ABSTRACT

In South Africa the work-integrated education curriculum of universities of technology (UoTs) requires a portfolio of evidence from a student towards the end of study, typically work being done over three years of undergraduate study. This paper will consider the potential that e-portfolios will have on the skills the students gained from work-integrated learning experiences as well as possible online assessment management systems.

INTRODUCTION

Recently at the Cape Peninsula University of Technology at the Faculty of Business, work has started to establish the feasibility to use the functionalities of a large teaching and learning management system to support students to develop their portfolios in electronic format. The students need to be guided in auditing, reflecting on and illustrating the skills they develop during work-integrated learning (WIL) in e-portfolio format. E-portfolios can be divided into various categories for example student e-portfolios, teaching e-portfolios and institutional e-portfolios. For the purpose of this research the student e-portfolio will be used as it will showcase specific learning outcomes, accomplishments, especially within work integrated learning.

DEFINING e-PORTFOLIOS

World-wide the functionality of the term and definition of e-portfolios differs. The British Department for Education and Skills (2005) strives to provide integrated e-portfolios for schools. In addition, the National Qualification Authority of Ireland considers an e-portfolio system as a method for lifelong learning to demonstrate formal and informal qualification and competencies. Various Australian universities believes that for all successful curriculum innovations, the e-portfolio needs to be integrated into the teaching and learning process.

JISC Development Group (2007) as quoted by Mc Neill and Cram (2011) describes e-portfolios as a web-based space where students can demonstrate their developmental skills, knowledge and expertise, whether in discipline knowledge (WIL) or graduate capabilities. Various other authors such as Levin and Camp (2002) and Berg and Lind (2003) describe e-portfolios as advocated spaces for student demonstration on their evidence gathered during their practical experience, as well as the skills that they have developed during their exposure to the practical environment of the employer.
While various authors refer to the benefits and efficiencies to be gained from the implementation of the e-portfolio systems, the real challenge that exists is how to structure a proper e-portfolio assessment system.

WORK INTEGRATED LEARNING WITHIN UoTs

Within most UoTs in South Africa subject Work-integrated learning is compulsory within most of the academic qualifications of these institutes (experiential learning is a synonymous term). As a reflection of the student’s exposure within industry, a wide range of assignments, portfolios, logbooks, and any other formats need to be submitted to the course lecturer for assessment.

The outcomes of these work-integrated learning portfolios include assignments, logbooks, CVs, diaries, pamphlets and any other similar formats. In a nutshell the outcomes fulfill the following purposes:

- Learning – ongoing professional development by the student
- Assessment – formal evaluation of the student’s work by the lecturer
- Employment – consulted by the employer when a student seeks employment.

Furthermore, work-integrated learning implies that students should be involved in meaningful performances, tasks and learning areas which are set out clearly by the UoT. This will ensure contribute towards student outcome of high quality. As the final outcome of the work-integrated learning process, the portfolio as well as performance appraisal should be assessed by the employer and the accredited assessor (moderator) or in some cases, the lecturer himself.

The final assignment of the WIL component which needs to assessment, the paper portfolio has become out-dated. It becomes more difficult for students to reflect all the needs of competencies achieved during WIL. Acosta and Liu (2006) believe that the new models of instruction and/or assessment are more appropriate to support lifelong and autonomous learning. McDermott and Gallagher (2011) describe the e-portfolio as a “digital handbag” which uses digital tools to document, store and organise information which provide an appropriate alternative to the paper portfolio. One of the biggest advantages of the e-portfolio is that it can be showcased to various audiences (students, employers, lecturers, family and friends).

