide ePortfolio System in Japanese Perspective

Takeshi Matsuda, Daihachi Hachiya  
Yamagata University, Japan

1. Background
In this paper, we describe why and how a Japanese national university introduces e-portfolio system. As background information, new national requirements and their cause are identified in this chapter.

1.1. Social Environment and Enforcement of Regulations
Japanese society has been faced steep demographic change, rapidly aging population and declining birth rate, for over a decade. Despite this move, there are 733 universities and 406 junior colleges in Japan as of 2009 and these numbers are not decreasing (1). This fluctuation lifts the percentage going on to receive higher education on one hand and one thirds of overall universities approaches open admission on the other hand. In other words, almost all Japanese high school students can enter a university if they aren’t selective and higher educational institutions need to appeal their quality of education. Otherwise, they might be abandoned by potential students and their parents.

Policy makers have decided to settle novel quality assurance system based on a recent policy report of Central Educational Council in 2009. As a result, tertiary educational system will necessitate rigorous quality assurance criteria. Japanese universities will have to meet new national requirements; settings three policies, which are admission policies, diploma policies and curriculum policies, baccalaureate degree program reform and regular third-party evaluation.

1.2. Effort of Curriculum Reform - Yamagata University

With six departments, four campuses and around eight thousand students, Yamagata University (hereafter YU), one of the largest national universities in north-east Japan starts developing its e-portfolio system as an aggregation of existing SIS and traditional student support application called YU-Supporting System. Because both systems were original ones, YU chose to develop its own system instead of adapting an existing e-portfolio platform. YU established an educational reform project team or Office of Academic Planning last year (2009) in order to cope with the forthcoming national requirements.

The key factors of YU’s educational reform are appointments of educational directors and mapping of all subjects offered in it in renewed curricula. The educational director, who is in charge of rearranging diploma policy and curriculum policy of his/her department, is a new profession elected among faculties of each department. He/she can apply for financial support program from YU named YU-GP in order to promote progressive approach to the reform. He/she attends the educational directors’ conference to review curriculum policies regularly and suggest the development of systems.
Although the e-portfolio plays an important role as a tool of reference or schedule planner, the focus of YU’s reform is not on technology but on learning outcomes and their self-cognition of students. Our e-portfolio, therefore, is placed in YU’s educational reform process as Figure 1 indicates.

2. Developing System

This chapter introduces two aspects of our e-portfolio system; educational role and technical features.

Learning e-Portfolio, Personal Development e-Portfolio, Multiple Owner e-Portfolio, and Working e-Portfolio. YU’s e-portfolio system is a kind of presentation e-portfolio, not learning e-portfolio, and is expected to reduce workload both of students and faculties. Due to the multiple requirements, professors, as well as students, have to determine if a student reaches his/her goals with calculated data, for example the benchmark of government-certified independent evaluation body, credits needed for graduation, balance of credits for the promotion to the next year and so on. In fact, settings of standards are so complicated for students and university staff that some of them program their spreadsheet to recognize their own situation. The e-portfolio system remedies this situation by simple manipulations and indicates how many credits they need in line with the standard they select.

On top of that, it has several expected benefits in educational points of view. Firstly, it encourages quality assurance activities among faculties such as cluster-based curriculum reform and more frequent counselling session. Secondly, it works as a credit earning facilitator or planner for students. In other words, it supports students’ Self-Directed Learning. Thirdly, it promotes student’s metacognition on their tendencies and orientation of taken courses. Lastly, it is a virtual platform of communication between students and teachers as it implements some comment column for students and their advisors.

Technically, it is a database system that stores students’ personal data, performance records and the comments of students and their advisors. The system basically indicates four graphical screens for students, each highlighting different viewpoints.

For instance, one screen displays ones most/least favourite subject area with cobweb chart and notice of deficient subdisciplines he/she has to tackle at the same time. These screens can be read selectively according to the concerns and necessary information of the user (Table 1, Figure 4 and 5).
Table 1. Developing Functions in e-Portfolio

<table>
<thead>
<tr>
<th>User</th>
<th>Function</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>Student Search (Existing Function)</td>
<td>Traditional YU-Supporting System</td>
</tr>
<tr>
<td></td>
<td>Students’ Situation on Credit Earning (Figure 4)</td>
<td>List of students sorted by specified condition (e.g. GPA, number of credits, points etc)</td>
</tr>
<tr>
<td>Student</td>
<td>Learning Goal Confirmation Sheet</td>
<td>Table with which check goals of every learning category and his/her own earned credits</td>
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<tr>
<td></td>
<td>Achievement Chart (Figure 5)</td>
<td>Cobweb chart that shows the percentage of earned credits</td>
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<tr>
<td></td>
<td>Multi-purpose Achievement Graphic</td>
<td>Bar graph indicating the percentage of earned credits of a student and his/her peer students</td>
</tr>
<tr>
<td></td>
<td>Personal Goals / Self-Evaluation Sheet</td>
<td>Text entry screen with two tables; lists of earned credits in total and in the last semester</td>
</tr>
</tbody>
</table>

3. Conclusions and Future Works

Initiatives and national policies can drive forward an agenda for change, but the real challenge comes at the point of use. Now that beta version of the system has been released, formative evaluations in particular on its interface are on the way. Testers from five departments of YU including professors, technical staff, administrative staff and students check its usability and identify problems. Preliminary report of the evaluation suggests the difference of additional functions between departments.

As some department begin to use the e-portfolio, challenges have aroused as follows.

- Priority Ranking - In line with implementation of formative evaluation, various requests of customizations are reported. We have to specify the method and standard of arranging priorities of these requests because of the limitation of budget and time.

- Security - Some professors show the concern about the possibility of private information being exposed. As a matter of course, all the data are inaccessible to unauthorized personnel; we need to prove the system’s security from time to time, however.

- Direction of Extension - We have to settle on the next direction of its system extension; whether toward the assessment e-portfolio or learning e-portfolio. This is closely related with the first issue; priority of development.
References


3. IMS GLOBAL LEARNING CONSORTIUM (2006) IMS E-PORTFOLIO BEST PRACTICE AND IMPLEMENTATION GUIDE VERSION 1.0.1 FINAL SPECIFICATION HTTP://WWW.IMSGLOBAL.ORG/EP/EPV1P0/IMSEP_BESTV1P0.HTML

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Making ePortfolios work for those with learning disabilities – CODA project

Joel Voysey
United Response, United Kingdom

Background
CODA – or Career Opportunities with Disadvantage Awareness – is a project involving partners from the UK, Portugal, Germany, Bulgaria and France which set out to create a practical resource designed to make finding a job easier for disadvantaged people and with a particular focus on those with a learning disability. It is funded by the EU under the Lifelong Learning Programme (Leonardo – Transfer of Innovation fund) and has cost 400,000 Euros to create over two years.

Our Product
The product itself consists of two components – the website and the guidebook, entitled My CV. Much of the content on the website is designed to encourage people to understand that people who may not have formal qualifications (or conventional CVs and Portfolios) may still be very worthwhile candidates for jobs and excellent employees.

- It has three key audiences which it seeks to address –
- Jobseekers (particularly those with learning disabilities)
- Supporters (these could be family members, paid staff or advocates of the jobseeker)
- Employers

There are distinct messages for each of the target groups and the website is designed to address the particular information needs and concerns of the different client groups.

For Jobseekers we have attempted to make the website accessible for people with learning disabilities or those with lower educational attainment or for whom the language of the website is not their mother tongue. We have produced a step by step guide to completing My CV which is designed to help Jobseekers and Supporters in creating a showcase of their skills and achievements, as well as providing some concrete information for prospective employers as to the type of work and working conditions which would best suit the Jobseeker.

For Supporters, as well as the My CV Guidebook, we have also provided extensive notes on the process of supporting a person with a learning disability into employment. United Response has significant experience of helping people with disabilities to become more involved in their communities and to reach their personal goals and getting a job is part of this process. We recognize that we may have to work in a different way with Jobseekers and Employers to help people into work and we call this process job coaching. The text on the website is designed to demystify this process and give people confidence to help jobseekers achieve.

For employers, we know from our own research that many of those who do employ people with learning disabilities report that they are very happy with their performance as staff members. However, we also recognize that it may feel like a big step for somebody who may not have had very much contact with people with learning disabilities in the past. By giving information to employers about jobseekers in a slightly different way, we hope to build the confidence of recruiting companies and encourage them to give it a go.

Our session will cover the following issues;
- Introduction and outline of process from inception to completion
- Demonstration of product
- Learnings acquired
• Next steps for the website
• Questions from the floor (time permitting)
Capstone ePortfolio to Encourage Integration across a Degree Program

Romy Lawson
University of Technology Sydney, Australia

The Bachelor of Business Program in Faculty of Business at the University of Technology Sydney has been undergoing a review process over the last twelve months. As a result of this process the Undergraduate Review Panel (URP) noted various areas for improvement in the degree including:

- A clear set of graduate attributes for the Faculty from which the learning goals and learning objectives for the degree may be derived;
- A greater integration of cross-disciplinary knowledge;
- The inclusions of the themes such as creative thinking, ethics and sustainability.

In order to address this, the panel recommended embedding the themes of creativity, ethics and sustainability in an integrative manner across the whole degree. To achieve this, students will be required to collate evidence and reflections on the ongoing themes throughout their degree in a capstone ePortfolio, which will form part of their final subject’s assessment. Students will also be engaged with the graduate attributes, using the ePortfolio as a mechanism for showcasing best examples of each of the competencies students are expected to develop. This paper is a work in progress outlining the philosophy behind these recommendations and the proposed steps to achieve them.

The reasons for introducing ePortfolios in the Bachelor of Business were numerous and varied. The process will drive students to explore their own competence and achievement, it will lead to a more fulfilling learning experience through providing a mechanism to understand the integration of themes and disciplines, and it will also provide a process of selecting and recording samples of one’s own work, reflecting on experiences and assembling them into a ePortfolio which is seen as profoundly important to students whilst at university and in their lifelong learning.

The ePortfolio will act as a vehicle for promoting integration across subjects, as well as a record of the students’ capability for employment opportunities. Student support for developing ePortfolios will be introduced in the foundation subject when students complete a weekly reflective posting. This support will continue through the core subjects and majors when students will be guided to develop their portfolio, in subjects that cover the ongoing themes. This evidence will form an e-portfolio where students self assess their progress in order to submit their best examples of competence, understanding and critical reflections. This process will be encouraged throughout all the core subjects and within each of the majors. The completed ePortfolio (referred to as a Capstone portfolio) will then form part of the “real life” activity assessment within the Capstone subjects.

The Capstone portfolio will also identify an important connection with extra-curricular activities. Throughout the degree students will be encouraged, and supported where possible, to gain relevant practical experience to better prepare for a career in business. Students will be able to further develop their knowledge and skills that complement activities directly related to the curriculum, from which experiences can be recorded in the Capstone portfolio.
Cameras in Early Childhood: Tools of Communication, Voice and Reflection

Eileen Elizabeth Brennan
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This presentation is a segment of a three-year case study to “Embed ePortfolios in Early Childhood”. Digital cameras and flip cameras are placed in the hands of second graders who construct their own individual personal digital story. Age-appropriate, chronological/development communication skills and abilities are observed measured.

The construction of digital stories by students is standards based, embraces Bloom’s three domains and sequencing through his ‘Stages of Cognition’ and engages more than one of Gardner’s ‘Intelligences’.

This study addresses three specific voids recognized in current research (Barrett, 2010): (i) Cameras in the hands of the students, (not the teacher), as tools of receptive and expressive communication, (ii) incorporation of technology within student learning strategies to facilitating higher order thinking, specifically ‘Reflection’ (iii) authentic assessment of receptive and expressive in inclusive settings that supports assessment for both accountability and improvement (Ewell, 2009).

In this study 23 second-grade students are given digital cameras to create a personal story of their school day. Flip cameras are first placed in the hands of a teacher and then in the hands of a peer as each student discusses each of his/her digital pictures and the personal reason(s) for choosing to include (or reject) a picture within each ‘personal digital story’.

The development of ‘Voice and ‘Personal Identity’ are specifically observed.

In this presentation Construct and Assessment of student Digital is segmented. Participants, recognize the essentials of a lesson plan that supports successful inclusive learning, and specifically learn: (i) how the student construction of a digital story addresses the Common Core Standards, most especially the Language Arts and Technology; (ii) authentic assessment of the language arts is age-appropriate chronologically and/or developmentally; (iii) feedback within the construction process dynamically supports the three tiers defining ‘Response to Intervention; (iv) teaching and learning strategies that distinctly support the breath and depth of a UDL; (v) web 2.0 supporting each stage in the creation, storing and presenting, of a digital story.

An ePortfolio is a purposeful collection of work that demonstrates effort, progress and achievement over time, stored in an electronic container. ePortfolios support assessment ‘for’ and ‘of’ learning teachers, teacher candidates, and students (Brennan, 2009).

Increasingly, successful achievement of teacher certification requires that (i) teacher candidates submit a personal ePortfolio demonstrating mastery of the INTASC/NCATE Standards; (ii) teacher ability to support student construction of ePortfolios.

A digital story is a standards-based learning artifact with “Reflection” being the heart of the telling (Barrett, 2010). Digital cameras and flip cameras support expressive and receptive communication skills and encourage the receptive and expressive elements of Visual Intelligence. Throughout its construction the development of student ‘Voice’ and sense of personal identify are observed and measured.
Showcase You on iTunes U: The iPortfolio enables student self-assessment of key capabilities and the public showcase of achievements

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Abstract
Increasingly, teaching staff and institutions are encouraging or requiring students to self-assess achievement of graduate capabilities and competences using electronic portfolios. This paper describes Curtin University of Technology's electronic portfolio, called the iPortfolio. The iPortfolio was piloted with 2000 staff and students in late 2009. As of May 2010, over 10,600 iPortfolio accounts had been created. Increasingly, media rich assessments and authentic iPortfolio-based learning experiences are being woven into the formal curriculum of many units. This paper places particular emphasis on describing the role of the iPortfolio in evaluating what students have actually learned in order to close the loop on curriculum design and its implementation. Key to the strategy is an on-line iPortfolio space called the My Ratings tab where students self-assess attainment of Curtin's graduate attributes. It is now possible for aggregated data from the My Ratings tab to inform a needs analysis used by teaching staff during the curriculum review process. A strategy is described for using the My Ratings tab as a staging area in which students plan and produce short video resumes. Video resumes and other media rich artefacts that highlight skills and key capabilities can be shared with selected others in the iPortfolio My Showcases tab. The iPortfolio holder can seamlessly publish My Showcase entries to the University's presence on iTunes U where they become broadly available to the public. Once published to iTunes U, these media rich entries facilitate further qualitative analysis of student achievement by teaching teams, curriculum review participants, accreditation panels, and prospective employers.

