Supporting Healthcare Workforce Development Using Simulation and ePortfolios

Gough, Suzanne; Hamshire, Claire

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SUPPORTING HEALTHCARE WORKFORCE DEVELOPMENT USING SIMULATION AND E-PORTFOLIOS

Suzanne Gough, Manchester Metropolitan University, Claire Hamshire, Manchester Metropolitan University

Introduction

This paper discusses how the authors have blended a selection of digital technologies to enhance clinical skills learning with undergraduate healthcare students. The project combined simulation scenarios, video podcasts and blog based reflection within an e-portfolio (PebblePad). The e-portfolio acted as a repository for the digital media, and provided a scaffold for students to reflect on their clinical skill acquisition and evidence their learning journey. The students perceived this blend of technologies positively and valued the opportunities for learning and development beyond the original simulation and debrief.

Reflection on clinical experiences to enhance skill development is an essential ability for all healthcare students. However, the challenge of embedding reflection within curricula remains a difficult one. Combining high-fidelity, clinical simulation activities, podcasts of these activities and peer-reviewed blogs provides an environment in which MSc (Pre-registration) Physiotherapy students at MMU are encouraged to reflect on their skills development. This supportive and informal environment allows students to review their clinical decision-making and practical skills, explore their reflections and receive feedback from their peers to add depth and scope.

This provision of blending digital learning material has enabled the students to become responsible for their own development, reflect on their level of skill acquisition, formulate student-led revision sessions and collate evidence of participation/achievement. The integration of all of these learning resources and activities within the PebblePad e-portfolio allows links to be easily made to previous activities and facilitates further learning and reflective practice. The storage of all resources within the 'PebblePad Asset Store' thus enables students to recall, re-play, and reflect at a convenience time for the individual learner. Resources can also be accessed online whilst the students are on clinical placement to further support learning.

Background

Engaging undergraduate students in reflective practice to enhance their clinical decision-making and personal development has previously been reported as an ongoing challenge (NMC, 2007; Sandars, 2009; Owen et al 2009). One of the educational tools that can facilitate this is a personal development portfolio (PDP) and nursing, medical and healthcare professions have a history of using portfolios within both undergraduate and postgraduate curricular to facilitate reflective practice and support learning and development (Owen et al 2009; Sandars, 2009; Tochel et al 2009; NMC, 2010).

Professional bodies encourage and support both undergraduates and qualified members in the use of portfolios (paper-based and electronic) internationally. Currently the use of portfolios within postgraduate healthcare education is being actively considered and in some cases used for both recertification/revalidation and evidencing continuing professional development (Owen et al 2009; Tochel et al 2009; van Tartwijk and Driessen, 2009). Therefore students that actively engage in keeping a PDP throughout their studies are more prepared to enter the workforce and have a readily available collection of evidence that they can use to stimulate their learning in the workplace.

The Association for Medical Education in Europe (AMEE) guide on portfolios for assessment and learning by van Tartwijk and Driessen (2009) discussed how educators can make full use of the possibilities and opportunities that portfolios can offer and highlights difficulties, which can occur. The migration of portfolios to the electronic medium continues to grow (Tochel et al, 2009), and the combination of digital multimedia (audio, photographs, video and podcasts) and emerging

technologies including blogs, social networking sites, wikis and human patient simulators activities can be used to stimulate student self-analysis of skill development. One of the advantages of an e-portfolio is therefore the ease of making links between a range of electronic evidence to demonstrate how skills and learning can be transferred from one setting to another. However, careful consideration must be taken to align the most appropriate learning and teaching technologies to enable students to experience and/or consolidate clinical skill development. Careful consideration must be taken to align the most appropriate learning and teaching technologies to enable students to experience and/or consolidate clinical skill development. The structure of the desired learning is acknowledged as being just as important for effective leaning as the content (Owen, 2009; van Tartwijk and Driessen, 2009). Over reliance on and use of new technologies can disenfranchise learners who are unfamiliar with them and the purpose and advantages of using technologies need to be made clear to learners if they are to actively engage. Getting the blend of technologies right can be time consuming and problematic. The aim of this project was therefore to explore if a blend of digital technologies could be used to enhance clinical skills learning and reflective practice