E-PORTFOLIOS COMMON PHENOMENON IN WORK-INTEGRATED LEARNING

Patrick (2009) describes the term work-integrated learning as educational activities that integrate theoretical learning with its application in a workplace, profession, career or future employment. Chang-Barker (2006) describes e-portfolios as “a critical knowledge management tool in a digital age”. WIL is an essential component within UoTs in South Africa and is integrated in a broad range of undergraduate programmes. The WIL experiences can be off campus, project based (real or simulated), all depending on the academic discipline. It must be clearly outcomes-based according to specified learning areas, assessed according to specified assessment criteria and should consist of specified teaching and learning.
Students tend to relate very difficult the theory to practice. The UoTs encourage workplace opportunities for students to apply the conceptual knowledge they have gained from classroom learning to the “real world” or practice/industry. Once the students are exposed to the workplace, they tend to apply theory and make the connections between theory and practice more explicitly.

**ASSESSMENT OF E-PORTFOLIOS**

Assessment is a very important phase to determine the success and the learning outcome of each and every student within each and every subject’s learning area. These learning outcomes are usually determined within industry (off-campus) and must be documented by the student through various methods. The purpose of assessment of the WIL student is to determine if the academic course content was successful, if the WIL objectives have been achieve and if changes in student behaviour have occurred. These can only be accessed via a performance management system. Various assignments, learning outcomes, work records and oral presentations needs to be completed before the student can be finally assessed.

The e-portfolio platform can be considered as the application of the above activities and is already being used worldwide as an effective tool for the assessment of the education and teaching process, student success within industry and the students’ competence within the subject (WIL).

An important question in this regard is “Which assessment method and process suit the specific teaching method of WIL”. The answer depends on variables such as the content, target audience and subject specific outcomes. It is general consensus in the literature that the best teaching method for work-integrated learning should be project-based learning and the e-portfolio assessment as the evaluation strategy.

It is common knowledge that the entire WIL process consists of three partners, each distinctive within its own unique function, that is the student, the education institution and the employer. It is important to keep in mind that each individual partner does perform a very important role in the final assessment process of work integrated learning. See Figure 1 in this regard.
FIGURE 1: Relationship between student, institutions, employer and assessment phase

POSITION OF THE E-PORTFOLIO WITHIN THE ONLINE ASSESSMENT SYSTEM

It is important to establish the position between the e-portfolios and online assessment systems. As early as 1992, Lucas has cautioned against the use of e-portfolios without proper investigation. At that stage the following issues were unclear:

- Weakening effect through careless imitation
- Failure of research to validate the pedagogy, and
- Co-option by large-scale external testing programs.

Because of these factors he argues that the increasing use of e-portfolios leads to confusion in the literature towards the validation of the teaching and learning process.

Furthermore, Mason et al. (2004) is of the opinion that other e-portfolio applications should also be taken into account. E-Portfolio applications that already exist are for example created for

- Developmental purposes
- Presentation purposes, and
- Assessment purposes.
Whilst different e-portfolios can fulfil different functions, a more permanent e-portfolio can be maintained that will be usable throughout an individual’s career. The following can form part of such an e-portfolio:

- interviews (extended CV)
- personal and academic achievements
- outcomes achieved through academic subjects,
- created links to data within portfolio
- various references, competencies achieved in qualification(s).

Ittelson (2001) strongly believes that e-portfolios have an edge over “traditional” portfolios because of the portability and adaptability of the output. Kaider et al. (2009) supports the argument that technological platforms such as e-portfolios wikis and discussion boards can be utilised to support of reflective practices.

In terms of assessment of the e-portfolio, the e-portfolio provides the student with more authentic, reflective, interactive and individual features (Chang 2001). According to his research he makes it clear that there exist distinct advantages between e-portfolios over traditional examinations and computer-assisted, multiple choice forms of assessment.

Barrett (2004) also contributed and continued with her research between the e-portfolio and a dedicated assessment management system which can also be incorporated into WIL. Chang’s point of view is strengthened in, Table 1 where the differences between electronic portfolios and the online assessment system are clearly illustrated.