Introduction
Curtin's iPortfolio is an online space for students and staff to create, share and publish evidence of their learning achievements. Students and staff can add reflections associated with a collection of tabs, including: About Me (profile picture, introduction, biography and goals); My Courses (create, share, manage and collaborate on assignment tasks and evidence of learning against generic and specific professional competencies); My Employment (resume and evidence of work-related skills, experiences and professional development); My Journals (for reflective journals); My Networks (entries reflecting on professional networks and organizations contributing to one's professional development, an overview of those who are invited to view, provide feedback or collaborate, and access exemplar portfolios); and My Showcases (to highlight examples of learning and professional development, and publish showcases to the iTunes U).

Background
The iPortfolio was developed following broad consultation with the University community, and from a general recognition that electronic portfolios have been shown to be effective in assisting students to reflect on their learning, be more confident in identifying their abilities, and more competitive in the labour market [1-3].

The decision to create an electronic portfolio with an institutional focus was taken at a time when the University was undergoing an institution-wide curriculum renewal initiative called Curriculum 2010 (C2010) [4], and based on research findings that showed a high proportion of Curtin students possess mobile devices capable of collecting movies, images, and audio and routinely access media servers like You Tube, Facebook, and iTunes [5].
The iPortfolio and its role in 360 Degree Curriculum Design

During the C2010 project, the University reaffirmed its graduate attributes as the prime focus of student achievement and teaching endeavour. The University has embedded these attributes at the foundation of all its degree programs in the context of discipline specific learning outcomes and professional competencies. Emerging from this is the triple-i curriculum that highlights Curtin’s aim to produce highly employable global citizens who are educated beyond their first discipline [4].

The graduate attributes and triple-i curriculum have become well known by teaching staff and students. They are prominent in Curtin information resources, including unit outlines distributed to students at the beginning of each semester, posters displayed around the University, and on bookmarks like the one shown in Figure 1. They also form the basis for student self-assessment in the iPortfolio, branded with a leading “i” to convey this connection with the triple-i curriculum.

The iPortfolio provides an opportunity to close the loop on curriculum design, as shown in Figure 2. In Step 1 of the loop, the formal curriculum specifies where teaching teams intend for students to develop designated graduate attributes. This includes setting out how the graduate attributes are contextualised, embedded and assessed in the curriculum. In Step 2, students use the iPortfolio to self-assess their attainment of the graduate attributes and manage evidence of their learning achievements. In Step 3, a Needs Analysis is conducted to inform the next cycle of curriculum review and any subsequent re-design.
Traditionally, data used in the Needs Analysis have come from many sources and stakeholders. These include course coordinators, teaching staff, students, graduates, and employers, and data captured in Course Experiences Questionnaires (CEQ) [6]. It is expected that the iPortfolio will play an increasingly significant role in this analysis [4].

Effectively, electronic portfolios like the iPortfolio are personal learning spaces that are managed by individual students. Portfolios are indicative of what students have actually learned based on accumulated evidence and placed into context using personal reflections on learning and the attainment of professional capabilities. In contrast, the planned formal curriculum is managed by teaching staff. It defines the intended learning outcomes, together with the learning experiences and assessments meant to develop and measure them. Taken together, these provide opportunities for a 360-degree approach for embedding, assessing, and evaluating the graduate attributes in the formal curriculum [7].

Several strategic aspects of the iPortfolio are intended, in part, to assist with this 360 approach and to assist teaching teams to evaluate the effectiveness and impact of the curriculum as currently implemented:

- Students use the My Ratings tab and a star rating system to self-assess progress towards the attainment of the graduate attributes and the triple-i curriculum experiences.
- Students publish media rich My Showcase entries that highlight their skills and abilities to the University’s presence on iTunes U. The publication of video resumes is particularly encouraged. For example, in a recently introduced video resume tutorial offered by the University Office of Assessment, Teaching and Learning, students learn how to produce video resumes that have been compiled from video reflections originally collected and organised under the My Ratings tab.

It is important to note that the content of individual iPortfolio entries is private. The teaching team cannot view them unless they have been invited to do so by the student, or until the student has publically published a My Showcases entry to iTunes U. An exception is aggregated star rating competence levels under the My Ratings tab, which can be reported to designated administrators as averages for a given cohort as a whole. This can be used to provide a quantitative snapshot of self-assessed progress towards graduate attribute attainment for a given group.
Table 1. The star rating system used to self-assess competence level in the My Ratings tab

<table>
<thead>
<tr>
<th>Number of stars</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Star</td>
<td>Novice</td>
<td>You know and try to follow the basic rules and get as much information and experience as you can. You are tentative in making any decisions or deciding on successful outcomes.</td>
</tr>
<tr>
<td>Two stars</td>
<td>Advanced beginner</td>
<td>You are able to follow instructions and build on your experiences. You are still somewhat tentative about making decisions or deciding on successful outcomes.</td>
</tr>
<tr>
<td>Three stars</td>
<td>Competent</td>
<td>Despite feeling perhaps a little overwhelmed with new information, you are able to plan appropriate actions based on your experience. You are more aware of what might go wrong. Your confidence is increasing.</td>
</tr>
<tr>
<td>Four stars</td>
<td>Proficient</td>
<td>You feel confident making decisions and acting on your knowledge. You see what needs to be done and decide how to do it.</td>
</tr>
<tr>
<td>Five stars</td>
<td>Expert</td>
<td>You know what to do and how to produce a successful outcome. You are experienced, intuitive, and involved.</td>
</tr>
</tbody>
</table>

The My Ratings Tab

In the My Ratings tab, students self-assess progress towards attainment of the University’s graduate attributes and triple-i curriculum experiences. Students give themselves a “star rating” for each attribute based on Dreyfus' five-stage model, using competence levels ranging from “Novice” to “Expert” as shown in Table 1 [8]. The student justifies the star ratings awarded with evidence and reflections.

An example of the My Ratings tab is shown in Figure 3, which has been expanded to show entries that capture industry-based triple-i experiences. This example includes both video and text-based reflections to explain accompanying evidence and justify the star rating awarded.

In all cases, the evidence and reflections stored in the My Ratings tabs are private until the iPortfolio holder requests feedback on them from specified critical friends, peers, mentors, and teaching staff. Only those invited to view or offer feedback are able to see an iPortfolio holder’s My Ratings tab. Those invited to offer their feedback see the evidence and reflections left by the iPortfolio holder, but not the self-awarded star rating. Those providing feedback are able to make their own star rating assessment based on evidence and reflections provided in the tab. The average star rating awarded by those providing feedback is available to the iPortfolio holder, but only when the number of individuals providing feedback exceeds a pre-set threshold. This provides the iPortfolio holder an opportunity to evaluate if the evidence and reflections adequately convey the perceived level of graduate attribute competence to others. Those invited to offer feedback are able to do so using built-in social networking features to provide more detailed text-based comments.

Star rating values averaged for a given cohort can be extracted from the iPortfolio database. Currently database administrators extract aggregated data manually using SQL queries, with data graphically presented in a spreadsheet as shown in Figure 4. A planned enhancement will plot aggregated data for authorised administrators within the iPortfolio itself.

In the case of the cohort represented in Figure 4, these My Ratings data suggests that students feel competent (3 stars) to proficient (4 stars) for all graduate attributes, tending towards proficient for most attributes. In this example, students perceive particular strengths with respect to their professional skills, with some small opportunities for improvement with respect to international perspectives. Overall, however, students in this cohort perceived that they have attained relatively good achievement of all nine graduate attributes. It is anticipated that star rating data like that in Figure 4 will become increasingly significant when triangulated with national indicators for cohorts using data like the Course Experience Questionnaire and Australian University Survey of Student Engagement.
**Figure 3.** My Ratings expanded to show Industry triple-i experiences with video and text reflections and accompanying evidence.

**Figure 4.** Average graduate attribute self-rating for students enrolled in a third year discipline-based professional practice subject (n=51).

**The My Showcases Tab**

The **My Showcases** tab is used for entries that highlight completed work that demonstrate skills and abilities, particularly those that are of value to the community or prospective employers. As with the **My Ratings** tab, all entries in the **My Showcases** tab are private until others are invited to view or provide feedback on them.
Entries in the **My Showcases** tab can be published through the University’s presence on iTunes U where they become available to everyone. While all **My Showcase** entries can be published to iTunes U, media rich entries that include video and audio are particularly encouraged. These are well suited for distribution via iTunes U, and make it possible to highlight skills and abilities that are difficult to convey in static or paper-based formats. These may include recordings of authentic assessments such as those involving role-playing exercises, presentations demonstrating oral communication skills, or group-based learning experiences demonstrating teamwork and leadership. Short video resumes that summarise skills and abilities are also well suited to publication via iTunes U. Once published to iTunes U, these media rich entries facilitate further qualitative analysis of student achievement by teaching teams, curriculum review participants, accreditation panels, and prospective employers.

**Video Resumes**

New resources including a hands-on tutorial have been developed to assist students to create effective video resumes that are suitable for publication to iTunes U. The tutorial recommends the following steps, which tightly integrate the use of the **My Ratings** tab to guide video resume planning and production:

1. **Review video resumes examples**

   Use iTunes U and You Tube to identify attributes of successful video resumes. Students will generally find that the most effective video resumes recount actual examples of graduate attribute attainment, have a central theme or message, and are less than 3 minutes in length.

2. **Conduct a Graduate Attribute Self-assessment**

   Conduct a Graduate Attribute self-assessment to identify personal strengths. The self-assessment should focus on real evidence and specific examples that demonstrate progress towards graduate attribute attainment. It is helpful to conduct the initial self-assessment working in small groups, but ultimately this should be done individually using the star rating feature in the **My Ratings** tab.

3. **Upload evidence to the iPortfolio**

   Use the iPortfolio Evidence Manager to upload evidence of graduate attribute attainment. Insert the best evidence into the **My Ratings** tab to justify the star ratings awarded. Students are advised to be selective, and to include only a few good examples under each attribute.

4. **Write text-based reflections**

   Write reflections to place the evidence for each graduate attribute into context. For example, if an essay is used to justify communication skills, the reflection should identify those aspects of the essay that exemplify excellence in written communication. Similarly, if a report arising from a group project is to be used as an example of Professional Skills, the reflection might consider identify aspects of the report or the processes used to compile it that demonstrate teamwork, leadership, or time management skills.

5. **Record video reflections**

   Record video reflections for each graduate attribute and upload these to the iPortfolio Evidence Manager. Insert video reflections into the appropriate place under the **My Ratings** tab. A good way to do this is for students to record themselves reading the text version of the reflection using a web camera. Alternatively, an off-camera coach can ask the student questions about graduate attributes attainment. The coach and the student should agree on the questions in advance after discussing the student’s self-assessment in the **My Ratings** tab. The questions asked by the coach can be edited out of the recording, leaving only the student’s responses. This approach can lead to a more natural and relaxed presentation on camera because the speaker is interacting with a human coach rather than reading from the screen or staring directly into a camera.
6. Identify emerging themes

Identify themes that emerge from the My Ratings tab. For example, if international perspectives and communication and technology skills are obvious strengths, the emerging theme might be the ability to convey new technologies to others in the context of global economic markets.

7. Record short intro and wrap up video clips

Students should record a short video clip to introduce themselves to their audience. They should record another short wrap up clip to describe the emergent themes.

8. Edit the video resume

Use video editing software to splice together highlights. Macintosh users can use iMovie. PC users can use Microsoft Movie Maker, which comes bundled with some versions of Microsoft operating systems. Students are advised to use only the best examples that illustrate the emergent themes, and multimedia cutaway and picture-in-picture features of the editing software to show actual evidence where appropriate.

9. Seek feedback and refine

Upload the video resume using the iPortfolio Evidence Manager and insert it into a My Showcases entry. Students use iPortfolio social networking features to seek feedback from critical friends and mentors and reflect on and refine the video resume based on the feedback.

10. Publish to iTunes U

Update profile information contained in the About Me tab, which is also used in the iTunes U banner for work published by the student. A button at the top of each published My Showcase entry takes viewers to the equivalent entry on iTunes U. Published entries can also be found under the University’s iTunes U link in the iTunes store. A video resume published to iTunes U is shown in Figure 5.

Web cameras are available on campus in some computing labs, and at least one Department has purchased handheld digital camcorders for loan to students creating video resumes. Additionally, future enhancements are under consideration that will embed the ability to record video reflections directly into the My Ratings tab, and to easily edit these together to produce finished video resumes, working entirely within the iPortfolio.

Media-Rich Assessments

Increasingly, assessments and learning experiences that incorporate movies and images in media rich iPortfolio entries have been used effectively in many subjects.
For example, pharmacy students record patient counselling sessions on video and upload these to their iPortfolio [9]. In addition to facilitating an authentic learning experience, artefacts arising from this exercise have the potential to provide enduring value to graduates who use can use the recordings to demonstrate patience counselling competencies in a portfolio required for professional registration.

In Engineering, students use the iPortfolio to capture images, movies, and audio recordings made during site visits and relate these to formal learning in the classroom. This has resulted in enhanced student focus during site visits and guest lectures as evidenced by level of note taking, photography, video recording and audio recordings collected by all students and captured in student iPortfolios. Enhanced student research arising from fieldwork experiences has also been noted, as evidenced by extracts and references to other sources that support iPortfolio fieldwork entries. A new iPhone application that enables students to collect images, movies and audio while in the field, tag these with the University’s graduate attributes, and upload them directly to their iPortfolio is intended to further encourage the use of mobile devices during fieldwork. However, recording can be prohibited for security reasons at some sites, limiting what can be collected in conjunction with some types of fieldwork.

Conclusions
Achievement of key capabilities and attributes is key to universities’ mission to produce capable and employable graduates. This paper suggests one way that ePortfolio systems might enable this to occur through student self-assessment. Aggregated star rating data can be extracted from the My Ratings tab of the iPortfolio to quantitatively convey student perceptions regarding their attainment of the University’s graduate attributes. When traditional indicators of student outcome attainment are triangulated with aggregated star rating data from the My Ratings tab, qualitative assessment of My Ratings tab reflections made by teaching staff, and through qualitative evaluation of video resumes and other finished media rich work publicly published to the University’s iTunes U presence, course coordinators and teaching teams have powerful new tools to assist in curriculum review.

References
Development of an ePortfolio system for taking the initiative in learning

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Purpose of development of the e-Portfolio System

In Japan, the higher education admission rate has been more than 50% since 2007. And numbers of the student who wish to enter higher education has been below the capacity of institutions of higher education. As a result, number of the students who has low academic achievement and poor communication skills are on the increase in many universities, then meticulous, individually-targeted advice are required.

