

# 'As a student, I do think that the learning effectiveness of electronic portfolios depends, to quite a large extent, on the attitude of students!'

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**Abstract:** Lynch and Purnawarman (2004:50) point out that 'a solid electronic portfolio can show reflection, evolution of thought and overall professional development'. Research shows that electronic portfolio assessment, if implemented thoughtfully, can successfully engage learners in critical thinking and problem solving, promote lifelong education, encourage self evaluation and allow learners to have a higher degree of control over the learning process (Pierson and Kumari, 2000; Mason, Pegler, and Weller, 2004). Given the value of electronic portfolios, there has been growing interest in using electronic portfolio assessment to support teacher education (Lynch and Purnawarman, 2004). In this paper, we discuss on-going efforts at the University of Hong Kong to design assessment tasks for a language awareness course entitled 'Pedagogical Content Knowledge'. The final-year student teachers taking the course are required to compile an electronic portfolio based on their reflections on the relevance and applicability of the issues relating to dealing with the content of learning in pedagogical practice discussed in the course. This paper sets out to describe and analyze issues relating to the design and implementation of the assessment, focusing specifically on the challenges that the research team faces. In our paper, we draw on a range of data, including student teachers' feedback on the assessment and in-depth reflections of two student teachers after the assessment to critically evaluate the extent to which the assessment has achieved the intended learning outcomes. The reflective study shows that apart from technical support, methodological and psychological preparation designed to help students to take on a more active role in the learning and assessment process are also needed to help students to perform effectively in the computer-supported assessment. Implications are drawn for those who plan to conduct electronic portfolio assessment in higher education.

**Keywords:** electronic portfolio assessment, psychological preparation, methodological preparation, assessment innovation, teacher education

## 1. Introduction

Given the value of electronic portfolios, for example, engaging learners in critical thinking and problem solving, encouraging self evaluation and allowing learners to have a higher degree of control over the learning process (Pierson and Kumari, 2000; Mason, Pegler, and Weller, 2004), there has been growing interest in using electronic portfolio assessment to support teacher education (Lynch and Purnawarman, 2004). In this paper, the research/teaching team discusses reflectively on-going efforts at the University of Hong Kong to design assessment tasks for a teacher language awareness course. The student teachers of L2 English taking the course are required to develop electronic portfolios based on their reflections on the applicability of the issues relating to dealing with different language systems in pedagogical practice discussed in the course. The paper sets out to describe the significance of portfolio and electronic portfolio assessment in education, and the implementation process of electronic portfolio assessment in the course over the last few years. A range of data, including the patterns that emerged in the electronic portfolios collected, student teachers' feedback on the assessment and the in-depth reflections of the tutors and two individual student-teachers after the assessment, are drawn on to critically evaluate the extent to which the assessment has achieved its intended learning outcomes. Implications are drawn for those who plan to conduct electronic portfolio assessment in higher education.

## 2. Literature review

Portfolios, as defined in this study, are 'rich, contextual, highly personalized documentaries of one's learning journey. They contain purposefully organized documentation that clearly demonstrates specific knowledge, skills, dispositions and accomplishments achieved over time. Portfolios represent connections made between actions and beliefs, thinking and doing, and evidence and criteria. They are a medium for reflection through which the builder constructs meaning, makes the learning process transparent and learning visible, crystallizes insights, and anticipates future direction' (Jones and Shelton, 2011: 21-22). The portfolio building processes that learners go through engage them in a reflective inquiry process (Zubizarreta, 2004) and provide them with a holistic learning experience

(Jones and Shelton, 2011), which helps to explain why different forms of portfolios and portfolio assessment have been widely adopted in the educational context worldwide (Kinnard, 2007). With enhanced features such as flexibility in storage, and production and dissemination (Barrett, 2000), the introduction of electronic portfolios has taken portfolio assessment in education to a new level.

