ePortfolio in Midwifery Practice:
“‘The Way of The Future’”

Jan Pincombe a, Lois McKellar a,b,*, Marlene Weise c, Elizabeth Grinter a, Gerardine Beresford d

a School of Nursing and Midwifery, University of South Australia, City East Campus, Australia
b School of Population Health and Clinical Practice, The University of Adelaide, Adelaide, South Australia, 5000, Australia
c Flinders University, Bedford Park, South Australia, Australia
d Children, Youth and Women’s Health Service, South Australia, Australia

Received 18 February 2009; received in revised form 6 May 2009; accepted 6 May 2009

KEYWORDS
ePortfolio;
Portfolio;
Midwifery;
Action research;
Midwifery education

Summary
Background: Educational portfolios have been used across a variety of disciplines in university education as means of encouraging reflective practice in students and as a form of assessment by which a cumulative record of the student’s experience can be substantiated. More recently, the development of ePortfolios has provided the potential to transform portfolio learning for students in the 21st century.

Aim: Development of a pilot ePortfolio for the Bachelor of Midwifery at the University of South Australia (UniSA).

Methods: This study adopted an action research methodology and followed the action research cycle of planning, action, observation and reflection in order to develop, implement and evaluate a pilot ePortfolio. An action research group was established to develop the ePortfolio.

Results: Once the ePortfolio was developed, it was piloted with 18 first year midwifery students undertaking their second clinical placement. Eleven students provided feedback by completing an anonymous electronic questionnaire and, of these, eight also participated in interviews.

Discussion: One of the overriding findings from this project is that midwifery students studying at UniSA consider the portfolio, in any form, a valuable record of their experience. It provides students with an authentic record of achievement, proof of their competency and a final summary of their learning journey. A number of issues with paper-based portfolios were identified; essentially students found that they were confusing at first, cumbersome and created anxiety but that they provided a tangible means of consolidating their learning experiences. With regards to the ePortfolio, students agreed that it seemed more simple, streamline and safe, but there were a number of suggestions for improvement put forward.

Conclusion: The paper concludes that ePortfolio is considered ‘the way of the future’ for midwifery students at UniSA.
Background

Educational portfolios have been used substantially in teaching education, with health care education embracing the concept during the 1980s. Providing a definition of the term portfolio however, is difficult, as there is significant diversity in the type and application of portfolios documented in literature.\(^1\) For example, types of portfolio are most commonly discussed reflecting different purposes, such as developmental, presentational and assessment.\(^2\) Developmental portfolios may simply document the student’s learning over time while a presentational portfolio is ultimately focused on showcasing the student’s best works.\(^3\) In a review of literature, Butler [p. 2] described a portfolio as simply, “a collection of evidence that is gathered to show a person’s learning journey over time and to demonstrate their abilities”.\(^3,4\) Certainly, within nursing and midwifery education, it is important that this learning journey has its basis in reflective pedagogy, encouraging students to actively participate and direct their own learning. A portfolio within this context is understood as a means of encouraging reflection and enabling students to document relevant and valuable learning experiences in practice. It provides a link between experiences during clinical placements and university teaching. Further, it serves as a means of assessment and provides documented evidence of attaining and maintaining competence required for registration.\(^5,6\)

Traditionally, portfolios have been paper-based with the evolution of ePortfolios being relatively new.\(^7,8\) Although ePortfolios appear promising, and have a broad range of applications in teaching and learning, they are not yet recognised as mainstream higher education technology and, similar to paper-based portfolios, a single standard for interoperability for ePortfolios does not yet exist.\(^6\) Descriptions of ePortfolios in literature convey the notion of a digital collection, an electronic accumulation of materials, or a continuum possessing a number of functions that ultimately support pedagogical processes.\(^3,6\) It also appears that considerable emphasis has given to developing the ePortfolio with the ability to create a high standard of presentation, recognising that there is greater potential for showcasing the material. However, Emden et al. [p. 130] state that it is important to be clear about the purposes of a portfolio and to distinguish between material for showcasing and public use, from material for development and private use.\(^5\) Central themes which must be considered in development of the ePortfolio are reflection, self-evaluation, assessment and personal development, with a format that allows students to store and update records of their achievements, both in terms of specific skills and in acquiring broader graduate qualities.\(^9,10\)