Higher education which introduces e-Portfolio system as one of the methods for individually-targeted advice is increasing. The purpose of introducing of this system is mainly classified three as follows.

1. To make tutorials and mutual evaluation among the students complete by using learning records about lectures and practices
2. To foster a sense of purpose and self-management skills for students to learn.
3. To make the evidence of learning and activity in the student life for career options.

Our e-Portfolio system also was based on the idea of described above.

Especially, we designed the system in consideration of self-management skills for students to learn for keeping learning of undergraduate guarantee and to develop the carrier passport to work in the region. This system has two functions, one of which is a function of development of learning such as a set of goal, record and accumulates of learning and extracurricular activities and assessment, and the other of which is a function of showcase for making an appeal on learning output and self identity. This system has been in operation since August 2009.

Functions of the e-Portfolio system

The process of the initiative in learning and consulting by the advisor using e-Portfolio was shown in Fig. 1. Advisor and counsellor

1. Records of learning activities
2. Produce and open learning outcomes
3. Assessment by advisor and other student, self-assessment
4. Set up learning goal

Understand students learning situation
Support for setting up learning goal
Evaluate a process to learning goal
Give a meticulous, individually-targeted advice

Fig.1. The process of the initiative in learning and consulting by the advisor using e-Portfolio
Showcase Function

With an assistance of the showcase function, the students can make a product which they want to bring their learning and extracurricular activities, for example, internship in the company, educational practice in the school, volunteer for regional active citizen ship, open by editing all records of their data.

It is very important for the student to summarize the results of learning activities. Because the reflection of learning to summarize is very meaningful for them to consider what they should study and make a new goal of learning individually.

Showcase function consists of two functions as follows.

The first function is storage for learning activity such as diary, report and presentation file used in the class. The second function is to support for producing learning outcomes by making the connection among records of learning activities.

Supporting function for “1.Records of learning activities” and “2. Produce and open learning outcomes” in the process of the initiative in learning in Fig.1 are first and second function respectively.

The first function for store has many functions such as upload and manage files used for learning activity, learning diary like Blog including text and picture, and records of learning time. Furthermore, the student learns not only on campus but also at many places and situations, for example, internship in the company, educational practice in the school, and volunteer for regional active citizen ship. Then our system can record qualifications and social activities, hobbies, talent, people they met and book impression they read. We call these functions "piggy bank". And, it has more functions to record the number of hours for activities depend on the categories "Friendship", "Work" and "Health" at non-formal learning.

The second function to support for producing described above has these functions as follows in detail. First function is a support system to make learning outcomes from many data stored in e-Portfolio system. Students use this function to make outcomes which they want to show as the evidence of the activities. Second is open system to disclose some data such as competency chart and other outcomes made on advices of an adviser and a friend. Learning outcomes can be recorded by not only subjective assessment by themselves but also the assessment of an advisor and other students. To create learning outcomes by the assessment from the perspective of others make a chance to have a deeper reflection on learning.

Development Function

Development function is the support system for the student what about and how much study do they do. Students can understand their learning situation and have a handle on what about they should learn through the development function. At the same time, they can manage their learning according to their learning plan on their own responsibility.

Development function is to support “3. Assessment by advisor and other student, self-assessment”, “4. Set up learning goal” showed in Fig.1. This function consists of supporting function to set up learning goal and to advice and assess learning outcomes.

This system can record a learning condition now, learning goal from now and means to achieve the goal. Furthermore it can record the time to work in a day to achieve the goal in next 6 months. A tool of an assessment of competency is provided for the student to evaluate a process to learning goal. Using question and answering system, student’s current condition is shown on the cobweb chart. Comparing past and current is possible on the chart. It underlines the difficulties facing student in dealing with and it is effective for them to set up next goal.

Advisor or counsellor can supply advice to the student to progress the goal using the data of competency assessment, comparative data between planned goal and current condition etc. shown in Fig.1. In some situations, he or she can get some advice from other students who watch the data on the showcase opened.

My Portfolio

Personal data such as learning outcomes recorded by showcase function, planned goal, cobweb chart, many advices supplied by advisor made by development function are shown with view format. Students can watch their data, adding records and edit the data on their portfolio. Advisor and counsellor only can browse their student’s portfolio.
My Portfolio is covering the student record about a variety of learning. Then advisor and counsellor can give a meticulous, individually-targeted advice to their student using individual my portfolio.

In addition, our system has a basic function of SNS. Communication through message boards and diary is possible, then this SNS function is used widely for the club activity and other activities except academic learning in the laboratory and lecture.

Storage for learning activityAdvice and assess of learning outcomesSupport for setting up learning goalSupport for setting up learning goalStorage for learning activitySupport for producing learning outcomes

Fig.2. My Portfolio

System environment
This system is developed by OpenPNE, open source SNS software. OpenPNE is most commonly used in Japan and its interfaces and operations are similar with mixi which is very popular SNS for student. Our system was developed that showcase function and development function which function are necessary for e-Portfolio are added to OpenPNE.

And recently, most Japanese students use cellular phone, then they can use our system with cellular phone. Our e-portfolio system corresponds to not only PC but also cellular phone. Students can record some activities on a daily basis timely and browse the advice by advisory staff by a cellular phone at anytime and anywhere.

As management function, there are three functions such as user registration, system setting and monitoring system. Especially this monitoring system is monitoring all information included text and images posted by users to monitor bad posts and list user name and posted information along with the chronological information of the user posted. And except monitoring, this system has a function to analyze content of posts using text-mining techniques. As a result, advisory staff can get the trend of learning and employment activity of the student and this information is very useful for them to advice correctly for their learning and employment counselling.

Assessment of the system and vision
Before commerce operations, trial practice for 12 students was done during their semester. After trial, 15 questionnaires about usability of the system and possibility of e-portfolio were investigated on an ascending risk scale of 1 to 5. For each question students answered generally positive fragment. In particular, three questionnaires such as "5. To be concerned about anyone else’s posts", "6. Will help you think about the issues", "7. Useful for the reflection of learning" showed high average over 4.0 more than the score of other questions. Our e-portfolio system is considered fully effective for students to reflect for learning.
In the future, we hope this system will be put to use for taking the initiative in learning and employment activity, and other activity in their student life.

References
1. OGAWA, KAYO., OMURA, MICHIAKI., KAJITA, SHOJI AND KODATE, KASHIKO (2007) DEVELOPING PRACTICAL COMPETENCY OF RESEARCHERS IN SCIENCE BY ROLE MODEL BASED E-PORTFOLIO SYSTEM, JAPAN JOURNAL OF EDUCATIONAL TECHNOLOGY, 51-59

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Background. Practical experiences and key competencies are becoming increasingly important for students in today’s working life. One way to attain those competencies is to take part in self-organised project groups at the periphery of their university (i.e. campus radio, debating clubs). Here students learn to solve problems and become part of a community of practice. At the University of Augsburg students can get such extra-curricular learning activities accredited through the study programme "Problem Solving Competencies" (www.begleitstudium-problemloesekompetenz.de). This study programme builds on the reflection of the student’s experiences via ePortfolios and focuses the assessment on the articulation of the competencies that the students acquire. In the context of the research and development project "Implementing an IT-Service Center" (http://www.uni-augsburg.de/de/einrichtungen/its/), which is funded by the German Research Association, the didactic concept for this study programme has been designed and was prototypically implemented in the bachelor/master programme “Media and Communication” (http://www.imb-uni-augsburg.de/studium/muk-studium).

Objectives. In this paper a case study is presented which gives an overview of the implementation process of ePortfolios in this study programme. It will be shown:

1. how we developed the didactic purpose and rational for our portfolio approach which aims at fostering key competencies through the reflection of informal learning experiences
2. how we proceeded with the implementation of this assessment approach as well as which difficulties we faced an which successes we achieved during the implementation
3. how students and teachers view the employment of ePortfolios within this study programme based on continuous evaluations of the costs and benefits of this assessment approach.

Results. The results are framed within the model of implementation strategies of Baumgartner and Himpsl: We describe the local context of the implementation, explain the motivation and purpose of the assessment approach, outline the study and examination regulations, explicate the didactic rationale and the underlying learning culture and discuss the competencies which students and teachers need to employ this approach.

In the outlook we sketch how the portfolio approach (after its successful implementation in one study programme) is right now transferred to other study programmes at the University of Augsburg.
A ground-breaking approach to the subjective assessment of ePortfolios using the Law of Comparative Judgement.

Matt Wingfield, TAG Developments, Richard Kimbell

In 2004, a team at Goldsmith’s College, University of London, embarked on a five year pilot project to investigate the use of ePortfolios to dynamically capture live project-based coursework created by students during the course of GCSE practical examinations.

A key development of the project through the latter stages of the project was the development of a web-based Comparative Pairs Assessment Engine, which enabled more subjective assessment criteria, such as creativity and collaboration, to be judged through the implementation of the ‘Law of Comparative Judgement’, as initially described by L.L. Thurstone in the 1927. Uniquely, the integration of a web-based Comparative Pairs Assessment Engine within an ePortfolio context, make this innovative and highly accurate form of assessment available globally for the very first time.

This paper and the supporting presentation, will case study the Comparative Pairs pilot that took place as part of the e-scape project during 2009, which involved ‘judges’ in a variety of different locations all over the United Kingdom assessing students ePortfolios at exactly the same time via this revolutionary pairs assessment engine.

It will look at the more recent research done into the accuracy and authenticity of this approach when compared against traditional paper-based/hand marking, and will discuss the benefits offered to students, institutions and accreditation bodies by this form of assessment. It will also look at other possible applications such as the standardisation of ePortfolio based coursework assessment.
Developing learner autonomy through the use of ePortfolio: consideration about qualitative and quantitative evaluation

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Introduction
This study aims to foster learner autonomy by using the e-portfolio for English-major university students in Japan. This paper reports on the ongoing work of developing the criteria for assessing the effectiveness of the e-portfolio. Numerous portfolio projects for foreign language learning that aim to foster learner autonomy are being launched nowadays, but it is not clear how we can qualitatively and quantitatively assess the effectiveness of their use. Therefore, in this study the emphasis is on the review of qualitative and quantitative methods of analyzing learner autonomy. This study also contributes to the assessment of longitudinal e-portfolio projects, especially in the field of language education.

A typical Japanese scenario
In spite of the fact that English is part of the national curricula from the 7th to 12th grade level, Japanese have been criticized in many international settings for their lack of pragmatic communicative skills in English (MEXT 2003, Yoshida 2003). For example, the average TOEFL (Test of English as a Foreign Language) score for Japanese people was the worst among the 28 Asian countries in 2005–2006 (Educational Testing Service, 2007). In general, it is said that Japanese have difficulty mastering English because of the following reasons: (1) there is a great difference in language structure between English and Japanese, (2) Japan is a non-English-speaking region, and hence people do not often use English in daily life, (3) classroom instruction has been focused on translation and reading instead of practical English, and (4) English lessons are short in duration in the national curricula (Sato 2002, MEXT 2002, Saegusa 2000). English learning, therefore, has been a significant topic of attention and concern for educators and policy makers in Japan. The Japanese Ministry of Education, Culture, Sports, Sciences and Technology (MEXT) proposed a five-year action plan to cultivate “Japanese with English Abilities” in 2003. In the action plan, MEXT aimed to foster Japanese people who can utilize English in business settings to communicate effectively with people from other countries. However, there has been a discrepancy between the English language skills required for activity in international society and the average Japanese English ability. Hence, in the interest of acquiring pragmatic English ability, it is suggested that people learn English actively and autonomously.

How does this study contribute to solving the problem?
This study aims to develop a model of effective practice with the e-portfolio for fostering learner autonomy in English learning. The subject of this study is university students who major in English, and it consists of three phases: (1) surveying the current situation of autonomous English learning experienced by university students in Japan, (2) developing an e-portfolio prototype and conducting experimental portfolio projects, and (3) evaluating the effectiveness of practicing with e-portfolios. The focus of this paper is the first phase. Figure 1 describes the research process in this study.
In this paper, I discuss learner autonomy from the viewpoint of self-regulated learning (SRL). Although there are a variety of definitions of SRL, Pintrich & DeGroot (1990) have pinpointed three components that seem especially important for learner autonomy. “Self-regulated learning includes students’ metacognitive strategies for planning, monitoring, and modifying their cognition (Pintrich & DeGroot 1990: 33).” For example, capable self-regulated learners who persist at a difficult task or tune out distractions (i.e., watching TV, noisy classmates) maintain their cognitive engagement in the task, enabling them to perform better. Schunk & Zimmerman (1998) insist that autonomous learning occurs when the cycle of SRL works continuously. The SRL cycle consists of three processes: planning, monitoring, and reflecting on personal progress. Figure 2 shows the process model of SRL proposed by Schunk & Zimmerman.

**Figure 2. Cycle of self-regulated learning (Schunk & Zimmerman 1998)**

It assumes that the SRL theory is going to contribute to the evaluation of the autonomy development and the effectiveness of using the portfolio. Based on the cyclical phases of SRL, two research questions were proposed: (1) How is an e-portfolio useful for students’ goal setting, volitional control, and reflection? (2) How does an e-portfolio support the cyclical phases of self-regulated-learning for autonomous learners?

**How can we evaluate autonomy development?**

Let us suppose that research has been conducted for developing learner autonomy by using the e-portfolio for about six months or for a year. Based on the framework of self-regulated learning, let us now look at the optimal evaluation of autonomy development.

a. **Qualitative evaluation**

According to JACET (2005), we can evaluate autonomy development by looking at the learning strategies used by the learner. As previous studies have demonstrated, capable learners have clear goals and monitor their learning processes, and they can use a variety of strategies effectively. JACET (2005) indicates that we can evaluate autonomy by looking more closely at: (1) the awareness of strategy use, (2) the use of strategy, (3) the changes in strategy use, and (4) the acquired strategies. In order to elicit and analyze these data, it is recommended that we utilize interview sessions, an observation method, a think-aloud method, and a diary or journals (depending on the research objectives) in addition to the use of a portfolio.

The European Language Portfolio (ELP), which is provided by the Council of Europe, is another representative model of qualitative autonomy evaluation. Analyzing the learner’s description in the ELP.
allows us to evaluate the autonomy development of the learner (Little 2005, Lens 2004, Simpson 2003). The ELP consists of three components: (1) language passport, (2) language biography, and (3) dossier. The language passport and biography support learner self-management in terms of goal setting, self-assessment, and reflective accommodations to the ongoing processes of learning. The dossier is a place to keep work in progress. Looking at the self-assessment records (e.g., goal setting and achievement checklists and the reflection essay) in the ELP seems to reveal the learning attitudes of the autonomous learner.