**TABLE 1 : E-portfolios versus assessment management system** (Barrett 2004)

<table>
<thead>
<tr>
<th>E-PORTFOLIO</th>
<th>ASSESSMENT MANAGEMENT SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Multiple purposes: Learning, assessment, employment</td>
</tr>
<tr>
<td><strong>Data structure</strong></td>
<td>Data structure varies with the tools used to create the portfolio; most often common data formats (converted HTML, PDF)</td>
</tr>
<tr>
<td><strong>Type of data</strong></td>
<td>Primary type of data: qualitative</td>
</tr>
<tr>
<td><strong>Data storage</strong></td>
<td>Data storage in multiple options: CD-Rom, videotape, dvd, www server, LAN</td>
</tr>
<tr>
<td><strong>Control of design &amp; links</strong></td>
<td>Visual design and hyperlinks most often under control of portfolio developer</td>
</tr>
<tr>
<td><strong>Locus of control</strong></td>
<td>Student–centered</td>
</tr>
<tr>
<td><strong>Technology skills required</strong></td>
<td>More advanced skills required, including</td>
</tr>
</tbody>
</table>
Schulman (1998) identifies five benefits for the traditional paper-based portfolios:

“...allows the tracking and documentation of learning over a period of time within a supervised environment”
“...enhance the reconnection between theory and practice”
“...institutionalise norms of reflection and discussion’
“...introduce a structure to experiences gained”
“...shifts the agency from an observer to the interns...”

Schulman (1998) describes five limitations of paper-based portfolios:

“lamination” – the portfolio becomes a exhibition, self-advertisement, to show off
“heavy lifting” – well structured portfolio is hard work
“trivialisation” – the documentation of work that is not worth reflecting upon
“misinterpretation” – develop a sufficiently objective scoring system
“misrepresentation” – does the emphasis of isolated examples of “best work” misrepresent the lecturer’s “typical work” as picture for competency?

The real challenge for a student is to reflect their practical experience in an e-portfolio system and meet the need from industry as well as the UoT while not losing valuable information which was reflected in a paper-based portfolio system. Within the purpose of this research, the Department of Human Resources Management at the Cape Peninsula University of Technology will be used as sample. Currently no proper method exists on the assessment system for the Department of Human Resources on how to record the students’ progress according to the learning outcomes of the e-portfolios.

Stefanakis (2002) were involved in various research projects to demonstrate the effectiveness of high stake assessment as well as multiple intelligences of e-portfolios. She states that “...the drive toward standardised and state testing requires the researchers and practitioners to find ways to learn from tests and portfolios in order to develop a comprehensive assessment system in which accountability would be demonstrated at many levels related to student achievement”. She believes that she can present a comprehensive system which will include formal, informal and classroom assessment (including portfolios) that will benefit stakeholders such as the employer, the university, the lecturer, and the student.

The goal for each department within a university of technology should be to construct a comprehensive assessment system, with a collection of assessments which will
allow many stakeholders to use the data to improve student learning and teachers’ teaching. E-Portfolios must provide a visible effect to the lecturers to what activities the students are exposed to while they are within the corporate environment. With continued on-line assessment of the learner while they are within the corporate environment – the lecturer will be able to evaluate if learning take place and if the students learning outcomes is achieved. In Figure 2, Stefanakis represents her assessment for learning continuum which can be adopted for the WIL process and all the WIL activities within the department.

**FIGURE 2 : Assessment for learning**

<table>
<thead>
<tr>
<th>Learning</th>
<th>Accountability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Assessment</td>
<td>Standardised Tests</td>
</tr>
<tr>
<td>Informal Feedback</td>
<td>Performance Based</td>
</tr>
<tr>
<td>Rubrics</td>
<td>PORTFOLIOS</td>
</tr>
</tbody>
</table>

Adapted from: Stefanakis, E. (2002)

During WIL students are placed within a project-based learning environment with real-life applications (learning areas provided by the UoTs), which might result in comprehensive experience to benefit their own career. Within any higher education environment different approaches towards performance assessment exist, for example rubrics, self-assessment, and/or the paper-based portfolio but which method will be best suited for WIL at UoTs?