It has been recommended that the development of an ePortfolio is underpinned by a student-centred focus where students are not “merely the users of the system” rather “the authors of it” encouraging students to become “dynamic participants in their own learning.”\(^11\) It has been proposed that ePortfolios have great potential to enhance teaching and learning by enabling students to construct their own schema for knowledge organisation and empower students to make sense of their learning experiences through interaction and feedback from clinical and academic staff.\(^3\)

There are a number of cautions in the literature concerning ePortfolios with regards to the ease of use, need for constructive guidance, time to build and maintain the ePortfolio, and the need to ensure that the process does not become onerous for the individuals involved.\(^5,12,13\) The predominant focus of the ePortfolio must be on learning not on the technology used to facilitate that learning.\(^3,12\) Nevertheless, McMullan (p. 340) maintains that careful consideration must be given to portfolio design ensuring a structure that is ‘relevant, clear and user-friendly’.\(^12\) It is essential that clear guidelines are given that are understood by students, mentors and academic staff, along with comprehensive and ongoing support. It has been suggested that there is a need to improve student skills through more explicit teaching of reflective practice, alongside training in the technical aspects of ePortfolios.\(^8,14\) Additionally, an important aspect of ePortfolio development is the potential for meaningful interaction, as the effective communication between academic staff and students lies at the core of successful portfolio pedagogy.\(^3\)

It would seem that the ePortfolio offers the potential to transform portfolio learning by providing students with a self-managed, independent learning space, which is accessible in the clinical setting. It would facilitate mentoring by teaching staff with whom they can build and develop their work, and encourage ongoing interaction with other colleagues. It also offers students the potential for high levels of interaction such as, fast feedback by teachers, collaborative learning projects, development of showcase and web publication, and involvement of industry partners in assessment and mentoring. Further, it would enable students to craft an exit presentation of their work for prospective employers that are accessible at a distance. This paper presents the findings of a project which sought to design and implement a pilot ePortfolio for students undertaking the Bachelor of Midwifery at the University of South Australia.

Methodology

The study adopted an action research methodology and followed the action research cycle of planning, action, observation and reflection in order to develop, implement and evaluate an ePortfolio for the Bachelor of Midwifery at UniSA.\(^15,16\) The fundamental aim of action research is to improve practice and involve the people that a change in practice will affect.\(^15\) As such, action research was selected for this study because it provided a collaborative and dynamic framework to improve the provision of midwifery education, specifically portfolio assessment, while supporting the philosophy of student-centred learning.\(^17\) In this project, the cycle of action research was followed as outlined.
Planning

The initial planning phase explored the notion of using ePortfolio in midwifery education through discussions with midwifery academic staff reflecting on anecdotal accounts from students regarding the current paper-based portfolio. Most of these accounts indicated that students believed that the current portfolio could be improved. A review of contemporary literature regarding portfolios and ePortfolios was undertaken in order to provide background to the study and inform the development of the ePortfolio.

An action research group (ARG) was established consisting primarily of academic and research staff, including staff from the Flexible Learning Centre, midwifery lecturers and IT staff. The ARG met regularly through the development process and notes were collected during each discussion. Further to this, an advisory committee was established to contribute to development of the portfolio and participate in the reflective phase of the project. This committee represented university staff, students and industry partners. Participants were invited to participate by a letter of invitation. The planning phase identified specific concerns and requirements for the ePortfolio.

Action

During the action phase ePortfolio requirements, including design interface, organisation and display, were developed in collaboration with technical staff. The design was based on the existing paper-based portfolio with the necessary modifications to construct an accessible, online learning space managed by students themselves, enabling students to electronically document, store, and reflect on learning activities. Specifically, provision was made for students to create a cumulative record of practice experiences and a clinical experience assessment form was made available to students to complete with regards to the level of skill attained for each competency. The option for staff or peers to collaborate and provide prompt feedback was developed. The capacity for continuing assessment of course requirements, both formative and summative, was created. Importantly, it provided a location for students to accumulate evidence for professional registration requirements. Privacy and confidentiality issues were addressed by creating password protected access to the ePortfolio.