Tierney, Carter, and Desai (1991) have proposed holding monthly portfolio conferences. These conferences are meetings between a teacher and student in which students can reflect on and evaluate not only their learning processes and outcomes but also their strengths and weaknesses. Holding conferences also functions as an in-depth analysis of students' possible areas on the descriptors in the portfolio. Scheduled conferences are suggested as a means of increasing the visibility of students' learning processes.

b. Quantitative evaluation

When it comes to the quantitative evaluation of autonomy development, the use of questionnaires or assessment scales will be helpful. The Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich & DeGroot (1990) is one of the representative instruments for analyzing autonomy development. The MSLQ was developed based on the theory of SRL and it consists of 56 items in five categories: (A) self-efficacy (9 questions), (B) intrinsic value (9 questions), (C) test anxiety (4 questions), (D) cognitive strategy use (13 questions), and (E) self-regulation (9 questions). Misono & Akahori (2008), for example, explain that the MSLQ functions as a pre-test and post-test for the subject group and control group to assess the development of autonomy.

The Learning and Study Strategies Inventory (LASSI) is another quantitative analysis method. Cano (2006) attempted to assess learning strategies based on the LASSI by focusing on affective strategies (time management, motivation, concentration, attitude), goal strategies (anxiety, test strategies, selecting main ideas), and comprehension monitoring strategies (information processing, self-testing, study aids). The affective, goal, and monitoring strategies are considered the key variables of SRL. By adapting the LASSI questionnaires, we may use the pre-test and post-test research model to quantitatively evaluate the effectiveness of using the e-portfolio. In addition, we can conduct achievement tests. Mineishi (2001), for example, provides the result of an achievement test in her longitudinal portfolio research and reports that the use of portfolios has the potential to significantly enhance self-regulated learning.

Summary and future research

This paper reviews a variety of evaluation studies on the use of portfolios for autonomy development. It also suggests that portfolio practitioners arrange and coordinate previous criteria and propose relevant research designs. Figure 3 shows a prototypical evaluation combining both the qualitative and quantitative perspectives.

**Figure 3. Prototypical Model of Portfolio Evaluation**

In the future, I will reconsider and integrate both qualitative and quantitative methods of analysis and propose a model for future evaluation research.
References


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Creation of Seamless ePorfio Ecosystem: Challenges of the Rural and Sub-Urban Dwellers in Nigeria.

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Abstract
Globally, integration of Information and Communication Technology (ICT) tools in education has revolutionized teaching and learning beyond mere imagination. This has placed further requirements on e-learning practices, especially in developing/underdeveloped countries. Current trends and advances in ICT and the adoption and use of these emerging technologies in education is widening the divide in e-learning practices between developed countries and the developing/underdeveloped countries, who are faced with numerous implementation challenges in integrating these technologies in education. Nigeria is currently ranked the 7th most populous nation in the world with an estimated 75% of the population living in sub-urban and rural areas. Investigations in this work show that teachers in these areas are not engaging e-learning tools in the classrooms. There is strong adherence to traditional teaching methods. There is also absence of specific government policy on e-learning. Effective use of learning technologies is seen as the solid foundation upon which ePortfolio best practices can thrive. This paper examines key competences required of learners, educators and instructional designers and highlights the challenges faced by sub-urban and rural dwellers in Nigeria in adopting the use of these technologies. A pilot programme was carried out with selected children for two years from rural area to establish their ability to cope with the use of e-learning technologies. Thereafter the paper proposes domestication of e-learning as a solution to bridging the gap and examines two issues (technology and content development) that would make learning outcomes relevant to the need of the immediate society.

Keywords
eLearning, ePortfolio, domesticating elearning, ecosystem, key competences.

Introduction
Integration of information and communication Technology (ICT) tools in education has revolutionized teaching and learning across the globe. This has placed a requirement on teachers to use these emerging technologies in teaching.

It is observed that a larger percentage of teachers in Nigeria have not adopted the use of these emerging e-learning technologies in teaching. This results from the low level of integration of ICT tools in the education system in Nigeria. Adoption and effective use of e-learning technologies is seen as the foundation upon which ePortfolio best practices can thrive. Education is strategic to National and Regional development and must first and foremost serve all, because it is a human right and a development imperative [1]. However, actualising expanded access, equity and quality assurance education poses numerous challenges in Nigeria as a result of the high population of rural dwellers who are underprivileged.

On one part, this work has drawn inference from a 2-year learning programme on children in a rural settlement in Edo State, Nigeria, to establish that the rural children have the intellectual capacity to cope with new technologies, when the right environment, technology and learning content are provided. It becomes obvious that several other factors, other than the intellectual capacity of the learners account for the low level of integration of e-learning tools and strategies in the Nigeria Education System.

The paper therefore examines these factors that pose challenges to e-learning in Nigeria and consequently inhibiting the possibility of integration of the sub-region into the envisioned ePortfolio ecosystem.

Motivation for study
An ePortfolio is seen as a specific type of a Content Management System (CMS) which works as a collection of digital artifacts, where different types of users have different rights of access provided by the
maintainer of the ePortfolio [2]. It can be seen as a type of learning record that provides actual evidence of achievement. This relies on the adoption and use of emerging learning technology tools. These tools are high-tech based and their use assume that infrastructure is available, adequate and accessible.

Nigeria is currently ranked the 7th most populous nation in the world, with an estimated figure of 123 million people, projected to increase to above 156 million in 2015. 44% of this represents children between 0-14 years, while 53% represents young people between 15-64 years. It is estimated that about 25% of the Nigeria population are urban dwellers, while about 75% of Nigerians live in sub-urban and rural areas [7].

Without doubt, Nigeria is a huge market in terms of both technology and content development. Studies therefore need to be carried out and positive steps taken as a matter of urgency to determine and implement strategies for integration of ICT tools in the country's education system, considering the numerous environmental challenges, so that this vast nation will not be excluded from the envisioned ePortfolio ecosystem.

**Study methodology and findings**

Two studies were carried out during the past two years. These studies are still ongoing and require sponsorship to expand the scope and dept for further development effort in education. The objectives of the studies were:

To determine if the rural learners have the ability to cope with the use of emerging learning technologies given their peculiar environmental challenges.

To ascertain the attitude of teachers to the adoption and use of new technologies in teaching and learning.

To ascertain the level of computer penetration in the rural and sub-urban areas in Nigeria.

To determine the level of teachers competence in the use of IT tools in teaching and learning.

Students in selected areas in Edo State in Nigeria were selected and exposed to informal learning or some sort of social learning by giving them play environment equipped with IT facilities and carefully selected learning contents based on their differing age grades. The selected age grades ranged from 3 years kindergarten to 15 yrs junior secondary levels. Other research instruments (questionnaires and interviews) were administered to teachers at kindergarten, primary and secondary schools levels.

For the second aspect of the study, questionnaires were administered to ICT administrators in some selected schools (mostly post secondary) across the country. This was to determine the level of ICT integration in the Nigerian School system.

The studies carried out reveal that:

Rural learners have the intellectual capacity to cope with use of IT tools right in their locations if the right facilities and learning content are provided.

- Teachers are not enthusiastic about integration of IT tools in teaching and learning processes mostly because they are unable to resolve the implications of this integration on course design and assessment of learners.

- There is low level of ICT penetration in Nigerian education system mostly because a larger proportion of the population are rural and sub-urban dwellers.

- Almost all tertiary institutions in Nigeria have computers and cyber cafes. However, these computers are mostly used for office routines, word processing and other administrative duties. They are not integrated into teaching and learning processes.

**Status of integration of learning technologies in Nigerians education system**

The study revealed some important facts about the level of integration of IT tools in the education system of Nigeria. There are no tertiary institutions in rural areas. A small percentage, mostly state owned and private colleges can be found in sub-urban towns.

At the post primary level, about 60% of teachers and students are aware of elearning but less than 10% have used ICT tools. Less than 10% of the schools have ICT facilities. Less than 15% of teachers are competent in the use of ICT tools while about 20% of students are fairly competent and they acquire ICT skills through friends informally using private cyber café's.
However, at the tertiary level at least 85% of workers and teachers are aware of e-learning but less than 20% have adopted the integration and use of these technologies. Almost all tertiary institutions have acquired ICT facilities but about 60% of workers are not quite competent in the use of these tools. ICT tools are mostly used for office routines and communications such as electronic mails. Some higher institutions are beginning to adopt the use of ICT tools for research and development as well as information processing, but quite an appreciable number of institutions have not. Over 70% of teachers in Nigeria are unable to engage e-learning technologies in the classrooms.

Two key issues emerge here (i) status of our education (ii) status of e-learning. It is observed that the status of our education is still mostly classroom and teacher-centred. The schools are grossly under-facilitated and the student population is explosive. The existing facilities are over stretched. e-Learning is still at its elementary stage of integration. The technology is foreign and local content is absent. e-Learning products are hardly in use. Proprietary e-learning products are not available, mostly imported, if any. Apart from the National IT policy, there is no specific e-learning policy. The newly developed Senior Secondary School Curriculum which has Computer Studies and IT alongside other vocational courses is yet to be implemented.

Teacher preparatory programmes for the implementation of e-learning are incredibly low leveled. There is low computer penetration especially in rural schools.

**Overview of e-learning and ePortfolio practice**

**E-Learning and Trends in Learning Technologies**

Wikipedia, the online dictionary defines e-learning as all forms of electronic supported teaching and learning, which are procedural in character and aim to effect construction of knowledge with reference to individual experience, practice and knowledge of the learner. Information and communication systems, whether networked or not, serve as specific media to implement the learning process [10].

E-learning is seen essentially as the computer and network enabled transfer of skills and knowledge. E-learning applications and processes include web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered through the internet, intranet/extranets, audio/visual devices, satellite TV, CD-ROM. It can be self paced or instructor led and includes media in form of text, images and animation [10].

In recent times, the technology driving e-learning practice has evolved with advances in IT. Sum Total Systems white paper presented top five Trends in Learning Technology [8]

**Increased adoption of mobile devices**

In use across the globe. A study by market intelligence centre in Taiwan says that our planet will hold an astonishing 3.3 billion mobile subscribers by 2010. Possibly over a third of the world’s projected population. This growth is driven by the fact that Mobile network and service providers are delivering increasingly improved performance, while mobile devices manufacturers are now delivering more comprehensive features sets with greater capabilities. There is also a proliferation of new mobile applications that give users access to functionality including ability to check email, surf web browsers, download GPS maps etc. However, no content or application development tools available at present. Vendor provided mobile LMS solutions are either non existent or immature.

(ii) **Blended Learning environments**

This is when different modalities of training such as self paced and instructor led are blended into a combined programme. The growth in this area is driven by the realisation that blended learning environments can be more effective and engaging than discrete ones because it provides learners with diversity of styles, pace or content. As recognition of these ideas grows, LMS technology is beginning to keep pace in its ability to deliver blended approaches. Because blended learning is maturing a number of organisations have not yet clearly defined the most appropriate blended programs for their needs. Nor have they. Figured out how to track progress and completion across multiple learning modalities within a single program.

(iii) **Talent development suites.**

This combines five key elements (community informal learning measurement formal learning, mobile access and compensation) into a single unified solution. Through its cyclical stages, talent development seems to
lend itself naturally to integration as a single comprehensive solution. Some companies have found that effectively centralising talent development components through a common technology can build real competitive advantage. However, most talent development suites were built to manage the different categories separately so uniting them can be extremely challenging.

**Integration of Web 2.0 technologies**

These technologies enable users to build and share their own content within interactive discussion groups, forums, wikis, and blogs. It’s about helping users participate more actively in their own on-line experiences. This is an area where users rules. They no longer want to sit passively and receive data, because in many cases they have vital knowledge to share and they know others have knowledge they are seeking. The major challenge in this area stems from the fact that many organisations remain unclear on how to fit these new technologies into an overall learning strategy.

**Immersive technologies**

These enable real-time, user-to-user interaction within a virtual reality. The development tools are maturing and becoming much more affordable. Immersive technology can be extremely effective for skills practice. However immersive learning environments can still be costly and time consuming to create. They can also be more difficult to deploy, given their intensive hardware and software demands.

**ePortfolio Practice, Technology and Key Competences.**

ePortfolio is seen as a collection of electronic evidence of achievement assembled and managed by a user or organisation. ePortfolio is seen as a specific type of Content Management System (CMS) that works as a collection of digital artifacts, where different users have different rights of access provided by the maintainer of the ePortfolio [2]. These artifacts are a demonstration of the owner’s abilities and constitutes a platform for self expression.

Three types of ePortfolio and two types of ownership are presented in a proposal for a taxonomy of ePortfolios by Danube university Krems (DUK), 2008 [2].

i. Reflection Portfolio or Educational Portfolio
ii. Development Portfolio or Personal Development/Career Portfolio
iii. Presentation Portfolio or Demonstration Portfolio/Professional Portfolio

ePortfolio is emerging as a future learning strategy. The rapid change of information and knowledge society does not stop at education; communication, teaching and learning are changing due to digital media [4]. Thus, ePortfolio forms an aspect of Technology Enhanced Learning (TEL) that embraces the total life of an individual from learning to career and profession. It is right to assert that Information and Communication systems, whether networked or not, serve as specific media to implement ePortfolio processes as is the case of e-learning processes. ePortfolio practice is the documentation process of learning outcomes of e-learning. For any society to efficiently exploit the full potentials of ePortfolio, the education system of that society must have integrated e-learning technologies into its system.

E-Learning places increased emphasis on social learning and use of social software, emerging learning technologies like blended learning, talent development suites, social software and web 2.0 technologies. Key competences in the use of these learning tools can not be dispensed with and will without doubt facilitate the integration of ePortfolio as an emergy learning strategy. Other desirable competences include but not limited to basic knowledge of computer operations and internet technologies, skills in the use of presentation software or tools to create web pages, use of Virtual Learning Environments (VLEs).

**The ePortfolio Ecosystem Concept**

The Oxford English dictionary defines ecosystem as “a biological community of interacting organisms and their physical environment” [3]. Reflecting on this, we envision an ePortfolio ecosystem as a community of biological beings whose identities are represented electronically with digital artifacts and modes of interaction defined by the maintainer of the portfolio on the identity representation. The environment is represented by the underlying technologies, IT tools, networks and internet which provide the platform for interaction.
Actualisation of Seamless ePortfolio Ecosystem precipitates on the assumption that the high-tech environment with the high-tech tools exist, the relevant communication infrastructure is available, adequate and accessible.