The potential benefits of portfolio assessment have well been documented in the education literature. For example, the self-directing and on-going nature of the assessment, such as learners collecting and selecting items to be included in the portfolio, seeing connections between these artifacts and reflecting on them over a period of time (Mason, Pegler and Weller, 2004), encourage deep-learning (Moon, 2004), reflection (Stefani, Mason and Pegler, 2007), self evaluation and critical thinking (Pierson and Kumari, 2000), and develop in the learners a sense of voice (Jones and Shelton, 2011) and ownership of learning (Zubizarreta, 2004). All these benefits were the reasons why portfolio assessment was adopted when the language awareness course was first introduced in 2008. In order to prepare the student teachers of L2 English better for the literacy pedagogy challenge—the 'burgeoning variety of text forms associated with information and technologies' (The New London Group, 2000: 9)—the paper portfolio assessment was replaced by electronic portfolio assessment in the following academic year.

In addition to all the benefits of paper portfolio assessment mentioned above, electronic portfolio assessment offers learners a multimedia platform to design, produce and distribute their portfolios; for example, learners can enhance their portfolios using a combination of digital media including animation and sound effects (Kilbane and Milman, 2005). In fact, it allows learners greater flexibility in terms of capturing the items to be reflected on, storing the artifacts, and duplicating and distributing their portfolios (Barrett, 2000). According to Jones and Shelton (2011: 145), the 'non-linear structure [of electronic portfolios] means that support documentation can be virtually attached where appropriate without compromising the overall community and flow of the document'. Specifically, in the context of teacher education, electronic portfolio assessment can engage student teachers in the use of technology so as to develop their digital literacy (Lane, 2009), as in this case study, in which one of the intended learning outcomes of the assessment was to develop student teachers' understanding of the interplay between various types of knowledge including content, pedagogical and technological knowledge.

Despite their benefits, portfolio and electronic portfolio assessments present challenges to both implementers and builders. According to Parsons (1998), portfolio assessment needs to be approached with caution to ensure success. Also, Janesick (2011: 42) states that although teachers and students have been moving into the computer age 'one can imagine that the transition to electronic portfolios is gradual and not necessarily easy'. In terms of the implementers, issues such as technical training for both staff and students, problems with portfolio archiving, and increased workload of faculty, all need to be dealt with properly. The issues of technology and time are two determining factors that need to be addressed in relation to both the implementer and the builder (Zubizarreta, 2004). In terms of teaching strategies, Biggs (1999: 2) points out the importance of 'constructive alignment', stressing that deep pedagogical approaches focusing on teaching for understanding, especially personal understanding (Lynch, McNamara and Seery 2012), are needed for deep learning assessment approaches such as electronic portfolio assessment.

According to Kinnard (2007), the process of constructing a portfolio is complex and consists of three major phases: introspection, design and implementation. In the context of teacher education, the first stage involves student teachers reflecting introspectively on their teaching beliefs and practices with respect to the focus of the portfolio assessment. In the next two stages, the processes of collecting items to be included in the portfolio, selecting and categorizing them, and recording related reflections continue until the artifacts are actually arranged and presented in the portfolio. These processes, especially those involved in electronic portfolio building, could be novel to many student teachers and thus, methodological support is needed to help them commit to this time-consuming, and possibly daunting, portfolio building process. In terms of psychological support, Parsons (1998) stresses that learners need to be helped to see the active role they play in the 'new' learner-centred assessment, in particular, the importance of their engagement in this self-regulated (Nichols and Dawson, 2012) learning-and-assessment combined process (Hung, 2012).