The study used a purposive sample of 39 midwifery students who were undertaking year one of the Bachelor of Midwifery Program at UniSA, a large university in Adelaide, South Australia. Once the ePortfolio was developed, several academic staff and a student reviewed the program for ease of use and clarity. No changes were recommended at this stage and it piloted with first year students undertaking their second clinical placement across several large tertiary maternity hospitals. First year midwifery students were selected for the pilot study as they were considered the most appropriate student cohort. These students had been required to record clinical experiences during their first clinical placement as part of the paper-based portfolio and assessment criteria. This ensured that the students were familiar with the process of maintaining a portfolio record and also provided students with a means to compare practice between electronic and paper-based portfolio without having established a familiarity or preference for either. One of the clinical facilitators responsible for these students had participated in the advisory discussion and was familiar, to some extent, with the pilot ePortfolio.

Students were recruited to participate in the project by personal invitation or email. Each student was provided an information letter regarding the ePortfolio and asked to sign a written consent form. Students were provided a face-to-face training session about the ePortfolio with university IT staff before using the ePortfolio. Eighteen students maintained the ePortfolio throughout their clinical placement representing a diversity of student participants (Table 1).

Observation

During the observation phase students who maintained the ePortfolio were asked to complete an electronic questionnaire and participate in face-to-face interviews providing feedback regarding their experience in using the ePortfolio. The questionnaire and interviews were conducted following completion of the clinical placement experience. The questionnaire was anonymous and designed to collect feedback from students regarding the use of the ePortfolios. It also gave students an opportunity to comment on the current paper-based portfolio. Eleven students completed the questionnaire online.

Eight students agreed to participate in the interviews and were asked to complete a written consent form giving permission for the interviews to be taped. Two interviews were conducted face-to-face but due to difficulties in connecting with students the remaining six were conducted as phone conversations.

Table 1 Student participant demographics.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Number of students</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;25 years</td>
<td>10</td>
<td>55.6</td>
</tr>
<tr>
<td>26—30 years</td>
<td>4</td>
<td>22.2</td>
</tr>
<tr>
<td>31–35 years</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>&lt;35 years</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>14</td>
<td>77.8</td>
</tr>
<tr>
<td>Swedish</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Suburb region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>5</td>
<td>27.8</td>
</tr>
<tr>
<td>North Eastern</td>
<td>4</td>
<td>22.2</td>
</tr>
<tr>
<td>South</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>East</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>West</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Country South Australia</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>6</td>
<td>33.3</td>
</tr>
<tr>
<td>Not married</td>
<td>12</td>
<td>66.7</td>
</tr>
<tr>
<td>Grade-point average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;6</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>5—5.9</td>
<td>7</td>
<td>38.9</td>
</tr>
<tr>
<td>4—4.9</td>
<td>8</td>
<td>44.4</td>
</tr>
</tbody>
</table>

The study used a purposive sample of 39 midwifery students who were undertaking year one of the Bachelor of Midwifery Program at UniSA, a large university in Adelaide, South Australia. Once the ePortfolio was developed, several academic staff and a student reviewed the program for ease of use and clarity. No changes were recommended at this stage and it piloted with first year students undertaking their second clinical placement across several large tertiary maternity hospitals. First year midwifery students were selected for the pilot study as they were considered the most appropriate student cohort. These students had been required to record clinical experiences during their first clinical placement as part of the paper-based portfolio and assessment criteria. This ensured that the students were familiar with the process of maintaining a portfolio record and also provided students with a means to compare practice between electronic and paper-based portfolio without having established a familiarity or preference for either. One of the clinical facilitators responsible for these students had participated in the advisory discussion and was familiar, to some extent, with the pilot ePortfolio.

Students were recruited to participate in the project by personal invitation or email. Each student was provided an information letter regarding the ePortfolio and asked to sign a written consent form. Students were provided a face-to-face training session about the ePortfolio with university IT staff before using the ePortfolio. Eighteen students maintained the ePortfolio throughout their clinical placement representing a diversity of student participants (Table 1).

Observation

During the observation phase students who maintained the ePortfolio were asked to complete an electronic questionnaire and participate in face-to-face interviews providing feedback regarding their experience in using the ePortfolio. The questionnaire and interviews were conducted following completion of the clinical placement experience. The questionnaire was anonymous and designed to collect feedback from students regarding the use of the ePortfolios. It also gave students an opportunity to comment on the current paper-based portfolio. Eleven students completed the questionnaire online.

Eight students agreed to participate in the interviews and were asked to complete a written consent form giving permission for the interviews to be taped. Two interviews were conducted face-to-face but due to difficulties in connecting with students the remaining six were conducted as phone conversations.