Methods

A series of cardio-respiratory simulated scenarios where developed and integrated into the undergraduate curriculum. Twenty-three students completed the scenarios and debrief and where subsequently provided with a series of podcasts of the sessions on a DVD. The students were subsequently required to undertake self and peer reflection activities on the simulated scenarios using shared blogs within their PebblePad e-portfolios. They also explored the evidence-base related to planned and simulated patient management.
To evaluate the students' experiences of using this blend of technologies a questionnaire survey utilising both open and closed items was used. Additionally, the unit evaluation featuring mixed items was used to gather data on the students' perceptions of the cardio-respiratory teaching. The closed items were analysed using descriptive in SPSS. A thematic analysis of the open items was undertaken using a 'Framework' approach, as described by Ritchie and Spencer (1994).

Ethical considerations

Ethical approval was obtained from the Manchester Metropolitan University Research and Ethics Committee. Students were informed about the survey via email and the institutional managed learning environment and directed towards a students' information sheet. Involvement in the project was voluntary and students had a period of two weeks to consider if they wanted to complete the survey.

Results

A 70% response rate was achieved with the questionnaire survey (16/23 returned, 14/23 fully completed), and100% response rate from unit evaluations (N=23/23). Descriptive statistics from the closed questions are presented in table 1.

Table 1: Student perceptions of clinical skills and personal development.

	Not Answered	***Strongly Agree [1]***	***Agree [2]***	***Neither [3]***	***Disagree [4]***	***Strongly Disagree [5]***
I am confident in using Pebblepad (e-portfolio)	*0 (0)*	*0% (0)*	***71% (10)***	*22% (3)*	*7 (1)*	*0 (0)*
I am not confident working alone	*0 (0)*	*0 (0)*	*14% (2)*	*28% (4)*	*22% (3)*	***36% (5)***
I am confident finding my way around in the Pebblepad e-portfolio	*0 (0)*	*0 (0)*	***58% (8)***	*28% (4)*	*14% (2)*	*0% (0)*
I am not confident obtaining information using the Pebblepad e-portfolio	*0 (0)*	*0 (0)*	*22% (3)*	***36% (5)***	***36% (5)***	*7% (1)*
I am confident in sharing an asset of my Pebblepad e-portfolio with peers/tutors.	*0 (0)*	*14% (2)*	***58% (8)***	*14% (2)*	*14% (2)*	*0 (0)*
It was easy to upload reflective activities to Pebblepad	*0 (0)*	*28% (4)*	***43% (6)***	*28% (4)*	*0% (0)*	*0 (0)*
I liked being able to upload digital material (videos of simulation and reflection activities) to support my reflective account	*0 (0)*	*14% (2)*	***58% (8)***	*22% (3)*	*7% (1)*	*7% (1)*
I found using digital material assisted my learning	*0 (0)*	*14% (2)*	***50% (7)***	*36% (5)*	*0% (0)*	*0 (0)*
The use of digital material helped me to link my learning to the Knowledge and Skill Framework (KSF)	*0 (0)*	*14% (2)*	*28% (4)*	***42% (6)***	*14% (2)*	*0 (0)*
I did not benefit from uploading digital material to Pebblepad.	*0 (0)*	*0 (0)*	*22% (3)*	*28% (4)*	***36% (5)***	*14% (2)*

	Simulation	**Reflective Debrief**	**Sharing an Asset**
Which asset contributed ***most*** to your personal development	**57% (8)**	36% (5)	7% (1)
Which asset contributed ***least*** to your personal development	14% (2)	22% (3)	**64% (9)**

Three key themes emerged from the thematic analysis of the open items: Clinical skills acquisition, personal development and transferability.

Clinical skills acquisition

Findings indicated that students were able to use the simulation podcasts to facilitate personal reflection: *"Simulation activities were excellent." "The podcasts will be useful on placement"*,

They also reported that being able to link activities within an e-portfolio provided an environment in which they could consolidate their learning within and beyond the simulated environment: *"PebblePad is good … an obvious use (will be when) we are on placement*"

Students also reported that using the webfolio function within the e-portfolio, allowed them to repurpose and represent digital evidence in a variety of different contexts: *"We can re-look at the DVD and Basic Life Support Videos on our placeme*nts".