### 3. Implementation of the assessment

#### 3.1 The teacher language awareness course

The course into which electronic portfolio assessment was introduced is part of an initial teacher education programme that integrates English studies, education, English language teaching methodology and school experience. The course aims to develop the teacher language awareness of student teachers of L2 English as it relates to different language systems such as grammar, lexis and phonology. According to Thornbury (1997: x), teacher language awareness refers to the knowledge that teachers have of the 'underlying systems of the language that enables them to teach the subject effectively'. In other words, language-aware EFL teachers, as in this case study, need to be able to reflect on their knowledge about language, and their knowledge of the learner, and draw appropriately on their knowledge about language in all aspects of their pedagogical practice (Andrews, 2007) to enhance language teaching and learning. An important principle underpinning the curriculum design of the course is the prioritisation of student teachers' development of metacognitive awareness so as to help them assess their own knowledge about language, evaluate their own pedagogical decisions and performance, and modify their teaching assumptions and practices. The assessment task for the course aims to provide these student teachers with opportunities to capture and reflect on their own experiences of dealing with different language systems and to re-evaluate some of their content-related pedagogical decisions in light of the knowledge gained on the course. This paper compares the extent to which the assessment achieved these two intended learning outcomes in the academic years 2009/2010 and 2010/2011, as well as reporting on a case study investigating the in-depth reflections of two student teachers after the assessment in 2011/2012.

#### 3.2 The student-teachers

Two sub-classes of student teachers were taking the language awareness course in 2009/2010 (i.e. 21 and 25 student-teachers in sub-classes A and B respectively) and 2010/2011 (i.e. 22 and 19 student-teachers in sub-classes A and B respectively). Although all the students from the two cohorts had been using different social networking sites such as Facebook to communicate with each other, they reported that they did not have any experience of building their own electronic portfolios. Many of them lacked the technical knowledge or skills for video editing, which was indeed a prerequisite for developing their electronic portfolios for the course. Most of them admitted that they had not heard about the University recommended portfolio building software, Mahara, before the course. Some student teachers from the 2009/2010 cohort were also found to be reluctant to log on to the new faculty e-learning platform, Moodle, from which they could access Mahara. Student teachers from the two cohorts were asked on various occasions for their comments on the electronic portfolio assessment implemented in the course, for example, the end-of-term teaching evaluation surveys and feedback sessions. However, because of the course design, these data were all collected before their portfolios were actually submitted and graded. Also, in 2011/2012, student teachers were invited to share with their tutors their in-depth reflections of the assessment about two months after they had been informed of their final grades of the course. As the tutors of sub-class A changed over the last few years, only the implementation process of the assessment in sub-class B was detailed and compared to maintain continuity. The patterns that emerged in the 25 and 19 electronic portfolios submitted by the student teachers in sub-class B in 2009/2010 and 2010/2011 are examined in detail below.

#### 3.3 The 2009/2010 cohort

The 25 student teachers in sub-class B of the 2009/2010 cohort were given a large amount and various kinds of technical input to conduct the electronic portfolio assessment. Specifically, a technical staff member was assigned to support their electronic portfolio building process. Technical support in the form of Mahara user manuals, in-class demonstrations, and technical support hotlines was provided to help the student teachers to complete and submit their assignments. In each electronic portfolio, student teachers had to include two pieces of reflection detailing their teacher language awareness development, a brief contextual description of their teaching practice school, a few extended pieces of reflection on the course online forum, the teaching materials they used, the student compositions they marked and two content-related incidents that they had captured on video during their practicum. Although some difficulties were encountered, such as the tutors' not being able to open some electronic portfolios properly, all the student teachers in the sub-class managed to submit their assignments before or shortly after the deadline.