Table 1 Student participant demographics.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Number of students</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;25 years</td>
<td>10</td>
<td>55.6</td>
</tr>
<tr>
<td>26—30 years</td>
<td>4</td>
<td>22.2</td>
</tr>
<tr>
<td>31–35 years</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>&lt;35 years</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>14</td>
<td>77.8</td>
</tr>
<tr>
<td>Swedish</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Suburb region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>5</td>
<td>27.8</td>
</tr>
<tr>
<td>North Eastern</td>
<td>4</td>
<td>22.2</td>
</tr>
<tr>
<td>South</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>East</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>West</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Country South Australia</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>6</td>
<td>33.3</td>
</tr>
<tr>
<td>Not married</td>
<td>12</td>
<td>66.7</td>
</tr>
<tr>
<td>Grade-point average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;6</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>5—5.9</td>
<td>7</td>
<td>38.9</td>
</tr>
<tr>
<td>4—4.9</td>
<td>8</td>
<td>44.4</td>
</tr>
</tbody>
</table>
interviews. Confidentiality was assured by de-identifying each student and their comments. Similar to the questionnaire, the interviews sought specific feedback from students regarding their experience with both paper-based and ePortfolio, with specific questions to guide the discussion based on the data from the survey. Consequently, the interviews provided additional understanding and were valuable in being able to validate the project results.

Reflection

During the reflection phase, the analysed data from the questionnaire and interviews were reviewed. The findings were presented to the ARG, including the advisory committee, and contributed to an evaluation of the ePortfolio and recommendations.

An ethics proposal was submitted and approved by the UniSA Human Research Ethics Committee prior to commencing the study.

Findings

ARG and advisory committee

The initial ARG discussions presented anecdotal accounts of issues with the current paper portfolio and were reviewed in light of contemporary literature. These discussions provided a means to articulate the research problem and subsequent proposal. Through these early discussions, several key concerns were identified and it is agreed that there was a need for a well-designed ePortfolio interface that was able to meet the specific needs of midwifery students, academic staff, and clinical facilitators. Specifically, it was acknowledged that key stakeholders needed to be involved with the finalisation of the design and specifications of the ePortfolio and an advisory committee was formed.

An initial design interface for the ePortfolio was developed by the university IT department consisting of a two-tier web application with a presentation layer, a database backend, and normal login security features. It was written using a standard methodology within Microsoft’s Dot Net 2.0 framework. The initial ePortfolio was presented to the ARG and advisory committee and was well received although a number of issues were raised. All stakeholders commented that the design appeared “user friendly” and thought that the ePortfolio was a “positive step” with “huge potential.” The issues raised by stakeholders centered around IT, such as access to computers for hospital staff, computer literacy, safe options, safety and confidentiality of electronic data. These issues were considered and adjustments made to the final design of the ePortfolio.

Questionnaire

Eighteen students maintained the ePortfolio and 11 of these students completed the electronic survey. Students were provided five statements and asked to rate the degree to which they agreed or disagreed with the statements, ranging from strongly agree to strongly disagree. The first two statements specifically asked students to reflect on their experience with the paper-based portfolio. Seven (63.7%) students indicated that they agreed or strongly agreed with the statement that the paper-based portfolio process in the Bachelor of Midwifery Program was user-friendly. Three (27.3%) students disagreed or strongly disagreed with this statement (Table 2).

Seven (63.7%) agreed or strongly agreed that they had found it easy to keep track of the paperwork for clinical experience during their first course of the program, while only one (9.1%) student disagreed with this statement (Table 3).

Students were asked to provide additional comments following each statement. Comments were both positive and negative for the first two statements and included the idea that a paper copy of the portfolio provided a sense of satisfaction when reflecting on experience, such as “It’s a record of my progress.” Also, students commented that it felt “safe” knowing that there was a hard copy available. Negative comments reflected on the size and complexity of the document suggesting that a significant degree of organisational skills was necessary to manage such a large document, one student commented “If you’re organised it’s simple.” Other students admitted to redesigning the portfolio “I had to (re)create the entire document myself on computer” and “I have simplified (it) a lot.” There were some students who felt that more guidance would have been beneficial. While some students felt that a paper copy was a safe option, most felt that there was risk of losing the portfolio, particularly when on clinical placement.