Personal Development

The podcasts provide an opportunity for the students to review their performance repeatedly, facilitating reflection and personal development: *"Reflection and video evidence will be useful for employers"*. The e-portfolio provided a secure web-accessible environment in which all the resources could be linked and revisited. This enabled the students to see their learning journey and the process of becoming a professional: *"Everyone should be provided with this opportunity for CPD purposes*

Transferability

Students were able to identify transferable skills developed during the basic life support and simulated scenarios, that would be useful beyond the formative and summative unit assessments: *"Its necessary to use this information when applying for jobs"*. Blending these digital technologies also supported the students' different learning styles: *"Simulation sessions were very pertinent and supported my own learning style", "These activities support all our learning styles"*.

Discussion

Previous cohorts of students have used paper-based portfolios to demonstrate their PDP. Additional digital evidence was stored on data sticks, as video files and on DVDs. This process led to fragmentation of their portfolio across a variety of paper based and digital medium. Thus, opportunities for students to transfer learning from one context to another were potentially missed.

Students reported that the simulation and reflective learning activities assisted their personal and professional development. The e-portfolio was easy to use and had the advantage of allowing sharing of assets. The students were able to learn at their own pace, reflect with peers and gather supportive information to demonstrate their achievements. The analysis demonstrated that the students believed that the cardio-respiratory simulation activities supported their learning the most, closely followed by reflection and sharing assets electronically. This is likely to be due to the fact that at this stage in the course, reflection and sharing an asset within the e-portfolio was a relatively new skill. This may change as the students develop further reflective writing skills, during the programme and make links to experiences on practice placement.

The e-portfolio allowed students to select learning resources to demonstrate achievement of a range of core dimensions within the National Health Service Knowledge and Skills Framework (DoH, 2004). Students across all Physiotherapy programmes at MMU are now encouraged to use PebblePad to develop, collaborate, share and store learning and assessment activities including podcasts of clinical skills (expert/best practice examples and the students own). These collective learning experiences and reflections can be utilised and re-purposed by students to develop their e-portfolio/webfolios; organise their learning resources in preparation for examinations, practice placements, and demonstrate skill acquisition. Thus allowing learning and development to continue beyond the original simulation learning opportunity. However, one barrier to this intervention relates to the maximum upload of individual movie file sizes, currently at 10MB (Owen et al 2009).

The use of an e-portfolio as a repository for the digital media provided a secure, structured environment for students to reflect on their clinical skill acquisition. Students were also able to clearly see their learning journey and the transferability of skills to the practice placement setting. This would be applicable to a wide range of undergraduate and postgraduate professional programmes where skills are developed within the academic/simulated learning environment and translated into the practice placement setting. Current literature suggests that high-fidelity simulation may promote clinical and reflective skills and that debriefing is the most important aspect of simulation-based education (Grant et al, 2009). However, there is a paucity of evidence identifying the impact of blending simulation, digital learning technologies and e-portfolios to enhance healthcare clinical skills development. Although this study reports positive findings relating to an innovation and provides positive findings, further research is required to explore the applications for other professional groups

Limitation

The small number of pre-registration students enrolling and participating in this initiative, limit our ability to generalize the findings to other populations, however the educational principles and practices are adaptable to all healthcare professional programmes.

Conclusion

This study demonstrated that digital technologies could be blended to enhance the students' educational experiences and facilitate repetitive reflection, post-event within the framework of an e-portfolio. The integration of digital media within the e-portfolio enabled the students to individualise their PDP and encourage each other through peer support networks. Thus providing an opportunity for students to enhance their clinical skill development beyond the initial learning activity and easily transfer learning from the academic to the clinical environment.

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Mrs Suzanne Gough and Mrs Claire Hamshire. Health Professions Department

Manchester Metropolitan University, T401 Elizabeth Gaskell Campus, Hathersage

Road, Manchester, United Kingdom. s.gough@mmu.ac.uk c.hamshire@mmu.ac.uk