**MONITORING AND ASSESSMENT OF WIL WITHIN HUMAN RESOURCES MANAGEMENT: CASE STUDY**

Within the current WIL system at CPUT, it is critical that the placement period is guided by the following objectives:
Students must be prepared to understand the benefit that they will gain from learning opportunities in industry.

Assessment criteria must be developed so that the students’ placement period could be integrated into their final curriculum.

Subject credits must be allocated and awarded according to the qualification criteria.

Agreement must be reached with employers that the students will be exposed to the critical course-based outcomes within their placement period.

Figure 3 represents an appraisal system which could be ideally incorporated into the Department of Human Resource Management. As the figure illustrates various functions are being performed and already exist, but with current developmental phases the e-portfolio and e-access to the employers would be the final link within the full work-integrated cycle. The three partners of WIL, the university, the student and the employer will each contribute to the final assessment of each uploaded e-portfolio and towards the success of the student.

**FIGURE 3: Appraisal session**
At the Cape Peninsula University of Technology (Cape Town, South Africa), students must undergo a WIL theoretical module and comply to specific criteria (as set by the subject lecturer) before they can qualify for the WIL practical module. WIL is only offered in the student’s third year of academic studies. Qualified students get the opportunity to undergo multiple interviews with the corporate environment. Successful students are then contracted by the employer for the prescribed exposure period (three months in total). Students then undertake their placement in industry for the purpose of building on the knowledge and theoretical skills they have learnt on campus. Whilst the students are in these placements, the university uses a range of processes, such as mentoring, monitoring, visitations and assessing of paper-based learning portfolios.

These learning portfolios are collections of evidence that can be used to reveal learning and/or provide evidence of developing competence within specific learning outcomes. The latter is also assessed by the subject lecturer or assessor. Part of the assessment process is a site visit by the WIL lecturer, whereby the student is expected to do an oral presentation on all the skills they have gained and how they incorporate it within their specified outcomes. This approach is designed to encourage students to reflect on their learning experiences whilst exposed to in industry.

There is currently no structure yet for the use of e-portfolios within the Human Resources Management department. However, learning management systems (LMS) such as Blackboard (previously WebCT) are used for uploading subject guides, announcements, communication to students, downloading of documentation, or testing of theoretical knowledge.

According to some international research it becomes clear that various universities use LMS platforms to manage and administer the complete WIL placements of the students. Currently formal assessment takes place at the end of the students’ practical experience, but no prior validation has been done by the examiner to validate completed work until the students’ competency is established in the specified course outcomes. It becomes more evident that the e-portfolio with a proper Blackboard LMS can create reflective opportunities for students to draw links between theory and practice whilst in WIL. As part of the e-portfolio architecture, provision should be made in the programme for the examiner to comment on the any of the continued entries of the students’ on various phases during their practical experience but very importantly before the final submission of all their assignments.

For an experimental project at the Department of Human Resources Management at CPUT, a fixed structure was to be developed, making use of Blackboard’s unique document upload features. Various sub-folders were designed to enhance the uploading of a student’s evidence. Examples are the following:

1. Personal information (CV, proof of registration, academic history, identification document)
2. Company information (interviews attended, companies approached, placed)
3. Memorandum of agreement
4. Logbook
5. Portfolio (written report and evidence on learning experience)
6. Performance assessment
7. Oral presentation.

Figure 4 demonstrates the deliverables which need to uploaded electronically by the student (over a period of time) and will be assessed by dedicated assessors/examiners as appointed by the Department of Human Resource Development.

**FIGURE 4 : Final Assessment for WIL at UoTs**

These sub-folders not only guide the student towards the type of evidence that can be submitted, but it's structured and logic outline simplifies the assessment process. By assigning login accounts to representatives of industry (so-called workstations) these important partners in the WIL process could also gain access to the content of student portfolios.