The following three statements were designed to gain feedback from students regarding the ePortfolio. The first statement, which aimed to gain a response from students regarding the ease of use of the ePortfolio did not appear to be well understood by students with six (55.0%) students responding with unsure. However, comments following this statement indicated that while the process allowed for easier maintenance of their record students at first, they found it was quite a “tedious” process. In addition, it was suggested that there was not always enough space or detail for the

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Paper-based portfolio user-friendly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>n = 11</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>2</td>
</tr>
<tr>
<td>Agree</td>
<td>5</td>
</tr>
<tr>
<td>Unsure</td>
<td>3</td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Paper-based portfolio easy to manage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>n = 11</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>2</td>
</tr>
<tr>
<td>Agree</td>
<td>5</td>
</tr>
<tr>
<td>Unsure</td>
<td>3</td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
</tr>
</tbody>
</table>
Specific entries required, for example one student commented, “the ePortfolio itself is not specific enough about the context (follow-throughs, placements) or detail of learning experience.” Some students also identified that their workload was doubled; however, this was due in part, to the misunderstanding that students had to maintain a paper-based portfolio at the same time and were reluctant not to do so as this represented a critical piece of assessment during their course.

The statement “I would prefer to use an ePortfolio to a paper-based portfolio” was presented to the students. Seven (63.7%) students agreed or strongly agreed with this statement. Four (36.3) students disagreed (Table 4). Comments following this statement included, “would prefer if it totally replaced the paper version and was user friendly for clinicians” and “I would prefer the ePortfolio over the paper, but I do think the ePortfolio needs a few changes to make it easier.” Interestingly, comments were made by several students indicating that they would still like a paper copy of the portfolio on completion of their degree. Also, queries were raised regarding the collection of signatures from midwives and facilitators while on clinical placement.

Students indicated that the ePortfolio would be good for keeping track of their progress over the program with 8 (72.7%) students responding with agree or strongly agree to this statement, however, 2 (18.2%) students did not agree (Table 5). Comments concerning the ability of the ePortfolio to track their progress suggested that potentially, it would provide a quick and easy way to review their progress at any stage of their program, highlighting the requirements that still need to be met. Comments included, “easier at a glance” and “it shows clearly the numbers that I have and what I still have to do.” This may be of particular concern for midwifery students who must fulfil a specified number of clinical experiences, including births and follow-through, for registration. Students did raise concerns regarding “losing data” and the need to “constantly put their experiences into the computer.”

<table>
<thead>
<tr>
<th>Rating</th>
<th>n = 11</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>Agree</td>
<td>5</td>
<td>45.4</td>
</tr>
<tr>
<td>Unsure</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Disagree</td>
<td>4</td>
<td>36.4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The questionnaire provided a final question asking students to comment from their experience with the ePortfolio, what improvements could be made to the technology itself, or to the user’s experience. All but one student provided a comment. Comments regarding the technology suggested that the software needed to include more options, such as a broader list of clinical locations, or the ability of the system to record names that have been entered once, such as midwives and facilitators. Also, students recommended that being able to document more experiences per web-page, without having to “update the screen” would save time and be easier to track. Comments were made on the terminology employed at times, for example “women undergoing birth.” Students felt that the ePortfolio would be more user-friendly if there were prompts written into the program, such as details required for an abdominal palpation including, “gestation” and “fundal height.” In general, students were positive about the future of the ePortfolio suggesting that with further modifications it would be a useful tool and could eventually replace the paper-portfolio.

**Interviews**

Eight students agreed to participate in face-to-face interviews. Seven out on the eight student interviewed completed both the paper and pilot ePortfolio. Each interview was recorded and transcribed verbatim. The data were then coded and sorted using thematic analysis. Demographic data were collected as shown in Table 5. The questions used during the interview process asked students to consider both the paper-based portfolio and the ePortfolio. Four themes were identified from the discussions for each type of portfolio providing a comparison between both types of portfolio (Table 6).

**Paper-based portfolio: confusing at first, cumbersome and created anxiety but was consolidating**

**Confusing at first**

On receiving the paper-based portfolio instructions for field placement, all participants interviewed expressed that they initially felt confused about what was required of them. However, they managed this confusion by seeking examples of portfolios from second and third year students. Based on these examples they created their own format to manage the information and requirements of their portfolio, according to personal preference. Once participants believed they understood what was required of them, recording their field placement experiences was considered by most as enjoyable. Comments included,

<table>
<thead>
<tr>
<th>Rating</th>
<th>n = 11</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>Agree</td>
<td>6</td>
<td>54.5</td>
</tr>
<tr>
<td>Unsure</td>
<td>1</td>
<td>9.1</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 5 ePortfolio good for keeping track of progress.

