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Use of e-Portfolios in Undergraduate Education and a Postgraduate Research Training Programme, ED4LIFE

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Abstract

Portfolios have long been the showcase tools for artists; expressions of competencies, to showcase work in progress and work finished. Portfolios are collections of work designed for a specific purpose i.e. to provide a record of accomplishments. An electronic portfolio (e-portfolio) can be defined as a digital enactment of a portfolio. Portfolios can be viewed online through an intranet or internet connection depending on the level of privacy desired by the stakeholder.

Portfolio implementations are best viewed as a continuum; they are work in progress. They evolve over a period of time through group interaction and discourse. The expressions of learning in an e-portfolio can range from lower order thinking skills such as a PowerPoint presentation or a written report to higher order thinking skills as seen in a wiki, a reflective journal or a podcast.

To align with learning, e-portfolios should offer students the opportunity to self- assess and record their learning experiences from a life long learning perspective. As colleges implement e-portfolios it will be important to do more than just replicate their paper based predecessors or adopt a system where a folder is created to store copies of static non-evolving papers. E-portfolios align with constructivist theories in that students construct their own portfolio, take charge of what it contains, reflect on what makes an entry good or better than others and use this information to make improvements or changes. As lecturers or mentors /supervisors advise on content, the student takes on the responsibility of collecting materials, selecting what is relevant and reflecting on the content.

Under the Programme for Research in Third Level Institutes (PRTLI) Cycle V, CIT received funding to establish and develop structured PhD education for Life Sciences. This programme called Ed4Life, aims to strengthen existing PhD education in the area of life sciences and develops industrial interaction and collaboration which is particularly relevant for the biomedical device and biopharmaceutical industries. In addition to research, which is the fundamental part of PhD training, students take modules on transferable skills such as academic writing, career planning, teambuilding and networking, communication in addition to subject specific modules such as for example entrepreneurship and research ethics.

This paper reviews and explores the potential use of e-portfolios in both undergraduate courses and postgraduate research training. We examine the infrastructure of the portfolio and examine whether the goal of the portfolio is reached i.e. student engagement. We also examine the student experience and feedback of the process. We question the effective use of e portfolios in graduate education and review how graduate attributes (e.g. communication skills, thinking, learning to learn and professional skills) can be documented in an e-portfolio and how these skills can be measured and assessed.

1. Introduction

E portfolios are a relatively new development on the education scene. They replace the traditional portfolio which was often a folder sectioned with evidence of coursework completed over a period of time. The traditional portfolio has long been the showcase tools for artists; expressions of competencies, to showcase work in progress and work finished. Portfolios are collections of work designed for a specific purpose i.e. to provide a record of accomplishments. An electronic portfolio (e-portfolio) can be defined as a digital enactment of a portfolio. Portfolios can be viewed online through an intranet or internet connection depending on the level of privacy desired by the stakeholder.

E portfolios or electronic portfolios have since replaced the paper based portfolio offering many benefits to learners namely providing an opportunity to display knowledge outside of a static transcript as is the case with the traditional paper-based counterparts. Online connectivity has transformed the practice of learning [1]. In addition, with the emergence of Web 2.0 tools, learners can now add extra dimension to their portfolio work; wikis can hyperlink to web-pages and video clips; figures and presentations can be enriched with voice overs, reflections can be recorded using voice as an alternative to written; all methods having the common goal of enhancing the reader experience and truly documenting the learners learning. Portfolio implementations are best viewed as a continuum; they are work in progress. They evolve over a period of time through group interaction and discourse. With the extraordinary take up of mobile devices and tablets and the explosive increase in the practice of blogging and online chatting, education practitioners such as teachers and their 3rd level counterparts are now beginning to integrate these tools into their teaching as they see it as a way of connecting with students reaching them through a medium they use and are comfortable with. Many of such tools can be integrated into the student portfolio.

To align with learning, e-portfolios offer students the opportunity to self- assess and record their learning experiences from a life long learning perspective. As colleges implement e-portfolios it will be important to do more than just replicate their paper based predecessors or adopt a system where a folder is created to store copies of static non-evolving papers. E-portfolios align with constructivist theories in that students construct their own portfolio, take charge of what it contains, reflect on what makes an entry good or better than others and use this information to make improvements or changes. As lecturers or mentors /supervisors advice on content, the student takes on the responsibility of collecting materials, selecting what is relevant and reflecting on the content.