Figure 5 depicts the structure or model for the WIL student to reflect learning via e-portfolios. The WIL lecturer could evaluate the e-portfolio on various phases as the blog entries appeared.
PROVISIONAL FINDINGS

More time must go into the training of students to upload evidence. They must also be able to update the layout of their own e-portfolio. These skills were not incorporated into the students IT literacy courses. Student support tutors should also be motivated to assist. An e-portfolio culture must be embedded within the Department of Human Resources Management to encourage students towards submitting e-portfolios of quality for their final assessment. With this structure of the e-portfolio (Figure 5) it is assumed that the student will apply more creativity in their WIL e-portfolios in future.
POSSIBLE RECOMMENDATIONS TOWARDS THE NEW DEVELOPMENT OF AN ASSESSMENT MANAGEMENT SYSTEM

As indicated in the HR case at CPUT, it is critical to develop and incorporate a proper assessment system for WIL. Recommendations can be listed to enhance the HR case, as follows:

WIL is highly regarded by industry and as means of introducing student to the workforce. The latter will be depicting within their e-portfolios as a level of development towards their personal development versus personal assessment.

The participating employers and the universities should develop an experiential learning framework that will demonstrate the students and their WIL outcomes rather than the time they have spend in industry. UoTs should develop an effective management assessment strategy to align better with the requirements of industry and effectively support the students’ learning experiences.

Assessments, during and following WIL experiences, must be designed to evaluate students’ developing levels of competence. Opportunities must be created between students, industry and the WIL lecturers to develop and improve the assessment frameworks of the WIL programme.

Portfolios provide opportunities for the effective documentation and sign-off (assessment) by the WIL lecturer which will also serve as a very effective level of self-assessment and reflection on practical experience.

The quality of learning are also facilitated by the e-portfolios which include the consistency of assessment and feedback, reflection on learning areas, as well as allowing formative feedback to various sources. E-portfolios can contribute to the creation of community of practice so that the students do not feel isolated during their placement phase.

Consistent approaching techniques must be develop and implemented which is learned and assessed at UoTs to what happens in the workplace and what must be implemented.

UoTs provide a well-developed graduate profile which is directed at discipline-specific outcomes. These specific course outcomes should be WIL directed to create a link with industry. This would allow students to experience the attributes being demonstrated by industry, and allow them to develop a shared understanding of what the UoT degree is trying to achieve and what is being assessed.

Industry, accredited Human Resources bodies and universities must make an effort to create environment of shared understanding as well as ownership of WIL and of its potential to enhance the quality of the student experience, the quality of the final assessment, and the quality of the professional graduates.
WIL experiences can be accessed and measured through e-portfolios, and students’ competencies may be viewed and assessed using a variety of tools, and examiners can assess students’ evidence, but further research into the potential of Web 2.0 technologies is needed to support the WIL concept.

SUMMARY AND CONCLUSION ON ASSESSMENT VIA E-PORTFOLIO SUBMISSIONS

The utilisation of technological instruments such as e-mails, blogs, discussion groups, group spaces and e-portfolios serve to maximise the learning experience of WIL students, through the provision of learning activities which encourage professional development.

The e-portfolios can be utilised very effectively with courses designed with specific learning objectives. The e-portfolio consists of specific work which will mirror the structure of the learning objectives, especially the activities which are activity based.

The e-portfolio with the structure of a multi-media tool as well as the assessment process, encourage students towards lifelong learning.

For the success of any new technological implementation within an academic environment, we need to share common conceptual models for the success of the implementation. Learning from each other and with each other, especially with the making of new choices from different perspectives will help all stakeholders and is a key factor for the successful implementation of an assessment method of e-portfolios.

Although the implementation of our proposed structure is still within the developmental phases, we believe that we can contribute towards the development of students learning, not just within the UoT or WIL, but throughout their lives.

REFERENCES