Table 6 Comparison between paper-based and ePortfolio.

- **Consolidating experience** Suggestions for improvement
“Biggest issue was not understanding. Unsure about what was required.”

“Tried very hard to simplify it.”

“Initially it was confusing.”

Cumbersome
Issues in the size and managing the portfolio emerged from the data. Students acknowledged that building a paper portfolio had some limitations describing this with words such as “awkward”, “wasteful” and “heavy.” Keeping entries up to date and managing lots of paperwork while on placement was expressed by participants as “stressful at times.” To manage the bulk of accumulating records participants often referred to the need to keep separate folders that later had to be collated to present for assessment. To ensure against losing these documents some felt the need to carry around their portfolios at all times and the burden of carrying such a heavy and bulky document was also expressed.

Created anxiety
The fear of losing completed paperwork and signatures that verified their attendances was often foremost in their minds. All participants referred to this as a significant issue as documented,

“Worried about losing when have to leave at nurses station”

“Fear of losing it or it being stolen”

This anxiety regarding losing documents while on placement was referred to as stressful, although it was also acknowledged that after time it became a habit to make sure they had multiple paper copies for each experience, “I photocopy all my originals, signed materials and sort them into folders as I go, so if I lose one I have another.” However, the need to do so involved extra time and cost. Presenting the completed portfolio for assessment also involved a cost as often students found it difficult to hand this in to UniSA staff directly so that the cost of postage was also required and also created uncertainty about the reliability of reaching the university. Also, the requirement to chase up signatures, up to five for each follow-through experience, was often found to be difficult and stressful, most commonly, this involved pursuing busy midwives. Often, this was also time consuming and created anxiety if the midwives and/or facilitator were unavailable.

Consolidating
While students identified issues concerning the paper-based portfolio, one consistent notion that persisted was that the portfolio provided an overall consolidation of their learning experience, particularly authenticating their clinical experiences. Having a verifiable document of their placement experiences that was validated by a facilitator and/or midwife gave them a sense of security, especially for assessment purposes. Participants liked the fact that they had a visual, authentic document that was at hand whenever it was required. Many found that having this record to look back over was both encouraging, as they reflected on achievements to date, and motivating, as they anticipated competencies still to be achieved. Comments included,

“Good visual account, like to reflect—keeps you motivated”

“Evidence of what I’ve done—encouraging to see the folder build up”

EPortfolio: simple, streamline and safe, but some suggestions
Simple
Participants who completed the ePortfolio found that creating their Midwifery portfolio using the online format was straightforward providing that the student had a degree of computer literacy. Students used descriptors such as ‘really easy’, “straight forward” and “all made sense” to describe their experience creating an ePortfolio. The visual layout was appealing and participants found their experiences could be easily quantified, showing those achieved to date and those still to be completed for assessment purposes. One student however, commented that they did not really understand it and “needed someone to go through it again,” identifying that computer literacy was a necessity. Interestingly, there may be a correlation between age group and acceptance of the ePortfolio, the youngest student who participated in the interviews appeared the most relaxed and accepting of the online format. This may need consideration in implementing the ePortfolio as standard practice

Streamline
Participants found that keeping track of their experiences was easy, also due to the visual layout. A number of positive aspects were identified by participants in using the ePortfolio, such as the ability to ‘enter as you go’, change entries if necessary and the ePortfolio’s user-friendliness. Less waste, less cost, and less hassle were also expressed as positive aspects. Using the ePortfolio was generally acknowledged as “the way of the future” for university courses requiring an ongoing clinical record. The accessibility of the document to all parties requiring access including staff, facilitators, midwives and students, was considered to be a better means of managing the portfolio as an assessment tool. One student described it as a “one stop shop” as it “accumulates everything in one place” another stated that it was “very good to quantify experiences.” Nevertheless, several students raised the issue of the time it took them to enter data such as “took a lot of time trying to upload 105 experiences” and “demanding course already, didn’t have time to learn it alone.” One student suggested that the ePortfolio would best be implemented at the beginning of the program as she was about to begin second year.