Regarding the question of students' perceptions of the new assessment in the end-of-term course evaluation survey, based on the 24 questionnaires returned from the whole cohort (i.e. 46), the electronic portfolio assessment was rated 3.13 on its usefulness on a 5-point likert scale, with 5 representing very useful. The result was somewhere between the highest rating, 3.63, for the course tutorials and teaching materials, and the lowest rating, 3.08, for the online discussion forum introduced into the course in the same year. In terms of student feedback, while some student teachers complained about the heavy workload of the course, others expressed the need to have clearer instructions for the assessment task. On the whole, the whole cohort of student teachers held rather negative opinions about developing their portfolios electronically and/or Mahara. One student stated in the questionnaire that the 'non-text format [assignment] is not preferred', while another considered things like video trimming 'unrelated' to their studies. All their comments on the electronic portfolio assessment are listed below:

#### Workload

- *too much for the E-portfolio*

#### Instructions for assessment

- *need clearer instructions for assignments. Perhaps a sample/ template.*
- *clearer guidelines are preferred*
- *guidelines about assignments are very unclear, not sure what I am expected to do*

#### Mahara

- *it might be more convenient to submit the video with DVDs than through Mahara*
- *Mahara is too difficult to use!*

#### Developing the portfolio electronically

- *trimming video and presenting in non-text format is not preferred*
- *should not expect Ss to do unrelated things e.g. trim videos, present artifacts in non-text format*

Based on their format, the 25 electronic portfolios submitted by sub-class B can be grouped under five different categories (see Table 1 in section 3.4):

- (1) all the files such as Word, video and PPT are uploaded as attachments to the electronic portfolio,
- (2) one or more Word files are uploaded as attachments with the video files in the ready-to-show format as required,
- (3) one or more Word files are uploaded as attachments with ready-to-show video clips, and images of student work and textbook materials being reflected on,
- (4) text, ready-to-show video clips, and images of student work and textbook materials, and
- (5) text, ready-to-show video clips, images of student work and textbook materials, and other enhanced features such as photos, graphics and sound effect.

In terms of the intended aims of the assessment, with only 17 student-teachers managing to present their ideas properly in their electronic portfolios (i.e. types 4 and 5), the research team believed that the primary aim to develop student teachers' digital literacy through electronic portfolio assessment had barely been achieved. Only 2 electronic portfolios, among the 25 submitted, were, to some extent, technically enhanced, that is, included features that could not be integrated in traditional paper portfolios. One student teacher included in his portfolio a piece of self-composed music to remember the learning process he had gone through, while another integrated an animation showing a pen writing out her final self-evaluation of teacher language awareness in the portfolio. Regarding the development of the metacognitive awareness of the student teachers, based on the in-depth reflections of the declarative and/or procedural dimension(s) of teacher language awareness shown in the portfolios submitted, the aim to enhance the metacognitive awareness of the student teachers had been achieved.

### **3.4 The 2010/2011 cohort**

Nineteen electronic portfolios were submitted by the student teachers in sub-class B in 2010/2011. In terms of content, the requirements for their electronic portfolios were exactly the same as those of the

2009/2010 cohort. However, support and preparation with different focuses (e.g. psychological, technical and methodological) were provided for this sub-class at different stages. In terms of psychological preparation, at the beginning of the academic year, the tutor went through the components and criteria of the electronic portfolio assessment with the sub-class, assuring them that they would be provided with all kinds of support they needed to build their electronic portfolios. Also, the tutor explained the significance of electronic portfolio assessment (e.g. to help develop their digital literacy), and why it had been adopted in the course, that is, to address the issue of storing different types of artifacts including video clips of classroom teaching, and to provide them with greater flexibility in terms of design and production of their electronic portfolios.

Regarding technical support, after the meaning of teacher language awareness had been explored and discussed student teachers in the sub-class were asked to write down their initial self-evaluation of teacher language awareness on a piece of patterned paper provided by the tutor. The reflections were then scanned, transformed into PDF files, and returned to the student teachers. The tutor then showed the sub-class how they could upload their PDF files onto Mahara to make their reflections the very first item required in the electronic portfolio. Most of the student teachers were indeed happy that they could follow the instructions easily, and they were encouraged to explore different uploading functions and presentation options on Mahara in their own time. They were also given short notes to guide their exploration and were encouraged to bring to the tutors any questions they had.