Implication and effect of research findings on creation of seamless ePortfolio ecosystem

Numerous identifiable challenges constitute inhibiting factors to full integration of e-learning technologies and ePortfolio practice in Nigeria. Most obvious are (i) teachers’ incompetence, which derives from the lack of suitable curriculum for teacher education, (ii) poor and unchallenging school environments, this results from inadequate facilities to match the student population, (iii) lack of sustainable power supply., (iv) The government of Nigeria, in seeking to gain relevance in the emerging information and knowledge society has set forth various initiatives aimed at realising its vision “20 2020”. To achieve its goals the National Information Technology Development Agency (NITDA) has produced a National Policy on Information Technology. However, there is absence of specific government policies and strategies for full adoption and integration of IT tools in education. Much of the effort of government now is directed towards increased computer penetration in the school system.

Our educational system is presently at the level of campaigns to create awareness of how the use of IT tools is changing the way we teach and learn. The system still adheres strongly to traditional methods which places emphasis on teacher/board with the learners being passive. Core issues of pedagogy and content are yet to be addressed.

In realising ePortfolio ecosystem, some economies especially the developing economies would require enormous time and effort to belong to that ecosystem for obvious reasons. (i) Time is still required to develop the policies and framework for integrating and implementation of ePortfolio practice in the education system. (ii) Effort is required to set goals and motivation for implementation of ePortfolio as well as identify and carry along stakeholders. This will ensure that learning outcomes are relevant to the immediate needs of the environments. (iii) New curriculum needs to evolve or old ones reviewed so that ePortfolio work will be anchored in the curriculum. (iv) A complete re-orientation process is required in the teaching/learning process so as to develop a different and better culture of learning. (v) Time and effort is required to re-design the teacher education curriculum so as to develop the required competencies and prepare the teachers for ePortfolio work. (vi) Strategies for dealing with resistances and difficulties have to be mapped out and actions taken, considering the peculiarities of the education terrain in Nigerian. (vii) It will still take some time to develop technology that suits the local needs of rural dwellers and for the requisite technologies to penetrate the sub-urban and rural areas.

Two key environmental factors that are fundamental to ensuring the physical, psychological and emotional development of learners are (i) the provision of school environments that are learner-centered, proper re-orientation for institutionalising education quality assurance approach at all levels of education as well as facilitating the process of meeting resource and training needs for the development of education quality assurance services on a country or region-wide basis. (ii) The technology to drive ePortfolio practice requires reliable and affordable internet connectivity built on good telecommunication infrastructure. This is still a dream in Nigeria. There are no specific national policies yet on widespread internet and broadband penetration as well as cyber crime, identity theft and other communications related crimes.

What can be done?

The government is presently embarking on a number of projects to improve on infrastructure development in Nigeria. However, for ePortfolio practice to be realised in this sub-region, would require that some level of domestication is achieved. With this e-Learning products that are suitable for the peculiar environments should be developed. Products should consider environmental factors and be adapted to suit. Also local content should be emphasized in developing learning content. This will facilitate adaptation of teaching and learning to the needs of the immediate society.

Nigeria is a huge market. There is need for producers and education consultants to know the user audience and the culture so as to create the right products for the market. Since Nigeria is an IT consumer nation, education consultants and producers need to pay close attention to the opportunities in the country and identify the specific technologies that will provide benefit to this audience. They should also assist and guide the institutions and various government agencies to initiate and start small pilot programmes that will create the proper awareness and motivation for full scale integration and deployment.
There is need for non-governmental agencies to come to the aid of the developing and underdeveloped economies to initiate sponsored programmes that assist in resolving these challenges.

References


An ePortfolio system to assist teachers in evaluating students’ language learning

Work in progress

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According to Meyer, Arami, Wade, Aslan and Deault (2010), ePortfolios are designed for three purposes: showcase, assessment, and process. The showcase in the ePortfolio refers to the concept that students, while many ePortfolios have been contrived for students to upload and organise the information, drawbacks are still remained. First, the current ePortfolios do not offer students many supports when they are collecting and organising the knowledgeable information. Students might have few ways to recognize which information they shall store in their ePortfolios and how they can organise and make personal connections among the collected information in a meaningful way. As a consequence, the collected information become fragmented and disconnected (Elena, 2009). Second, without scaffoldings from the system, students might encounter the difficulty in identifying their learning goals since goal setting can be a complicated process in terms of specificity, closeness in time, difficulty or challenge, which will affect students’ learning motivations, affective reactions, and attentions (Bandura & Schunk, 1981; Zimmerman & Kitsantas, 1997; Zimmerman, 2000).

As new system, E-portfoilo, will be developed in this project. The system is designed based on three main learning theories. First, the self-regulated learning (Zimmerman, 1998, 2000) is proposed as the fundamental framework to develop the system, including the phases of forethought, performance, and self-reflection. Second, Mayer’s Selection–Organisation–Integration (SOI) model of text comprehension (1996) is adopted to provide students with strategies for their content management. Finally, a web-based learning community is also advocated because learning is more effective when students are situated in a social context where they can discuss with their teachers and peers about their ideas, experiences and perceptions (Brown, Collins, & Duguid, 1989;).

Based on the research purpose to design an ePortfolio system to scaffold teachers in understanding learners, two research questions are proposed:

(1) How do teachers achieve their goals by the strategies of selection, organisation, and integration?

(2) How does the online system support teachers in scaffolding students’ reading?

Participants

Twenty to thirty pre-service teachers who register in a 3-credit graduate course entitled “Computer Assisted Language Learning” will be invited to participate in this study. These pre-service teachers have been learning English as a Foreign Language (EFL) for 10 years and are the first year graduate students in a Master program of English teaching. In this graduate course, the pre-service teachers will receive a teacher training program for five weeks to plan and implement a reading curriculum in this system.

Data collection

The collected data include questionnaires, interviews, and the actions of the trace result in the system. An open-ended questionnaire will be first designed to investigate teachers’ teaching strategy use, difficulty in teaching, and personal reactions toward the system. Follow-up interviews will be conducted for further clarification to explore how teachers overcome teaching difficulty to reformulate their teaching curriculum in teaching goals, materials, and teaching strategy use. The teachers’ actions of setting teaching goals, sharing the organised teaching materials, and monitoring students’ learning will be documented by trace results, so that the process data will be used to examine how teachers formulate and reformulate their teaching plans and objectives to scaffold their students.
Data Analysis

Data will be analyzed in terms of the trace results, questionnaires, and the follow-up interviews. Actions in the trace results will be used to analyze teachers’ goal setting, content management, and goal evaluation process. The open-ended questionnaire and follow-up interviews with twenty to thirty teachers will be used to explore the difficulties they had experienced in teaching and insights prospective teachers have generated to scaffold students’ reading.

The data will be analyzed by content analysis, including coding, categorization, description, an
Technology
Introduction
Today a lot of learning takes place outside of the classroom. To accredit these non-formal and informal learning activities of students in higher education, we developed a special study programme at the University of Augsburg. Within this study programme students take part in self-organised project groups e.g. campus radio, debate clubs, see figure 1), become part of such communities of practice and reflect on their learning experiences in terms of competency development cf. Sporer, Heinze, Jenert & Reinmann, 2007). In the context of the research and development project “Implementing an IT-Service Center” http://www.uni-augsburg.de/de/einrichtungen/its/, which was funded by the German Research Association, the didactic concept for this study programme was designed, and a software system was developed and implemented.

In this paper we introduce a software which was tailored specifically for this study programme. The software combines elements from ePortfolios, e-Collaboration and e-Assessment into one software solution — hence the name “e3-portfolio” cf. Sporer, Jenert, Meyer & Metscher, 2008). This software tool supports the collaboration of student’s project groups and it offers a way to integrate informal learning activities into the formal curriculum of higher education via a blended assessment strategy based on ePortfolios. It makes use of various features for collaboration and allows users to organise themselves in groups in a community area. It also allows students to reflect on their experiences in the project groups in a portfolio area. And it structures the assessment process of the student’s learning achievements and their accreditation in each specific assessment area.

Background of the Portfolio Tool
At the University of Augsburg students can take part in extra-curricular learning activities that are accredited through the study programme “Problem Solving Competencies” www.begleitstudium-problemloesekompetenz.de). In contrast to usual project-oriented seminars and tutorials, students participating in this study programme organise their project activities with a great extent of self-responsibility and usually are involved in the projects for several semesters. Since the study programme builds on the reflection of the student’s experiences via ePortfolios, it focuses the assessment on the articulation of the competencies that the students acquire in these projects. To understand the assessment procedure the roles of the persons involved in the organisation of the study programme are important:

Programme participants are also project participants. They can join one or more project groups and use the platform’s community area to coordinate their project activities. In the portfolio area they reflect their practical experiences and organise their project’s work results. Finally, members can collect and arrange learning and working achievements in the assessment area in order to get them accredited for their formal studies.

Project coordinators are responsible for the ongoing activities in the projects. They usually lead their project group and work at independent institutions outside of academia. They use the community area to coordinate operations within the project group and to enhance the knowledge management within the group. They use the assessment area to negotiate the goals and activities of the project participants at the beginning of a semester and give feedback to their project work at the end of a semester.
Project reviewers are part of the faculty and supervise the programme participants. They are concerned with the accreditation of the participant's learning and working achievements in the formal curriculum of the bachelor-master programmes. They use the platform's assessment area to negotiate learning contracts with the participants and to review the reflection and documentation of the project work in the participant's portfolios.

Programme coordinators manage the whole study programme. They organise the project groups which take part in the programme, they introduce the study programme to the participants and they coordinate the assessment with the reviewers. Via the assessment area they receive all learning and working achievements from the participant's and evaluate whether the work load is adequate for the recognition in the formal curriculum. After this they forward the portfolios to the project reviewers who finally give feedback to the participants.

At the beginning of each semester the student's write a learning contract in which they agree on their goals and activities with the project coordinators and reviewers. During the semester students document their working activities as project results and reflect on their learning experiences. In a project diary students ponder the salient events in their projects and track the workload they put into the projects. About once a week they take the time to write down what happened in their projects and how they evaluate the course of the project work. At the end of the semester the project diary and the work results are handed in to the faculty. Both serve to approve the workload in the project groups and get assigned to the modules of the study programme. Usually all three modules are covered in three semesters and then the participants receive the certificate of the additional study programme. If the students also want to earn credit points for their bachelor-/master programmes they have to write a final project report. In this report students reconstruct their reflective writings from the diary into a narrative of their participation in the project group. In an introductory part of this narrative writing students state their motivation and describe the context of the project. In the middle part selected entries from the project diary are revised into a coherent learning history which shows what the student has worked on and has achieved during the semester and how the necessary competencies to participate in the project were acquired. In the concluding part the student arguments how the competency development manifests in the project work and how the work in the project relates to the modules of the study programme cf. Sporer, Sippel & Meyer, 2009).

The described didactic background has been analyzed in detail cf. Metscher, 2009) and the corresponding requirements and outline of a highly customized software solution are described below.

Core Areas of e3-portfolio

Before explaining the technical implementation of e3-portfolio, the three areas of the collaborative e-Portfolio environment will be introduced and subsequently the intersecting and overlapping areas between these will be discussed.

Community Area

The community area of e3-portfolio is a place for sharing ideas and getting organised in project groups. Certain parts of the community area are open only to the participants of the project groups themselves and
are therefore suited for the private exchange of experiences and the construction of knowledge. For example, group proceedings can be posted and can only be viewed by members of the group. The community area can also be used to plan future meetings or to discuss the outcome of past events. Furthermore, project participants can use the platform to incorporate acquired knowledge, to help develop ideas and solutions associated with the knowledge base and structure of a project.

Any registered platform user can create a new project group, choose whether or not to make the group open to everyone and decide how people can join. Members will either be allowed to join with, or without confirmation from the group coordinator. Sometimes they may deny a request if the project already has too many members or if an individual does not meet the group requirements.

In addition to the internal group areas, there is a public area where visitors can read about the project’s aims and the ways one can contribute to it. This information is important for students who want to participate in one of the groups in addition to their regular course of study and want to learn more about them before choosing which group to join. But also potential employers can visit project groups’ pages and learn more about them if they are made aware of these in a student’s job application.

Portfolio Area

In addition to group contributions which are visible to all project participants, it is important for each individual participant to hold on to their own personal experiences and contributions within the group and to reflect on these. This can be done with the help of the portfolio area where a learning journal is written about once a week.

An overview of the learner generated content is accessible in the portfolio area. There the user can find all previously created diary entries and group contributions. The sum of these reflective writings represents the personal growth of an individual project participant throughout their participation in the study programme. To emphasize the chronological order of these contents, a timeline is used in addition to charts. This also helps the user during the subsequent compilation of his or her project diary.

The composition of a final project report is possible in the portfolio area. To craft such a report at the end of the semester, the student selects a project group and a time period. The system then automatically sets up a draft version of the report which is based on the journal entries. This draft version can then be edited and expanded into a coherent learning history. When the report is finished the students can hand it in to the programme coordinators and receive a criterion-referenced feedback from them.

In addition to creating a learning portfolio for the study programme, which consists of the project diaries, reports and artifacts of their project work, the student has the option of presenting a personal portfolio to an external audience. Therefore user profiles allow to publish personal information like areas of interest or expertise. Furthermore the project results can be integrated and made accessible to the public.

Assessment Area

The assessment area is primarily used for organising the relevant data and results in terms for participating in the study programme. Here students have an overview of the credit points and their achievements for the certificate they already acquired.

The certificate of the study programme can can only be received when all programme modules have been completed, each with at least one approved project diaries. The assessment area therefore gives each student an overview over completed and approved project diaries, which are listed with their status under the appropriate module. Once each module is covered by a submitted project diary, the student can apply for the certificate.

Because students can also earn credit points for each module, it is important for them to know for which modules they have already turned in a project report. In the assessment area students can see the actual status of their accreditation of credit points and access the feedback on their project report from the programme coordinators. All project reports are listed with their current status and achievable credit points.

Linking the Areas

As previously mentioned in the description of the three areas of e3-portfolio, there are numerous functions which intersect and overlap the areas. These intersections are highlighted briefly below.

A pivotal part of the study programme are the project groups, most prominently in the community area, but also representing an important concept in the other two areas. Therefore the journal entries in the portfolio
area can be assigned to one or a number of project groups. In addition, all group contributions a student creates in his project working are listed together with the journal entries in the portfolio area. These are important pieces for the creation of a portfolio, which includes all the work of each participant. The composition of project diaries and reports relies to a large extent on previous diary entries and group contributions the students make. These artifacts are interlocked with the community area indirectly through content that is used and directly through group assignment.

Both the assessment and portfolio areas incorporate project diaries and reports. In the assessment area, these are viewed as completed work and accomplished goals, credit points and certificates. Whereas in the portfolio area, the project diaries and reports are viewed more as a manifestation of the individual’s learning progress.

The submission of project diaries is supported by a process which keeps all people involved informed about the status of the diary and notifies them in case of status changes. After a project diary is created in the portfolio area it is saved as a draft and can still be edited by the author. Once the author is satisfied with the results and has chosen the appropriate programme module, they can submit the project diary.