Safe
The concern about loss of documentation was also resolved for many as they felt their ePortfolio was safely stored on the
University system, they maintained that if it was lost from there, at least this was “someone else’s problem”. It is possible that this cohort of students saw this as an additional back-up for their paper-based portfolios, as all maintained their paper-based portfolios as well. Further, students identified that there was less risk of physically losing electronic data compared to hard copies, “don’t have to carry it around, no risk of losing paper”. One concern that was raised was the issue of being able to validate the students experience and collect signatures as evidence of competencies achieved; students found this was an issue that would need to be addressed to ensure that the ePortfolio met registration requirements.

Suggestions

All participants who completed paper and ePortfolio stated that they completed their paper portfolio first and transferred this information to the online version. While students were positive about the potential of the ePortfolio, a number of issues with managing the online interface and data entry did emerge. Consequently, participants offered a number of suggestions for the improvement of the ePortfolio that they believed were required before it could replace the current paper-based model.

The main requirements expressed by participants were the need for a means of validating a students practice experiences, and the ability to enter details for each practice experience. For example, students wanted to be able to enter more detail about their birth experiences and to add to this as necessary. They identified that documentation of follow-through experiences needed to include all stages of pregnancy and childbirth, so that one continuous record could be kept for each woman they provided continuity of care. Verification of attendance was also a major concern for students, many of whom were unsure how this could be managed using the ePortfolio. At the moment, this is achieved by gaining signatures on paper from hospital staff/facilitator. Students wanted to ensure that there would be an effective and easy means of gaining validation to ensure that registration requirements would be met. They identified the need for hospital facilitators and midwifery staff to have a working knowledge of the ePortfolio.

A number of other suggestions were made, such as giving attention to wording, arranging the presentation of the ePortfolio so that miscellaneous comments could be made, access to hospital computers, ongoing IT support and the need for all users, midwives, facilitators, academic staff and students had continual access to the ePortfolio interface.

In summary, when comparing the ePortfolio and paper portfolio, the paper model was found to provide a means of ‘action journaling’, it could provide reflections, essays and information acquired that the student wished to record and access. As such, the portfolio of experiences was expressed by many participants as ‘more than just numbers’. The hardcopy was perceived to provide more detail for interviews, and was available at all times. However, the ePortfolio was considered by participants to be easier to use, easier to access and convenient. Overall, most participants appeared happy to move to online portfolio providing their concerns could be addressed, and providing that all students were required to use it. The ePortfolio “needs a bit of tweaking” but appears accepted as “the way of the future.”

Final ARG and advisory committee meeting

At the beginning of the final ARG and advisory committee meeting an overview of the ePortfolio pilot and a summary of the students’ feedback, from the questionnaires and interviews, was provided. The facilitator was also given an opportunity to share her experience with the ePortfolio during the pilot. The facilitator identified a number of problems that arose while attending students on placement including. These problems included difficulties accessing the ePortfolio as some facilitators were not employed by the university. This created a security issues as these facilitators did not have university ID and payment was required to obtain this. There were also difficulties editing the ePortfolio pages in order to adjust students clinical self-assessment rating where indicated or add further comments. It was suggested that there was a need for an additional space for the facilitators’ assessment as well as the students. Concerns were raised about managing the variety of shifts, recording dates and location. The IT representative suggested that it would be valuable to include facilitators more substantially in further development of the ePortfolio.

Ongoing discussion with stakeholders during this meeting identified a number of ongoing concerns, such as the need for a record of attendance of students while on placement and the need for verification of their clinical experiences. It was suggested that midwives, doctors and facilitators could enter their registration or provider number as a means of supplying verification or an audit trail which could be authenticated if necessary. There was also some discussion given to the proposed national accreditation of Midwifery and the need to consider national competencies in further development of the ePortfolio, providing a means to record and authenticate registration requirements. While it was recognised that the ePortfolio was beneficial in recording competencies and experiences for assessment, discussion was also given to the need to enable students to use the ePortfolio as a professional document and for this need to be considered in further development.

Overall, the comments from stakeholders remained positive with the facilitator commenting that she looked “forward to seeing the ePortfolio grow beyond its current capacity to contain the students ‘whole’ portfolio.” They all agreed that the ePortfolio was the “way of the future.”

Discussion

One of the overriding findings from this project is that midwifery students studying at UniSA consider the portfolio a valuable record of their experience. This is consistent with a number of studies, which also found that educational portfolios provided a means to document student’s knowledge and experiences over time, assisting them to bridge the gap between theory and practice. It also enhanced their ability to reflect and consolidated their understanding. Importantly, it provided students with an authentic record of achievement, proof of their competency and a final summary of their learning journey.