The student teachers were then methodologically prepared for the assessment. They were advised to create a specific folder and sub-folders to save up all the possible artifacts for their portfolios including drafts of their reflections. Specific attention was drawn to the importance of constantly evaluating, reflecting on and selecting appropriate artifacts for their portfolios over the period of the course. The tutor also highlighted the uniqueness and ownership of the portfolios, trying to help the student teachers to see the important and active role they played in the new assessment. Different learning activities involving self and peer evaluation were conducted to establish stronger links between course learning and their electronic portfolios. Towards the end of the course, the student teachers were asked again what specific technical support they would hope to have, and the requested support was given to the sub-class about one month before the deadline of the assessment.

All the student teachers in this sub-class managed to present their ideas properly in their electronic portfolios (i.e. types 4 and 5). Based on their format, the 19 electronic portfolios can be grouped under two different categories (see Table 1 below): (a) text, ready-to-show video clips and image(s) of initial self-evaluation of teacher language awareness (and teaching materials being analysed), and (b) text, ready-to-show video clips, image(s) of initial self-evaluation of teacher language awareness (and student work and textbook materials being analysed), and other enhanced features such as photos, graphics and sound effects. The submission process with some student teachers even submitting their portfolios days before the deadline as advised was smooth. The technician went through each submitted portfolio carefully, viewing all the files attached, before sending the student-teacher an email acknowledging receipt of the portfolio.

Regarding students' perceptions of the new assessment in the end-of-term course evaluation survey, based on the 37 questionnaires returned from the whole cohort (i.e. 41), the electronic portfolio assessment was rated 3.22 on its usefulness, slightly higher than the year before (i.e. 3.13). In terms of student feedback, while some student teachers in the whole cohort continued to complain about the heavy workload of the course and to express their dislike of the electronic portfolio assessment, one piece of positive feedback was received from a student teacher who could see the benefit of doing portfolio assessment electronically, stating that this new format was 'environmental friendly'. In fact, two student teachers told the tutor in their assignment feedback session that they had enjoyed the electronic portfolio building process and did not find it difficult. All the feedback collected from the end-of-term evaluation questionnaires is presented below:

Positive comment(s) on the assessment

*- The electronic portfolio is environmental-friendly.*

Negative comment(s) on the assessment

*- I don't prefer using e-portfolio as the form of assessment as it is difficult to manage.*

- I think submitting either hard copies of the portfolio or the e-portfolio could yield the same learning outcomes, and I could not see the advantages of submitting the final assignment as an e-portfolio instead of the hard copies.

- I think the electronic portfolio is very time consuming and it doesn't contribute to my learning of this course. I prefer handing in hard copy

**Table 1:** Electronic portfolios submitted by sub-class B

	The 2009/2010 cohort	The 2010/2011 cohort
(1) All the files (Word, video and PPT) are uploaded as attachments to the electronic portfolio	2	0
(2) All the Word files (one or multiple) are uploaded as attachments with the video files in the ready-to-show format as required	4	0
(3) All the Word files (one or multiple) are uploaded as attachments with ready-to-show video files, and images of student work and textbook materials being reflected on	2	0
(4) Text, ready-to-show video clips, and image(s) of initial self-evaluation of teacher language awareness (and teaching materials being analysed)	9 *	6
(5) Text, ready-to-show video clips, and image(s) of initial self-evaluation of teacher language awareness (and teaching materials being analysed) and other enhanced features	8	13
	25	19

\* The video clips in one of the electronic portfolios in this category were not in the ready-to-show format.

As all 19 student teachers managed to present their in-depth reflections on teacher language awareness in their electronic portfolios properly (i.e. types 4 and 5), the research team believed that both intended learning outcomes of the assessment had been achieved in the academic year 2010/2011. In fact, three student teachers were able to enhance further their electronic portfolios by effectively using the multi-media platform provided. One student teacher included in his portfolio different short video clips of him introducing various components of the portfolio. Another included in her portfolio songs and video clips relating to her learning and teaching. Last but not least, a student teacher included a theme song and a flip book in her portfolio to summarize her final self-evaluation of teacher language awareness. The tutor was happy to see the improvements shown in this sub-class.