The outlined system shows that we need a specific and highly customized solution to meet all requirements of the described concept. The biggest challenge is the combination and linking of all three different areas. The interleaved structure of the software assumes a very flexible and stable grounding.

Realisation of the Environment

During a brief analysis of existing online environments, like elgg or wordpress, and the native e-portfolio system mahara these different existing software solutions were classified regarding their flexibility and their compliance of the defined requirements. Unfortunately none of the analysed systems allowed the implementation of the described ePortfolio system to the full extend. Hence the e3-portfolio should be grounded on an extendable framework, like an open source content managing system.

The use of the content management system Drupal as a framework cf. Fitzgerald, 2008) enables developers to focus on making important adjustments to the system, taking into account changes in the organisation of the study programme in the process. The next section goes into detail on the Drupal CMS and factors in technical programming details. Subsequently the development of the e3-portfolio will be described briefly.

Drupal as Technical Basis

In Early 2007, version 5.0 of Drupal was released and since February 2008 version 6.0 is also available. Currently the versions 5.20 and 6.14 are available on the Drupal page to download. They differ in security updates and minor improvements. The structure and architecture of the CMS will be introduced below, as well as some of the utilized technologies.

The modular concept applied in the Drupal foundation has been proven reliable and has been continuously expanded. The result is an easier customization and extensibility, since all integrated modules have and share mutual functions. Through the Drupal API it is possible to select themes to demonstrate concepts or navigation. This ensures a clear separation of the application’s functions and their visual presentation in the web browser.

The open source CMS includes more than 20 different modules in the standard package. In addition to the essential base modules, a number of useful enhancements are offered. The following is a selection of the most important base modules.

The most important module in Drupal is the node module with which content can be edited to create a node, edit and adapt, and then publish it. These nodes include the title and the text body, along with information about the author. Next to standards such as pages and articles, personal content can be created and named. The user module, which is also available in the base module allows for a flexible user management with user roles and clearly defined user authorizations. In addition, users can change their user information accordingly and add personal information, such as profile pictures.

The search module can be found under the optional modules. It allows for a full-text search within the created nodes. The statistics module records and displays page views. The taxonomy module provides flexible categorization of content, depending on the type. It is not only possible to assign existing categories, but also self-compiled keywords. Lastly, a hierarchical system can be constructed and employed for the appropriate content types.
Implementation using Drupal

In the following chapter is describing the process of building a highly customized ePortfolio system using the CMS Drupal as a showcase.

The development of the e3-portfolio environment was carried out with Drupal 5, because essential modules, such as panels and views were not available in a sufficiently stable version for Drupal 6 when we started the project.

For individual requirements or functions that could not be implemented with existing modules, the base module e3-portfolio was developed, as well as three other module packages:

- e3-portfolio - Portfolio
- e3-portfolio - Community
- e3-portfolio - Assessment

During a workshop with the team of the study programme, in the winter semester 2008/09 the most important user stories were written down on note-cards and got prioritized. These user stories mainly covered the functionality of the community and the portfolio area. The ambitious goal was to implement all user stories in 4 sprints by the summer semester 2009 to be able to release the first version of the platform.

At first a simple blog-based learning journal and the most important group functions were implemented. This simple implementation of the learning journal used the module Blog which is already available in the Drupal standard package. On the basis of the organic groups module, the user stories with regard to the group functions could easily be implemented in the community area.

The user profile was extended with help of the module Content Construction Kit (CCK) so that participants of the study programme can optionally give detailed personal information. This modules allows the programmer to add almost any data field to an existing content type of a node. In order to make personal profiles public, a special view of the profile pages for non-registered users was created in the portfolio area via the module Views.

The compilation and creation of a new project diary and the ability to conveniently orient oneself along already produced journal entries and group contributions was not possible with the standard modules of Drupal. For this reason, a new module was created which uses the modules Views and Drupal Forms. The resulting module Journal-Creation-Wizard guides the user through the process of selecting several portfolio entries by picking a timeframe and a specific project group for the learning journal and generates a project diary in a two-column format. In addition, a separate content type named project diary was created that makes the connection to project group and the modules of the study programme through a node.

Figure 2: Screenshot of the e3-portfolio system
The development of the Report-Creation-Wizard expands the project diary module and adjusts its output to the requirements of the project report. The content type project report allows, aside from the depiction of the three-part project report, the selection of the appropriate module of the study programme as well as the project group, similarly to the project diary.

Furthermore the submission of the project diary is supported by a complex workflow. The description of activities that are submitted with the project diary must first be approved by the project coordinator of the project group the participant took part in. Not until the activities are reviewed and approved by the project manager the study programme coordinator should be able to access the document. Nested workflows can be defined with help of the Drupal module Workflow. It is possible to assign a content type more than one status and determine the status through junctions. These junctions can also be used to control the access permissions depending on the status of the content and the different user roles. The challenge at this point was to integrate the separate module and the project diary and report into the pre-existing environment. After the diary and report statuses and junctions were integrated, a separate plan for presentation and making changes were developed. As shown in figure 2 status and submission are inserted homogeneously into the project report.

**Prospects and current work**

As Drupal is a continuously growing and changing system, we are currently working on the migration from version 5 (D5) to the next stable version 6 (D6). Thus a wide number of new modules and so a lot of improvements will be available in the ePortfolio environment. Regarding the changes in modules which are already in use in the system, one of the most important improvements is the new version of Views.

The current module Views 2.x allows to reduce the administrative complexity by providing different display types instead of creating a new version of the view for each derivative) and additionally it is now possible to use relationships inside a view. Remembering the linked structure of the e3-portfolio system there are a lot of dependencies between the different content types, like project group and project diary or project report. These dependencies can now be realised in a view by using the new concept of relationship. But this is only one example of the technical enhancements of the e3-portfolio system which will be available in the near future.

Beside the further developments of the underlying CMS Drupal there are also a lot of concept-driven changes and improvements urgently needed by the study programme coordinators. The study programme is currently expanding at the university of Augsburg and also other universities have already started pilots using the e3-portfolio environment.

**References**


Ensuring learner privacy in an ePortfolio environment

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Introduction

ePortfolios are becoming increasingly popular as a tool to collate and demonstrate evidence of skills and achievements, as well as contribute to personal career development and facilitate learner pathways between education, training and employment. However, by nature, ePortfolios contain a significant amount of personal information about learners, some of which may be quite sensitive and, if not managed well, can compromise learner privacy.

In the Australian vocational education and training (VET) sector, ePortfolios are being implemented at a local level, either by a single teacher, department and occasionally across an organisation.

To support learner privacy in the use of ePortfolios in VET, the Australian Flexible Learning Framework (Framework) commissioned a privacy impact assessment (PIA). The PIA resulted in tools to support ePortfolio service providers (organisations which host ePortfolios) manage their privacy obligations to protect learners' personal information, while encouraging learner uptake of ePortfolios.

This paper describes the background of this work, the findings of the PIA and the work being done to develop tools and resources to ensure learner privacy in ePortfolio environments.

Background

In 2007, the Framework, commissioned a report into the use of ePortfolio systems in the Australian VET sector. This report identified that ePortfolios provided an effective way to support learner pathways between training, other forms of learning, and employment, and recommended their use be encouraged (Curyer et al. 2007).

To realise the full potential of ePortfolios for the VET sector, the Framework recognised that a cohesive national standards-based approach was required to provide efficient ways of using ePortfolios to manage learner pathways, and national action was required to develop the necessary standards, policies and business rules to support the use of ePortfolio systems. As a result, a national ePortfolios activity1 was incorporated into the Framework’s 2008-2011 Business Strategy (Flexible Learning Advisory Group, 2007).

In 2008, this ePortfolios activity conducted national stakeholder consultations and action research to determine the requirements for ePortfolios across the VET sector and beyond. This investigation also identified key areas that required national action to enable learners to utilise their ePortfolio to support lifelong learning.

This research culminated in the VET ePortfolio Roadmap (Roadmap) (Galatis, et al. 2009), a national strategic plan designed to support the diverse requirements for ePortfolios in VET. The Roadmap contains nine national goals, and three key outputs as outlined in Figure 1.

1 http://www.flexiblelearning.net.au/ePortfolios
To support the implementation of the Roadmap, the Framework also commissioned an investigation into the information needs of ePortfolio service providers in the VET sector. This research highlighted the need for further action on key topics including ownership, privacy, verification and security of learner information (Australian Flexible Learning Framework, 2009).

**Understanding learner privacy in an ePortfolio environment**

To address Roadmap’s Privacy goal to “ensure that personal data is protected and under the control of the ePortfolio owner”, the Framework engaged a company called Information Integrity Solutions to undertake a privacy impact assessment (PIA) of the use of ePortfolios in VET, resulting in the VET ePortfolio Privacy Impact Assessment research report (Cowper and Crompton, 2010).

This research recognises that ePortfolios are becoming increasingly popular in the VET sector as powerful tools for learners undertaking course work, collating evidence of achievements or skills to assist in recognition of prior learning processes, or when seeking employment. However, the research report also notes that if not managed well, ePortfolios may also have a significant impact on learners’ ability to control access to their personal information.

The PIA methodology involved the consideration of ePortfolio service provider obligations arising from Australian privacy law. This involved an assessment of privacy risks associated with ePortfolios from the learner’s perspective, together with the consultation of key VET stakeholders who were either currently implementing an ePortfolio system or had related interests in the use of ePortfolios.

Those stakeholders consulted showed a strong awareness of the need to protect learners’ privacy. This was particularly highlighted for education and training programs where the focus was on supporting and empowering vulnerable or disadvantaged groups.
While very few actual privacy incidents were reported during the consultations, there was a general view that the issue remained important and worthy of attention. This was particularly the case given that ePortfolios are a relatively new area of activity in the VET sector.

**Risk Factors for learner privacy**

The PIA identified three key risk factors related to the handling of personal information in ePortfolio systems:

- The extent of learner-generated content contained in the ePortfolio system
- The amount of learner controlled access of their ePortfolio content by third parties
- The dynamic and online nature of ePortfolio systems.

It also identified key areas, which should be addressed by ePortfolio service providers in managing these risks:

- Ensuring learners are aware of the potential privacy risks and are properly educated and supported to manage those privacy risks that are under their control
- Scaffolding the right educative framework around the development of ePortfolio content so that it is appropriate and does not expose learners or service providers to undue privacy risks
- Managing access to the ePortfolio content through fine grained access controls, so learners are assured of the control they have over their information, in particular, what other people can see, knowing that they will not see the whole ePortfolio
- Keeping personal information in the ePortfolio secure from threats such as hacking or identity theft by ensuring security measures such as firewalls and virus protection are appropriate and up-to-date.

**Developing user-friendly guidelines**

Based on the analysis of the PIA, it was recommended that guidance for ePortfolio service providers and educators be developed to help providers understand their obligations under privacy law, where common risks lie, appropriate terms and conditions for ePortfolio systems and the need for a privacy plan. This work particularly focuses on user-generated content and gives providers and educators use-cases and tips for good practice in privacy principles compliance. These matters have been outlined in the *VET ePortfolio Privacy Draft Guidelines* (Guidelines) (Cowper and Crompton (2010)).

With a focus on privacy compliance and good practice, these draft Guidelines provide practical guidance and tools to help ePortfolio service providers and educators comply with Australian privacy law obligations. They also aim to assure learners of the security and confidentiality of their personal information in ePortfolio systems, to build learner trust and confidence and maximise up-take by users.

The draft Guidelines contain a checklist of privacy considerations when establishing an ePortfolio system, and considerations for developing terms and conditions for ePortfolio use. An overview of privacy principles and tips for compliance is provided, along with sample ePortfolio use cases, identifying key privacy compliance issues and references to other useful tools and resources.

**Testing the guidelines**

The Guidelines will be trialled during 2010 with a number of ePortfolio service providers. The aims of these trials are to gather feedback about the usability and adoptability of the draft Guidelines, and to develop resources to support learners’ understanding of privacy risks when using an ePortfolio system. This process will enable the development of user-friendly ePortfolio Privacy Guidelines and resources, for which national agreement and adoption will be sought.

**Concluding remarks**

Currently there is a ground swell of interest and uptake in the use of ePortfolios in the VET sector in Australia. To ensure learners gain the confidence required to store their personal information in an ePortfolio system, good privacy practice principles need to be adopted by ePortfolio service providers.

The ePortfolios business activity, a national ePortfolios project in the Australian VET sector, is working to disseminate and support the adoption of draft Privacy Guidelines to provide support to ePortfolio service providers.
providers and their users. The Guidelines are being tested in 2010 via a number of ePortfolio service providers before national agreement is sought.

References


Emerging issues in using ePortfolio

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Varazdin, University of Zagreb

Introduction
With the development of Web applications that support the Portfolio concept, the latter became widely utilized by learners, educators, institutions and other audiences. In 2006, Jafari et al. made a comprehensive ePortfolio literature overview covering the ePortfolio concept from a wide variety of aspects. Numerous researchers tried to define an effective ePortfolio classification but until today no unique view has been established. In addition, many institutions use ePortfolio in different ways and at different levels of maturity, ranging from those providing an ePortfolio application only sporadically to those that have developed their ePortfolio implementation strategy and put it in practice so as to utilize as many ePortfolio functionalities as possible. However, both ePortfolio literature and practice reveal that there are still too many institutions and individuals using ePortfolio without either a profound insight into this phenomenon or any measurement of its performance. Therefore this paper raises a few essential questions that need to be addressed in the process of using ePortfolio from the individual and institutional perspective.

At the beginning we define the following three research questions:

1. What is the state of the art of the ePortfolio usage?
2. What are the most important issues and trends in the ePortfolio’s current state and future development?
3. What are the promising novel elements emerging in ePortfolio environments?

In order to answer these questions we shall first discuss ePortfolio types and then define a substantial number of criteria to analyze 91 ePortfolio systems found on the Internet.

Types of ePortfolio
For the purpose of the research in this paper, the following conclusions will be used as a point of departure in establishing unique criteria for comparing ePortfolio types:

1. Most ePortfolio classifications rely on a single common criterion: its purpose. By looking at the ePortfolio purpose and its role in LifeLong Learning (LLL) it will be assumed that this is the only meaningful classification usable in terms of ePortfolio. An institution that reached Level 5 according to the ePortfolio maturity levels can define a different classification type for its own purpose, but those possible types will not be the object of our analysis.

2. Considering the purpose of ePortfolio as a classification criterion and the diversity of the existing classifications (McGrath et al., 2004; IMS GLC, 2005; JISC, 2006; Stevenson, 2006; Stefani et al., 2007; ), three main types of ePortfolios will be established here and used in this paper hereafter:

1. Assessment ePortfolio: Demonstrate an individual’s competences and skills for well-defined areas. The purpose is to evaluate an individual’s competency as defined by program standards and/or outcomes in the case of an educational institution. An individual can publish his/her work and educators as well as peers can leave their feedback.