The students in this study
were very proud of their final portfolio and looked forward to using it as a means to gain registration and as a showcase for future employment. In fact, many took great efforts to enhance the design and format of their paper-based portfolio in order to create a well presented and visually appealing document. It appears that there is a need to consider the overall presentation of the educational portfolio to meet the expectation of students in the 21st century. The ePortfolio provides a means to create a document that has significant presentational abilities that would match the high-level of developmental and assessment performance. 2,5,18

There were other important understandings gained from this study. It was evident, that for most students, portfolios are difficult to comprehend at first and some students in their first year found the portfolio a significant learning challenge. This was not so evident in the ePortfolio but then student in this study were already familiar, to some degree, with the portfolio learning experience. Certainly, it would be reasonable to conclude that any form of portfolio requires considerable explanation and time to become confident with. This should be considered in implementing the ePortfolio as student and facilitators will require adequate training and time to consolidate their skills to make the ePortfolio more accessible that the paper-based option. 2,3

It has been documented that effective implementation of the ePortfolio remains a significant challenge. 12,19 For the students in this study, ease of use and simplicity of form was important. It would seem that developing the portfolio further so that it is student-centred and user-friendly is warranted. Consideration must be given to the need for designated ongoing IT support for all users. The issues, raised by students and stakeholders, should be acknowledged and further student and stakeholder involvement welcomed in developing the ePortfolio.

It would also seem that there is need for a discipline specific design so that comprehensive details relevant to midwifery clinical experiences and assessment criteria, both within the university and as required by registration bodies, can be documented and authenticated. Simply adapting a standard ePortfolio interface may not be sufficient to meet the needs of midwifery students. Attention should be given to national registration and accreditation requirements in future development.

A further finding was that students were concerned for the safekeeping of their portfolio and verbalised great anxiety regarding the potential to lose this document, many going to considerable efforts to ensure that their portfolio was safeguarded against loss. While this became an expensive and time consuming activity for many students it continues to be guarded against loss. While this became an expensive and time consuming activity for many students it continues to be a relevant concern in the transfer of portfolio material to an electronic form. A recent project undertaken in the UK using pocket PCs to document clinical experience found that midwifery students remained concerned about losing data and needed assurance of safekeeping. 20 Consideration must be given to providing student with options to ‘back-up’ their work and ensure that it is protected from possible electronic mishaps.

Limitations

A number of limitations are recognised in this study. Throughout the project there were difficulties experienced with regards to student placements, IT access and university staff changes. This impacted on the number of students that were ultimately involved and the degree of IT support available to all participants. Consequently, it is acknowledged that the project reflects the findings from a small study and cannot be generalised but it is hoped that they will add to the growing collection of literature regarding ePortfolios. Also, there were issues related to the design of the study, as many students perceived the study as simply a short-term initiative and not integrated as a compulsory aspect of their curriculum. All students involved felt the need to keep a paper-based portfolio as well, this was due, impart, to the assessment component which students felt safer to submit in paper form. Dearney et al. also identified this as an issue which impacted on the outcome of their study involving midwifery students. 20 It seems that substantial thought must be given to consider the most appropriate method of undertaking the next cycle of this study.

Conclusion

In conclusion, the ePortfolio shows great promise as a system for the portfolio learning experience and may address many of the issues that student currently face when using the paper-based portfolio. However, the ePortfolio at this early stage presents a number of challenges as evident by the number of suggestions provided from students and stakeholders with regard to how an ePortfolio might be more effective. Interestingly, because of these issues, students all preferred the paper portfolio ‘at the moment’. It would be valuable to undertake more extensive exploration of the issues identified in this study and collaborate further with students, academic staff, clinical facilitators, midwives and IT experts. It is recommended that a larger project be funded which facilitates the involvement of all the stakeholders in further development of the pilot ePortfolio to create a midwifery specific portfolio which can be implemented with a new cohort of students commencing their Bachelor of Midwifery.

Acknowledgments

The ePortfolio project was funded by a University Teaching Grant from the University of South Australia. Thanks to Margaret Faulkner, John Hannon, Ass. Professor Ian Reid and Helen Bradley for their valuable contribution to the project.

References