### 3.5 Gladys and Helena from the 2011/2012 cohort

The research/teaching team has long been aware of the possible impact of the anxiety that student teachers experience before submitting their electronic portfolios on their perceptions of the assessment. Therefore, in 2011/2012, student teachers of sub-class B were invited to share their views on the assessment with their tutor via email two months after they had been informed of their final grades. The seven open-ended questions listed below in relation to various aspects of the assessment were sent to the sub-class who had consented to allow the research team to analyse and disseminate the data they had provided. Among the 33 student-teachers in the sub-class, only 2 responded, although in great detail. The fact that the email was sent to the novice teachers just before the new school term could help explain the low response rate.

- How do you feel about the PCK electronic portfolio assessment NOW (e.g. after you have tried it)?
- We gave you different types of support before the assessment, i.e. psychological, methodological and technical support. Were you aware of that?

- If yes, could you please give me an example to illustrate each type of support you received?
- Do you think we should continue to implement the assessment in the language awareness course? Please explain your answer.
- If yes, have you any suggestions for improvement?
- Would you consider implementing this kind of assessment in your own secondary school classroom? Have you any preliminary thoughts to share?
- Is there anything in relation to the assessment that you would like to share with me. ☺

While Gladys (pseudonym) responded to the tutor with a comprehensive list of reflections on the seven questions shortly after the email had been sent out, Helena (pseudonym) wrote to the tutor immediately after she received the email, telling the tutor that she would love to help, but she would need a bit of rest after an overseas leadership training programme. She took the initiative in setting a deadline for sending in her feedback. Together with her apologies, her detailed reflections were received a day after the deadline. In terms of their portfolios, with lots of technologically enhanced features including cartoons and animations, and in-depth reflections on various aspects of her teacher language awareness, Gladys' portfolio (i.e. type 5) scored the highest in the sub-class. Helena, on the other hand, despite her in-depth reflections had hardly made effective use of the electronic platform to present her work (i.e. type 3).

The implementation of the assessment in 2011/2012 was basically the same as that of the year before, focusing on providing the student teachers with psychological, technical and methodological support. Similar to the previous cohorts, they were required to include two pieces of reflections detailing their teacher language awareness development, a formal essay describing their understanding of teacher language awareness, a brief contextual description of their teaching practice school, as well as a few pieces of reflection on the teaching materials they used, two content-related incidents they captured, and the course online forum. With an aim to reduce the workload of both the tutors and student teachers, hurdle requirements were introduced, with many of the items submitted this year, such as reflections on the online forum and school context, not being assessed in any way.

In terms of findings, unlike the feedback collected in the end-of-term evaluation surveys and feedback sessions before, both Gladys and Helena reported that they liked the new assessment format considering it creative, fun, interactive and stimulating. While Gladys reported liking its on-going nature best, Helena found the assessment fresh and creative:

*As an assessment method, I find it quite fun and interactive. It allows us to use our creativity in organising our content and enriching the portfolio with visuals and audios. It is user-friendly. Furthermore, the assessment is on-going, as there are certain hurdle requirements that enable us to collaborate with our classmates, exchange thoughts and reinforce our knowledge and understanding throughout the course. This is way better than merely an end-of-semester essay as it helps to check our understanding throughout the learning process. (Gladys)*

*Yes, I think it's an interesting way to show what we've learnt during our Teaching Practicum (in terms of teacher language awareness). And it's a fresh new creative idea that we can ask our own students to try. It's more stimulating as it's not only written text, but also videos, photos and songs etc. (Helena)*

Both of them were well aware of the different types of support that the course provided. While Helena clearly remembered the time spent on preparing the student teachers technically and methodologically for the assessment, Gladys could clearly see the connection between the assessment and the pedagogical approaches adopted in the course:

*Yes, I was aware of psychological and methodological support.  
 Psychological: I was in [tutor B's] class, and she told us about this portfolio long before it was due and assured us that we would all be able to come up with a creative and informative portfolio.  
 Methodological: [Tutors A and B] spent nearly two hours (i.e. one whole session) to show us how to follow the steps listed. They patiently explained and demonstrated every step carefully, also welcomed questions.*

*I'm afraid I don't have comments about technical support as I didn't ask for it. But I'm sure if I did encounter technical problems and asked, [both tutors A and B] would be happy to help through emails. :) (Helena)*

*I agree with this statement. I remember that in the beginning of the semester, a lecturer was invited to teach us how to use the moodle forum. When Mahara was first introduced to us, [tutor B] also gave us clear instructions and demonstrations on how to use it. In addition, personally, I feel that the layout and instructions of Mahara are also reader-friendly. We can easily comprehend and use Mahara after exploring it for a few attempts. I also remember that [tutor B] arranged meetings with each group after marking our collaborative essays [on teacher language awareness to be included in our electronic portfolios]. This meeting and her feedback helped me clarify some misconceptions about the important terms, for example, KoL [i.e. knowledge of language], KaL [i.e. knowledge about language], and guided me to the right path in my later learning. (Gladys)*

Moreover, their responses to the continuous use of the assessment in the language awareness course were positive. With a focus on students' factors and understanding, Gladys' suggestions are directly linked to the pedagogical approaches adopted in the course:

*In my opinion, the E-portfolio can be continually used in the future and the hurdle requirements too, as they aid students' ongoing understanding throughout the course. ... I think the learning effectiveness of the E-portfolio also depends on, to quite a large extent, the attitude of the students. To be honest, our class is more of a receptive, passive nature, and we are not so eager to exchange our own understanding and knowledge in the lessons. This may have undermined the learning atmosphere and effectiveness of the class. Perhaps in the beginning of the semester, students can be reminded of the importance of contributing to the lessons and that there is no such thing as model answers, but how much they could learn would be determined by the amount of contribution they make in the class. (Gladys)*

In line with the student factor that Gladys pointed out, Helena confessed that she had not made good use of the opportunity to enhance her learning:

*I feel that there is a lot more that I could have done. I must admit that I started playing with the buttons and different functions a bit too late. I wish I had started on the day (or not long after) [tutors A and B] introduced us to the features. Due to limited time (which was caused by my own procrastination), I played it safe and didn't take full advantage of the available features to create an entertaining and comprehensive portfolio.... I noticed that a number of classmates and I had problems uploading videos directly onto the site. We ended up having to upload the files to YouTube and paste the link in our portfolios. Would be great if uploading files could be made easier. But then again, it was our own fault - not starting to try uploading files earlier (as [tutors A and B] advised us to). (Helena)*

When asked if they would use the assessment in their own classrooms, both Gladys and Helena replied positively. However, being aware of the importance of student factors in this kind of assessment, Helena stressed that she might consider implementing electronic portfolio assessment with her self-disciplined and highly competent class only:

*Maybe in a self-disciplined class with strong language and I.T. skills. (Helena)*

#### **4. Discussion**

The findings show that the research/teaching team was so occupied with various technical challenges and issues in relation to the implementation of electronic portfolio assessment that they had not prepared the 2009/2010 sub-class psychologically and methodologically for the new assessment (Mok, 2011). Psychologically, they had not helped the student teachers see the underlying principle of the assessment, for example, allowing them much flexibility in capturing, presenting and storing their experiences in dealing with different language systems for reflection, and they had not, in any way, elicited from the student teachers their needs or concerns regarding the new assessment before or during the implementing process. Most importantly, they had not even explained to the student teachers why the portfolio assessment had to be done electronically. As a result, the student teachers were not prepared psychologically, in any way, for the new assessment experience.