2. Development ePortfolio: Demonstrate the advancement and development of skills over a period of time. It is a direct support to Personal Development Planning.

3. Showcase ePortfolio: Demonstrate exemplary work and skills. Individuals typically show this portfolio to potential employers, peers or educators. For example, it can be one’s CV.

In addition, a Hybrid ePortfolio can be established by combining all the three types of ePortfolio. This is the most widely used ePortfolio today. For example, a job application ePortfolio is a type of the Hybrid ePortfolio because it contains a CV as a Showcase ePortfolio and a set of artefacts by which certain work is
demonstrated or proven and according to which an individual will be assessed by the employer (characteristics of the Assessment ePortfolio).

It has to be noted, however, that these types are not to be taken for granted. In most cases individuals will create an ePortfolio without being aware of the type they are creating. Even if someone intends to create a Showcase ePortfolio, that same ePortfolio can also be used to assess that individual. In that particular case it will become an Assessment ePortfolio.

Methodology

In this paper 91 ePortfolios found on the Web were analyzed to examine various ePortfolio aspects covered in the following chapters and provide data necessary for gaining insight into the trends in ePortfolio usage. The ePortfolios were identified using search engines by means of keywords Portfolio, e-portfolio, ePortfolio, reflection and artefact. The worldwide ePortfolio sample encompasses a variety of ePortfolios in terms of their content, ownership, Web application used, level of implementation and level of maturity. In general, the analyzed systems are individual ePortfolio systems that belong to individuals that come from various spheres of human endeavour ranging from educational institutions, financial and management industry to music, art and informatics, with some examples of student ePortfolios included as well. For the purpose of this paper the following evaluation categories have been created based on judicious selection of elements available in the extensive ePortfolio literature (e.g. Barret, 1998; Bisovsky & Schaffert, 2009; Blackburn&Hakel, 2006; Brant, 2006; Challis, 2005; Doig et al., 2006; Emmet et al., 2006; Hartnell-Young, 2006; Hickerson & Preston, 2006; Himpsl & Baumgartner, 2009; Jafari, 2004; López Fernández, 2008; Riedinger, 2006; Stefani et al., 2007; Zhang et al., 2009, etc.) as well as on personal experience (Balaban, 2010) in ePortfolio implementation:

1. **Type of ePortfolio** (6 criteria) – evaluation category which examines the basic type of the analyzed system according to the classification proposed in the previous chapter;

2. **Individual/institutional dimension** (3 criteria) – evaluation category which attempts to determine whether the analyzed system belongs to a standalone individual, an individual within a certain institution or the institution itself;

3. **Reflectiveness dimension** (8 criteria) – evaluation category which examines the major characteristics of reflective learners, that is, the relation between proactive reflection of one’s own educational goals (and its outcomes) and life achievements in general;

4. **LifeLong learning (LLL) support** (12 criteria) – evaluation category which examines the elements of the ePortfolio system that support, facilitate and justify the efforts in establishing a LLL framework;

5. **ePortfolio maturity level** (5 criteria) – evaluation category which examines the maturity level of the ePortfolio system according to the classification by Love et al. (2004);

6. **Technical details** (9 criteria) – evaluation category which partially examines essential and most outstanding technical and technological characteristics of the analyzed system;

7. **Security issues** (3 criteria) – evaluation category which examines the security aspect of the analyzed system in the most general sense by verifying its openness and the existence of mechanisms for determining artefact authenticity;

8. **Employability** (4 criteria) – evaluation category which examines the elements of the analyzed system important for establishing a relationship between potential employers and employees.

A detailed overview of all the categories along with evaluation criteria is provided in Table 1. In the following chapters of this paper the results of the analysis are presented.
### Table 1. Categories and criteria for ePortfolio system evaluation

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Type of ePortfolio</th>
<th>Eportfolio independence</th>
<th>Reflectiveness</th>
<th>LifeLong Learning</th>
<th>Maturity level</th>
<th>Technical details</th>
<th>Security issues</th>
<th>ePortfolio and employability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Showcase Assessment Hybrid</td>
<td>Individual (standalone)</td>
<td>Artefacts from preschool</td>
<td>Simple description of artefact</td>
<td>Artefacts from elementary school</td>
<td>Artefacts from high school</td>
<td>Academic collaboration (Level 4)</td>
<td>Scrapbook software is used (Level 1)</td>
<td>Open ePortfolio (audience needed)</td>
</tr>
<tr>
<td></td>
<td>Individual (within an institution)</td>
<td>Artefacts from elementary school</td>
<td>Profound description of artefact / elaboration of artefact's meaning</td>
<td>Artefacts from high school</td>
<td>Artefacts from undergraduate study</td>
<td>Mentoring leading to mastery (Level 3)</td>
<td>No ePortfolio software is used (Level 2)</td>
<td>No ePortfolio (credentials not needed)</td>
</tr>
<tr>
<td></td>
<td>Institutional</td>
<td>Artefacts from high school</td>
<td>Elaboration of artefact’s creation and evolution (history)</td>
<td>Artefacts from postgraduate study / career study</td>
<td>Evidence of completion of certain educational level (certificates)</td>
<td>Assessment, Evaluation and Reporting System (Level 5)</td>
<td>Name of the software used (if any)</td>
<td>Commercial / non-commercial artefacts</td>
</tr>
<tr>
<td></td>
<td>Artefacts from high school</td>
<td>Description of individual's attitudes and opinions</td>
<td>Description of connections between individual's work / education / achievements and goals</td>
<td>Description of the followed curriculum</td>
<td>Description of extracurricular activities Language skills</td>
<td>Description of informal learning</td>
<td>Description of LLL goals</td>
<td>External artefacts</td>
</tr>
<tr>
<td></td>
<td>Artefacts from high school</td>
<td>Description of individual's work / education / achievements and goals</td>
<td>Elaboration of new ideas (in life, career and elsewhere)</td>
<td>Description of the followed curriculum</td>
<td>Description of extracurricular activities Language skills</td>
<td>Evidence of informal learning</td>
<td>Description of LLL goals</td>
<td>External artefacts</td>
</tr>
</tbody>
</table>
Results
The analysis showed that the largest number of the analyzed ePortfolio systems (60, that is, 65.9%) belong to the Showcase type. The second most frequently represented type are Hybrid systems (20, that is 22%). Among Hybrid combinations, the most common type (11) is the Showcase & Development systems combination. The second most common Hybrid combination is the Assessment & Showcase, with 3 examples of such systems. The third most frequently represented type (8, that is, 7.7%) are Development systems. Finally, the least represented type (3, that is, 3.3%) are Assessment ePortfolio systems used exclusively for that purpose. The category for the assessment of the ePortfolio maturity level (Love et al., 2004) yielded some very interesting results. The largest number of the analyzed ePortfolio systems (42, that is, 46.2%) belong to CV systems (Level 2). Elements of academic collaboration between various parties in the process of instruction and learning was recorded in 18.7% of the cases.

The number of systems in which a relationship between the teacher and the student (Level 4) is evident and a mechanism of cooperation between them exists leading to student progress through mentoring is fairly low (7, that is, 7.7%).

EPortfolio Independence

Since the purpose of ePortfolio is to support LLL, it should be independent of the institution that an individual is currently a member of (as a student, employee, etc.). What is the most common situation (i.e. state of the art) in this respect today? Our analysis of ePortfolio systems by using the criteria from the second evaluation category showed that 52.7% of the systems belong to individuals within a particular institution, whereas 45.1% of the systems belong to standalone individuals. Only 2.2% of the analyzed systems belong to institutional ePortfolios.

Structure and quality of artefacts
During the examination of the reflectiveness dimension, which is one of the most important evaluation categories, it was recorded that as many as 82.4% of systems contained simple descriptions of artefacts, whereas a total of 36.3% of the analyzed systems contained detailed explanations of the relevance of artefacts for the system owner. An accurate account of the origins and evolution of particular artefacts was provided by 16.5% of ePortfolio owners. Such positive assessment of reflectiveness is considerably accounted for by the fact that 49.5% of the analyzed systems contained descriptions of users’ attitudes and ideas on various topics. A significant reflective element of the relationship between an individual’s goals and career, education and achievements in general was recorded in 17.6% of the systems. In 36.3% of the analyzed systems new ideas and innovative solutions pertaining to various domains (personal sphere, professional sphere, education etc.) were elaborated and presented. Furthermore, it was found that as many as 65.9% of the systems contained descriptions of Porfolio owners’ individual goals. However, the rather discouraging fact that a clear and accurate description of the system’s type / purpose was provided in only 15 cases (that is, 16.5%) needs to be mentioned as well. When the LLL category is considered, several interesting results need to be pointed out related to artefacts. For instance, 56% of the analyzed systems contained artefacts originating from the authors’ postgraduate study, that is, their employment period. Furthermore, 48% the analyzed systems contained artefacts originating from the authors’ graduate study. It is a discouraging fact that a description of the curricula followed during the ePortfolio authors’ education was found in only 13.2% of the systems.
Only 9.9% of the observed systems contained information on a specific type of extracurricular activities/hobbies, whereas a description of ePortfolio owners' language skills was recorded in as few as 7.7% of the analyzed systems. Evidence of informal learning was found in 26.4% of the systems, while only 17.6% of them contained a description of long-term goals related to LLL.

Technical details and security issues

This section presents an analysis of the technical features that indicate the essential technical and technological characteristics of the ePortfolio platform. Related security issues are discussed in terms of system openness and the existence of mechanisms for verification of artefacts authenticity.

Only 13.2% of the analyzed systems are based on a software ePortfolio platform (e.g. Mahara, Elgg, Epsilen, eFolios), whereas most of them (86.8%) are developed on free Internet technologies such as Wordpress, Scrapblog, TaskStream and Google Sites. A great majority of the analyzed systems (86.8 %) contain an internal artefact storage and manipulation system. External links to artefacts stored on other Web sites were found in 37.4% of the analyzed systems. Furthermore, in 7.7% of the observed systems broken links were encountered.

When security issues are concerned, the fact should be mentioned that a great majority of the analyzed systems are open for access, that is, no log-in data is required to access them. Only 4.4% of the systems were closed-type, or some of their views required login. The most alarming fact in the entire analysis is that none of the systems contained a mechanism for artefacts authenticity verification.

Employability issues

The category of evaluation of elements relevant for the employment process revealed that 44% of analyzed systems contained descriptions of ePortfolio owners’ professional skills.

In 38.5% of the systems there was evidence supporting the stated professional skills. Moreover, as many as 50.5% of the analyzed systems contained a certain type of an official CV. These data suggest that ePortfolio is being increasingly used in employment and presentation of references. Nevertheless, if this finding is related to the aforementioned security issues, it turns out that the presence of professional skills in ePortfolio descriptions is not adequately supported by security mechanisms verifying them. Possible solutions include the introduction of a digital signature system, which is fairly costly and therefore unaffordable for a great number of institutions, or the development of an alternative solution such as one’s own artefact verification method. The latter was proposed and accurately described in Balaban&Kisasondi (2009).

Discussion

With respect to the extensive analysis presented in previous chapters the following conclusions can be made: in general, ePortfolio systems are based on free Internet technologies, most of which are not even specialized ePortfolio applications; access to ePortfolios is partially or fully open to all the interested parties; most analyzed ePortfolios belong to the Showcase type, i.e. a kind of rather sophisticated personal CVs. Such findings also invite several challenges to be addressed. First of all, most of the artefacts lack any authentication proof and little attention is given to intellectual property rights, both of which are important considerations when referring to the employability issue. On the other hand, about half of the analyzed ePortfolios include reflections on artefacts and opinions regarding various achievements and progress. Nevertheless, although they represent a contribution to LLL concepts of individual and institutional development, they tend to lack a clear vision and purpose. In general, ePortfolio is extensively employed in a way to cover all the aspects of formal learning, which leads to the conclusion that it is widely used as a pedagogical tool. One of the tasks in formal education should be to teach students how to reflect and use that knowledge in other types of learning (e.g. informal and / or non-formal learning to evidence their accomplishments). The artefact quality analysis showed that reflections are being increasingly more used, which apparently presents a foundation for exploiting the potential of reflections even further.

Moreover, regarding the ePortfolio development, several emerging trends can be identified. Firstly, Assessment and Development ePortfolio types are becoming more (although still not sufficiently) widely used and sophisticated. This can be accounted for by the fact that the need for using ePortfolios in such a manner has not yet been embraced in higher education. Furthermore, ePortfolio is used as a platform for presenting, elaborating and testing innovative novel ideas in the professional and personal development.
domain. Finally, informal and non-formal learning evidences have arisen as natural objects in ePortfolio environments that support personal development plans.

References


2. BALABAN, I. (2010) FIRST STEPS IN USING EPORTFOLIO IN A UNIVERSITY COURSE, CH. 16, PP. 155-164, E- LEARNING NEW TENDENCIES AND INNOVATION DIDACTIC ACTIVITIES, ED. ANA LANDETA ETXEBERRIA, CEF, SPAIN


13. IMS GLOBAL LEARNING CONSORTIUM (2005) IMS EPORTFOLIO BEST PRACTICE AND IMPLEMENTATION GUIDE, IMS/GLC, INC., HTTP://WWW.IMSGLOBAL.ORG


Let’s Keep it Personal: ePortfolio Data in Next Generation Distributed Computing Applications

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Introduction

We are seeing a changing trend in the way ePortfolios are used, moving from a ‘push’ model, where the user presents personal data to interested parties via a presentational ePortfolio, to a ‘pull’ model where interested parties are given permission to extract personal data automatically from the ePortfolio based on a pre-agreed policy. This trend is supported by developing standards in web service data security and developments such as the emergent Leap2A ePortfolio standard.

Although this model is advancing rapidly and seems to be the future for effective ePortfolio use, it raises concerns about user privacy. For example, extracted data could be leaked to third parties - witness the kind of data misuse from social networking sites that has been seen in recent years. To counter these threats the EU Framework 7 project TAS³ (Trusted Architecture for Securely Shared Services) has been developing a trust framework in which data can be shared while respecting user privacy.

TAS3 aims to create a service infrastructure that will put users in control of the use of their personal data in service orientated distributed computing environments at all times.

Objectives

The TAS³ implementation at the University of Nottingham is supporting a regional student placement scheme which will provide students with automated placement matching and management services from various service providers.

The implementation’s objective is to use TAS³ technology to allow users to track use of data extracted from their ePortfolios in other applications. We aim for users to be able to control and monitor their data use, seeing how it is used and by whom, and even to recall it.