1.1 Doctoral Education and Training at Cork Institute of Technology

Under the Programme for Research in Third Level Institutes (PRTLI) Cycle V, our institute, Cork Institute of Technology, received funding to establish and develop structured PhD education for Life Sciences called *Ed4Life. Ed4LIife* is a collaborative project in the provision of research postgraduate education between three institutes, CIT partnered with the Alimentary Probiotic Centre in University College Cork and Moorepark Dairy Products Research centre. *Ed4Life* aims to support PhD students to achieve the best possible experience of graduate research and training. It includes a number of innovative approaches to ensure the student achieves his or her academic, professional and personal objectives. In addition to their research, which is the fundamental part of PhD training students take modules on transferable skills such as academic writing, career planning, teambuilding and networking, communication in addition to subject specific modules such as entrepreneurship, intellectual property, bio techniques and instrumentation. Engagement with industry is fundamental in the design of the program to ensure graduates are produced with the research training and skill set required for the industry where they may end up working. To facilitate this, industrial representatives are a key part of the program's Joint Management Board and have influence on the design and development of the programme. The programme is student-centred through the development of a personal development plan for each student with mentoring throughout so that they choose the correct modules to suit the career path they decide on [2]

Students were encouraged throughout the pilot program to document their achievement of the learning outcomes of each of the modules by compiling individual e portfolios. They were encouraged to demonstrate, through their assignments, the advancement and breadth of knowledge they have acquired, how they are applying this knowledge to different situations and documenting this new learning through academic writing. The interdisciplinary nature of the program allows students to work with peers, engage in critical dialogue and present their work, discuss challenges and work in teams. Module assignments were designed to align with and complement/assist the student with their research work. The program activities are specifically integrated with the students' research; students are encouraged and guided in the development and documentation of skills acquired. The

combination of mandatory generic skills modules and subject specific gives students the opportunity to examine their own learning, identify deficits in their learning to date and plan to address these deficits by selecting modules that address these deficits. The research question and research theme underpins all the generic skills modules where assignments and workshop activities center on the students own research and how the skills presented can be applied to this. Modules are delivered in workshop formats and activities are designed to advance students with the essential knowledge and skills whilst deepening their understanding as they progress through them. The e portfolio allows the student to display their competencies, skills and personal attributes in an almost 3 dimensional perspective. This can be attractive to employers as they get a more rounded picture and profile of their future employees. The pedagogical underpinning of the e-portfolio is based on constructivist educational principles [3].

2. Methodology

2.1 Use of e-portfolio s in undergraduate and graduate education as a means to document learning

Different e-portfolio software was used throughout this research. Starting with the most basic of tools such as Dropbox, which does have storage capacity yet lacks the true dimensions of a portfolio, we moved to Mahara, then to license based Pebble pad and are now researching the use of Weebly as a tool. At undergraduate level, the e-portfolio was used with 1st year students in a module called Creativity, Innovation and Teamwork; the reflective element of the e-portfolio was created using the web tool Blogger.

2nd and 3rd year undergraduate students created an e-portfolio using Pebble pad to document project work and other skills in application for work placement.

Graduate students enrolled on the structured PhD program Ed4Life are required to produce a Personal Development Plan as part of a module on Personal Effectiveness. In addition, they are required throughout their studies to document all learning and competencies acquired in their e-portfolio .

3. Results

3.1 E portfolios at Undergraduate and Postgraduate Level

Students enjoyed the experience of producing their own e-portfolio . They felt a huge sense of achievement at the end of the semester having a portfolio they could show what they had done and many reported that it motivated them to produce good quality material. The reflective journal documented their learning experience in 1st year and as a course coordinator it gave insight into difficulties students were having and it helped in helping them. For 3rd year and final year students the e-portfolio was seen as a valuable tool to showcase their projects. Many of the students had presentations some of which were recorded and these could be added to their e-portfolio s. Projects with a highly visual dimension could be represented effectively in an e-portfolio and this was attractive to employers and places of employment. Final year students used the e-portfolio as a welcome addition to their curriculum vitae.

The e-portfolio as a tool was new to both students and supervisors. Graduate supervisors were reluctant to engage with it which impacted on students' eagerness to use. Results from focus groups with students suggested that while students liked the idea of using a portfolio they felt unsupported by their supervisors. At undergraduate level, students felt more supported. They used their e-portfolio in applications for job placement and used the reflective element of the portfolio to document learning during the placement. As entries were dated, students were more engaged with the portfolio as they had to document their learning on a more regular basis. Employees could engage with the e-portfolio give comments, read entries and generally see more of what the students were doing and what they were learning.

4. Conclusions

E portfolio development enables students to plan effectively, proceed towards a goal and it allows them to showcase their work to future employers and research supervisors [4]. The challenge lies for supervisors and lecturers in helping students see the E portfolios relevance and its part in future employment. E portfolios are important not just for students in their learning journey but also for supervisors. As students and supervisors are engaged in a collaborative research journey, the e-portfolio can shed light on the research journey and the many day to day experiences of the student which can greatly impact their journey. Implementing e portfolios in an institution is a challenging task. Supervisor support of students doing course work (which can be used as evidence in their e-portfolio of a particular generic skill) as part of their PhD is paramount. It can be the difference between a student having a quality rich e-portfolio accurately representing their learning experiences and personal journey to having one lacking in detail, superficial in content and missing depth and learning. Supervisor training and education on the benefits and significance of e-portfolio s and in student professional development are a huge development in postgraduate education. However many supervisors are reluctant to change from the traditional PhD model of pure research and are sceptical about the change. As e-portfolio s begin to play a significant contribution to job applications and employment these views should change.

References

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