Methodological 'preparation [that] involves the acquisition of the necessary knowledge and techniques that will enable the learner to fulfil his role' (Kolláth, 1996: 311) effectively in the new assessment was also not available to the student teachers in this sub-class. The various stages involved in electronic portfolio building (Kinnard, 2007) were not explained to them, nor how they could approach the assessment, for example, by saving all the possible artifacts in a designated place for further reflection and selection. The lack of methodological and psychological preparation could have contributed to some student teachers' negative and insecure feelings about the assessment, as revealed in their feedback and portfolios (i.e. types 1-3). While some of them did not show any intention of composing their portfolios electronically, others seemed to lack the skills to do it effectively despite the tremendous technical support given to them. What is shown seems to reflect an attitude problem, that is, their lack of commitment in creating their portfolios electronically.

In terms of the psychological and methodological preparation that this sub-class could have needed, the recommendations that Hargreaves and Fullan (1998) make regarding taking advantage of the power of emotional resources of students to help them learn in the context of educational change could be applicable. These include getting students motivated by helping them understand the underlying principles of the new assessment, using different support strategies to raise their comfort level and involving them as much as possible in the change process. As in 2010/2011, the tutor explained explicitly to the student teachers the benefits and principles of the new assessment, helped them to build up their portfolios step by step in class and invited them to voice their concerns, especially the support that they would hope to have. All this preparation seems to have helped the 2010/2011 cohort to see the importance and advantages of doing the portfolio assessment electronically and better prepared them for the new assessment experience. A few student teachers even reported that they had seen the advantage of the new assessment and enjoyed the electronic portfolio building process.

In line with the importance of psychological preparation for student teachers, the reflections of Gladys and Helena reveal the crucial role that students play in this self-regulated assessment (Nichols and Dawson, 2012). Also, the teaching/research team was glad to see that both student teachers were aware of the close connection between the various pedagogical approaches adopted in the course and students' engagement in the learning and assessment process (Hung, 2012), that is, constructive alignment (Biggs, 1999). The team has been trying to establish stronger links between the new assessment with the course curriculum and the faculty e-learning platform since 2010/2011, making the electronic portfolio assessment also assessment for learning tasks, for example, student teachers were invited to share their drafts of reflective essays for their portfolios and videos of microteaching on the e-learning platform to invite feedback from their group-mates and tutor. However, according to Gladys and Helena, there is certainly room for improvement. The team plans to integrate their feedback regarding peer review of portfolios and students' contributions to the learning community into the design of the course in the future.

## 5. Conclusion

This case study reveals that the student teachers in 2010/2011 were better prepared psychologically, technically and methodologically than those in 2009/2010 regarding the electronic portfolio assessment, which in turn maximized its learning potential. The findings point to the need for teachers to be aware of the importance of student preparation in the implementation of assessment innovations (Mok, 2011). The study, although exploratory, has important implications regarding the implementation of electronic portfolio assessment. First of all, various types of student support, for example, psychological, methodological and technical, may be needed to prepare students for the experience and to help them to perform effectively in the assessment. Secondly, deep pedagogical approaches need to be adopted to align constructively with the assessment in order to maximize students' engagement in the self-regulated assessment and learning process.

In terms of educational and/or assessment innovations regarding e-learning, the study shows that it is important for the implementer to understand that technical support is not all that learners need. Also, on top of the various types of preparation, it takes time for the learner as well as the implementer to reflect on and understand the innovation, as the research/teaching team has done during the past few years. Last but not least, it is important for teachers to put learners' experience at the heart of the change process, for example, by listening to the concerns they have about the change. The team is well aware of the limitations of the study, such as the limited data collected from Helena and Gladys. Future research on the implementation process of e-learning innovations and specifically, its

connection with students' engagement could help maximize the learning potential of the assessment. This paper hopes to facilitate further exchanges of ideas and reflections on the use and implementation of electronic portfolio assessment in the educational context.

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