Implementation

Management of data depends on the implementation of the TAS³ framework to create a trust infrastructure within which the user's personal data can be shared. This trust framework is held together by common policies, and by monitoring of policy decision and enforcement calls. In this model the data is tracked throughout the framework and users are notified each time a service provider receives or requests access to their data.

Selection of the service providers who can access the data is driven by users. Service selection is performed using the user's selected trust policies; these are matched against service provider trust rankings managed by the TAS³ infrastructure and generated from user feedback. Once access has been granted, users also decide on the policies that secure what actions can be performed on their data. These ‘sticky policies’ remain attached to the data as it moves throughout the system.

The policy mandates the trust criteria that a service provider must fulfill in order to be able to access the data, and subsequently what functions certain types of service provider can perform on it. This functionality is restricted according to service provider role and the specific element of data within the data object.

Monitoring of personal data use is fed into a user's Dashboard which reflects changes as the user's personal data is accessed by service providers.

The system is managed in real time by linking Policy Enforcement Points (PEPs) and Policy Decision Points (PDPs) to the user's Dashboard via a specifically designed Audit Bus. This Bus uses WS-Notification to send messages to relevant users when their data is part of a PDP or PEP request.
Results
The first results of the implementation were demonstrated to the European Commission in the project’s March 2010 review. The demonstrator showed successfully how users can control use of their personal data when it is extracted from the original hosted environment. In Nottingham we are planning to implement this in user trials for student placements using the OPUS student placement management system and Mahara ePortfolio by the end of 2010. TAS³ technology is also being applied by a working group to further develop the concept of Personal Data Stores (PDS). One interpretation of PDS is based on the concept of users holding policies to control the remote use of their personal data.

Conclusion
We see the future use of ePortfolios being to act as data stores within wider distributed applications. To enable this, a security framework has to be in place that allows users to set and enforce policies to protect the personal information in their ePortfolios. The implementation of TAS³ in Nottingham is leading the way in illustrating how this can be achieved to empower users to have control over how their personal data is used.
Which open source ePortfolio software system fits the demands of the University of Vienna best? A comparative praxis analysis of three ePortfolio software systems, considering the perspectives of students, teachers, and the institution

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To create a basis for decision-making concerning ePortfolio infrastructure for the University of Vienna, three software systems, have been evaluated as ePortfolio Tools during courses in five different disciplines. This paper presents the results and conclusions of this comprehensive study, including a set of basically functional needs for ePortfolio tools to fit the demands of the University of Vienna.

**ePortfolio framework of the University of Vienna**

Foundation of the research described in this paper is the formerly developed ePortfolio framework for the implementation of ePortfolio at the University of Vienna. According to the university's development plan "Universität Wien 2012", the goals for ePortfolio implementation on a curricular level have been defined in advance.

Within the national fnm-austria project "Model cases for implementation strategies for integrated ePortfolio in tertiary education", containing ePortfolio pilot projects, a framework for ePortfolio was predefined.

The framework for ePortfolio implementation considers four relevant dimensions of ePortfolio: Competency planning, learning processes, presentation and finally infrastructure. This paper is focusing on the last mentioned dimension: Infrastructure.

Each dimension is to be discussed for concerns of three levels of stakeholders: The Individual Learners, The Teachers of a Course or Module, and the institution, responsible for the study program and providing eLearning infrastructure.

**Preparing a ePortfolio Infrastructure decision**

The University of Vienna is a comprehensive university embracing 15 Faculties, and providing 47 degree programmes. At present, about 85,000 students are enrolled in 182 courses at the University of Vienna. As an ePortfolio system for the University of Vienna has to be able to cope with the needs of so many different disciplines on the one hand, and has to be accepted by a very wide and diverse range of users (students as well as teachers), the decision making process for a university wide ePortfolio system was assisted by a comparative test-phase and analyses of different software systems.

For reason of economy as well as sustainability only open source systems were included in the selection. We selected three software systems for the test phase: Mahara, elgg, and wordpress MU. Aim of the test phase was to analyze and compare all systems from the three different stakeholders’ perspectives separately: Those of students, teachers and the institution, providing and supporting the ePortfolio infrastructure.

**ePortfolio test phase and Evaluation**

Each of the Software systems was tested within two courses during the winter term 2009/2010, attaining about 1.400 students of 5 different study programs. Our goal was, to recommend which system will fit best to the needs of the University of Vienna. This included different aspects for the different stakeholder levels: Institutional level:
Was it possible to integrate the system in the existing eLearning infrastructure?
Was the system scaling for the needed number of users?
Which amount of support was necessary?

Teachers´ level:
• How is the acceptance of the system as ePortfolio tool?
• How do teachers appraise the usability and the functions of the software?
• Did teachers manage to implement their teaching concept using the software?
• How far did the system support or inhibit the desired learning processes?

Students´ level:
• How is the acceptance of the system as ePortfolio tool?
• How do students appraise the usability and the functions of the software?
• Did they manage to fulfill the course assignments using the software?
• How far did the system support or inhibit their learning processes?

Results of the Evaluation

The teachers and tutors of the courses were interviewed about their teaching concepts and the desired learning outcomes before and after the course. Also the involved members of the Vienna University Computer Center and the administrators of each software system were questioned about the technical aspects.

Students were asked to do an online survey, in which 106 students took part. Additionally about 80 students did an online usability test and an evaluation of an ePortfolio system they did not use in course, and a comparison with the one ePortfolio system, experienced in course.

The results of all evaluations will be presented in this paper and discussed according to their implications for the ePortfolio infrastructural development of the University of Vienna. The synthesis of all evaluation data provides a detailed view on the three software systems as ePortfolio tools: Their pedagogical potential, their usability and the acceptance threshold of students and teachers, and the technical aspects of ePortfolio implementation in practice. As no system fitted the expectations sufficiently, we will also present a set of minimal functional needs for an ePortfolio system for the University of Vienna.
Emerging issues in using ePortfolio

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With the development of web applications that support the Portfolio concept, the latter became widely utilized by learners, educators, institutions and other audiences. In 2008, Jafari et al. made a comprehensive ePortfolio literature overview covering the ePortfolio concept from a wide variety of aspects. Numerous researchers tried to define an effective ePortfolio classification but until today no unique view has been established. In addition, many institutions use ePortfolio in different ways and at different levels of maturity, ranging from those providing an ePortfolio application only sporadically to those that developed their ePortfolio implementation strategy and have put it in practice so as to utilize as many ePortfolio functionalities as possible. However, both ePortfolio literature and practice reveal that there are still too many institutions and individuals using ePortfolio without a profound insight into this phenomenon and any measurement of performance either. Therefore this paper addresses a few basic questions that need to be raised in the process of using ePortfolio. Moreover, a possible meta-model of ePortfolio usage is discussed to depict different scenarios in a variety of contexts.

Some of the research questions this paper will attempt to provide answers for are as follows:

The ePortfolio independence. Since the purpose of ePortfolio is to support lifelong learning, it should be independent of the institution an individual is currently a member of (as a student, employee, etc.). What is the most common situation (state of the art in this respect) today? Is the owner of an ePortfolio clearly stated? Is there a clear purpose of an ePortfolio? Have the institutions developed the need for using ePortfolio for self-presentation?

When does a collection of artefacts become an ePortfolio? Are there any innovative/creative approaches we can detect? Is there an added value that ePortfolio brings to an individual? What is the current status of ePortfolio in respect to the ePortfolio maturity level (Gathercoal et al., 2004)? Answering the question about the added value, the paradigm of ePortfolio will become clearer.

The user creates views for different purposes using artefacts stored in their private repository. A particular view can have one meaning for the ePortfolio owner and a totally different meaning for the audience. In addition, a single view can be used in different contexts and different situations producing a different meaning each time. These situations add further complexity to ePortfolio, while different ePortfolio classifications appear to be confusing. So the question that should be raised is about who defines the ePortfolio type and when is it defined?

Artefacts storage and retrieval. Where do users most frequently store their artefacts? Is it within the ePortfolio application or at an external link? Privacy and security issues should be raised here that will highlight the importance of an artefact’s credibility.

EPortfolio and employability. How can we link the concepts of ePortfolio and employability? Do people use ePortfolio to support their CV and skills while applying for a job?

In the paper, over 90 ePortfolios found on the Web are analyzed to address these research questions and provide possible arguments. The worldwide ePortfolio sample in this paper encompasses a variety of ePortfolios in terms of their content, ownership, web-application, level of implementation, and level of maturity.

As a result of this research, a global overview of the current state of ePortfolio will be given along with implications for further research and suggestions for improvement.
Interoperability in Action – ePortfolios, Leap2a and

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Background. Practical experiences and key competencies are becoming increasingly important for students in today’s working life. One way to attain those competencies is to take part in self-organised project groups at the periphery of their university (i.e. campus radio, debating clubs). Here students learn to solve problems and become part of a community of practice. At the University of Augsburg students can get such extra-curricular learning activities accredited through the study programme "Problem Solving Competencies" (www.begleitstudium-problemloesekompetenz.de). This study programme builds on the reflection of the student’s experiences via ePortfolios and focuses the assessment on the articulation of the competencies that the students acquire. In the context of the research and development project "Implementing an IT-Service Center" (http://www.uni-augsburg.de/de/einrichtungen/its/), which is funded by the German Research Association, the didactic concept for this study programme has been designed and a software system was developed and implemented.

Objectives. In this paper we introduce a software which was tailored specifically for this study programme. The software combines elements from ePortfolios, E-Collaboration and E-Assessment into one software solution – hence the name “e³ portfolio”. This software tool supports the collaboration of student’s project groups and it offers a way to integrate informal learning activities into the formal curriculum of higher education via a blended assessment strategy based on ePortfolios. It makes use of various features for collaboration and allows users to organise themselves in groups in a community area. It helps students to reflect on their experiences in the project groups in a portfolio area. And it structures the assessment process of the student’s learning achievements and their accreditation in the curriculum in the assessment area.

Results. The technological basis of the software is the open-source platform and content management system Drupal (www.drupal.org). The standard package already provides many administrative functionalities like user-management, dynamic content creation and activity-logging. With this core of Drupal it is possible to implement tools like forums, weblogs, wikis and other advanced features relevant to a portfolio system. Additionally there is a wide range of modules which extend the functionality of the standard package in almost any direction. We used the core of Drupal and several more modules to develop the installation package of our portfolio system (www.sourceforge.net). In our paper we will describe the system architecture, the portfolio functionalities as well as the implementation and configuration of this software.

Outlook. Finally we will outline the next steps in the development of e³-portfolio. As recent evaluations have shown that it needs to be interconnected with other systems in a twofold way: On the one hand the assessment area needs to be seamlessly integrated into our university-wide learning management system. The community area on the other hand needs to offer an interface that makes it possible to mashup e³-portfolio with other kinds of personal learning environments and groupware tools. With our contribution to the conference “ePortfolio 2010" we would like to get in contact with other designers, developers and users of portfolio systems in order to learn from them and to share our experiences and insights with them. Furthermore we want to introduce e³-portfolio to a broader community of experts and practitioners in the field of portfolio work and are looking for co-developers who are interested in joining our open source project.
Mahara: Book, Official Certification and eAssessment Integrations

Derrin Kent, Richard Hand, Glenys Bradbury, Meg Kent
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In this workshop, Mahara Partner Organisation TDM (http://tdm.info) will introduce and overview the contents of our new book:


The book not only teaches newcomers how to use Mahara, it also introduces some of the philosophies behind e-portfolios and offers a number of practical tips for Mahara Management.

We at TDM are extremely proud of all the very positive book reviews we have already received:

http://www.moodleblog.org/?p=184
http://kev-brace.blogspot.com/2010/03/maharan.html

In this workshop session, TDM will also introduce:

1. the new Official Mahara Certification Programme which will offer three certificate types:
   - Mahara Certificate
   - Mahara Manager Certificate (Pre-Requisite = Mahara Certificate)
   - Mahara Technologist Certificate (Pre-Requisite = Mahara Certificate)

2. Mahara MAX: (Mahara + Moodle + Assessment Tracking + eXtra Modules) an integration between Mahara, Moodle, the Moodle Gradebook and additional moodle modules which facilitate for a simple but useful learner-led, evidence-based qualification tracking process without sacrificing the personalised learning principles offered by a lifelong learning tool like Mahara.

Mahara is a user-centred environment with a permissions framework that enables different views of an e-portfolio to be easily managed. These views helps you display your artefacts – text files, spreadsheets, images, and videos – in a way you choose and to the people you want. You can also create online communities and social networks through groups, blogs, and forums.

Being a novice, you will need a quick and easy implementation guide to set up your feature-rich digital portfolio.

This book is your step-by-step guide to building an impressive professional e-portfolio using Mahara. It covers the key features of Mahara that will help you set up your customized digital portfolio and display the artefacts in your preferred way allowing contribution from selected users only.

This book will introduce to the exciting features of Mahara framework and help you develop a feature-rich e-portfolio for yourself. You will see how easily you can create folders, upload multiple files like journals, project documents, pictures, and videos and share them with your friends. You will learn to set up views of these files, making these visible to your chosen friends only. And then, you will allow people to give their inputs.

You will learn to create blogs and forums and get connected to the rest of the world. Customization and administration of your Mahara site will become easy after you have gone through this book. Imagine how good you will feel when you will see your knowledge, success, and ideas going live and available to your chosen audiences for their inputs.
Develop a feature-rich electronic portfolio – a digital repository of journals, presentations, reports, images, and videos – easily and share it with your friends, family, students, project team, and others

**What will you learn from this book?**

You will learn to:

- Create folders in Mahara – just like on your own computer – with an easy file search facility
- Upload multiple files – journals, reports, presentations, videos, and sound clips – easily and set permissions for your group to view, edit, and delete them
- Create a blog in Mahara and get connected to the rest of the world
- Make an impressive profile using Mahara profile fields and tailor your own profile view
- Create a new web page entirely from scratch and customize it to allow much more flexibility and control over who sees what and when
- Set an environment to receive public or private feedback on your pictures, videos, and articles
- Connect with other Mahara users and get social: discuss topics of common interest in forums and share views with each other
- Customize and administer your Mahara site to our own preferences using a number of configuration settings for easy administration

**Approach**

This book will provide you with step-by-step instructions to get started with Mahara and create an impressive electronic portfolio. The book is packed with many useful examples and screenshots for easy and quick learning.

**Who this book is written for?**

Pick this book up if you want to get started with Mahara.

This book is for you if:

- You are a student/learner wanting to maintain online documentation of your projects and share it with a particular teacher/trainer for feedback
- You are a teacher wanting to set up an e-portfolio for your students in order to encourage and advance personalized and reflective learning
- You are a professional wanting to share your journals and project documents with your team by sharing your existing knowledge and creating new knowledge in communities of professional practice

No previous experience of Mahara is required.