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Expanding the vision: A study of teacher trainees' beliefs about using technology in the English language classroom in Malaysia

Kevin Balchin and Carol Wild

Canterbury Christ Church University

Bio Data

Kevin Balchin is a Senior Lecturer in the School for Language Studies and Applied Linguistics at Canterbury Christ Church University, UK. He contributes to a number of undergraduate and postgraduate programmes including the MA TESOL and B.Ed. TESL for Malaysian secondary school teacher trainees. His research interests include English language teacher training and incorporating technology into English language teaching. He has been involved in curriculum development projects in both Bangladesh and India.

Carol Wild is a Senior Lecturer in the School for Language Studies and Applied Linguistics at Canterbury Christ Church University, UK. She contributes to a number of teacher training programmes including the B.Ed. TESL for Malaysian student teachers. Her research interests include the use of technology in the language classroom and lexical approaches to language learning. She has been involved in curriculum development projects in Palestine and Bangladesh.

Abstract

This study investigates the beliefs of a group of English language teacher trainees from Malaysia with regard to the use of technology for teaching and learning English. The Malaysian school system, like many schools systems, is strongly committed to the implementation and integration of technology across the curriculum in order to equip its next generation of citizens to compete globally in the technological age. Teacher trainees today, who have often grown up with technology and might be considered as *digital natives* (Prensky, 2001) or second generation users of technology, appear ideally placed to expedite this aim. In this study, three instruments are used for investigating teacher trainees' beliefs: questionnaires, discussion boards and reflective writing. Findings suggest that whilst some traditional concerns relating to technology use remain, a number of additional concerns have arisen, such as the perceived need for a wide knowledge of technological tools and a feeling of pressure to keep up to date. The study also highlights several negative influences on participants' perceptions of technology and its use in the classroom, such as the effect of their own classroom experiences as learners or 'apprentice of observation' (Lortie, 1975). Based on the findings, a framework for incorporating a more appropriate technology component into language teacher education

programmes emerges which might help second generation users in developing appropriate skills for an ever-changing digital environment.

Keywords: beliefs, technology, second language teaching, teacher training

Introduction

In recent years, there have been a number of studies relating to teachers' beliefs about language education (for example, Riley, 2009; Warford & Reeves, 2003) as well as Borg's wider review (Borg, S. 2006). Teachers' beliefs about the role of technology in education more generally have also been examined (for example, Chen, 2010; Sang et al., 2010; Liu & Szabo, 2009). In addition, there are studies which specifically address teachers' beliefs about the role of technology in English language education (Yunus, 2007; Kern, 2006). With the inexorable growth in technology use in all major spheres of life, a basic level of competence and a readiness to embrace technology as a teaching tool is increasingly expected to be part of an English language teacher's repertoire in many English language teaching contexts. Whilst it should not be assumed that today's teacher trainees, as digital natives or second generation users of technology, are all confident and competent with regard to use of technology (Robinson & Mackey, 2006), their concerns may differ from those of digital immigrants (Prensky, 2001) or first generation users of technology.

The present study investigated the beliefs of a group of English language teacher trainees from Malaysia with regard to the use of technology for teaching and learning English. The Malaysian school system is strongly committed to the implementation and integration of technology across the curriculum in order to equip its next generation of citizens to compete globally in the technological age. The Malaysian Ministry of Education aims to develop technology use across all schools such that "ICT will be a ubiquitous part of schooling life ... with all teachers and students equipped with the skills necessary to use this technology meaningfully" (Malaysian Education Blueprint 2012, p. E-19). The teacher trainees who took part in the study were cognisant of the Ministry of Education's aims and the resultant expectations with regard to their future teaching role and the focus on technology within their programme aimed to support the trainees in developing the required competencies.

A focus on particular technological tools is gradually becoming more prevalent in teacher training programmes for language teachers, often through innovative use of particular tools on particular courses within such programmes, such as the use of digital multimedia on a digital storytelling course to develop language proficiency and teaching techniques (Hanington et al., 2013). Similarly, in the language classroom, technology is being used in innovative ways appropriate to particular contexts, such as the use of wikis and digital video technologies to develop language proficiency (Johnson & deHaan, 2011). However, there is a need for a more systematic focus within teacher training programmes on equipping teacher trainees with the skills to operate confidently using technology in the language classroom. The overall aim of the study was

therefore to investigate teacher trainees' beliefs in relation to technology in teaching and learning in order to develop a framework to address this issue. The following areas were explored:

1. What are the teacher trainees' beliefs about using different forms of technology in their future teaching of English as a second language?
2. What challenges do the teacher trainees perceive in using different forms of technology in their future teaching of English as a second language?
3. What changes, if any, are there to teacher trainees' beliefs during the study?

Before detailing the investigation, the key terms of belief and technology need clarifying. M. Borg (2001, p. 186) defined belief as: “a proposition which may be consciously or unconsciously held, is evaluative in that is accepted as true by the individual, and is therefore imbued with emotive commitment; further, it serves as a guide to thought and behaviour”. This provided a point of reference for evaluating the nature and impact of the teacher trainees' beliefs within the study. Following the call of Russell et al. (2003), and Chen (2010), among others, to be specific in defining exactly what is being addressed in studies involving technology, the present study focused on areas Russell et al. (2003, p. 301) described as “teacher use of technology for delivery” and “teacher-directed student-use of technology”. The term technology as used in this article refers specifically to in-class uses of technologyⁱ. Other activities involving technology use, such as for lesson preparation and administration, are not discussed as these lay outside the scope of the study.

Literature Review

In this section, the influences on teacher trainees' beliefs and how these beliefs might change or be changed during the teacher education process are explored.

Influences on Teacher Trainees' Beliefs

While teachers' beliefs are likely to play a key role in determining what goes on in any classroom, it would appear that they can be particularly influential when considered in relation to the use of technology. Some of the possible influences on teachers' beliefs, both general and technology-specific, are discussed below.

Apprenticeship of observation and presentism

The term apprenticeship of observation, first discussed in Lortie (1975), refers, as M. Borg (2004, p. 274) put it, to the “phenomenon whereby student teachers arrive for their training courses having spent thousands of hours as schoolchildren observing and evaluating professionals in action.” Lortie argued that this concept to a large extent underlies teacher trainees' beliefs about teaching. Bailey et al. (1996) also felt that the apprenticeship of observation influenced the ways that they taught, while Warford and Reeves (2003) found

its effect to be particularly marked among non-native speaker teachers. Relating this to technology in teaching and learning, it could be argued that this has the effect of holding back the implementation and use of technology in the classroom as many of the technological tools that are potentially available now have only been developed in the very recent past and were not in common use or, in some instances, in existence when current teacher trainees were at school.

Presentism, again a term coined by Lortie (1975), refers to the idea that teachers' beliefs are strongly influenced by their present outlook at the expense of a more reflective viewpoint and an ability to envision future developments in teaching and learning. This concept seems particularly important in relation to technology in teaching and learning as, with developments in technology taking place at such a pace and new tools appearing all the time, the ability to project ideas and beliefs onto what might be the future reality would seem particularly necessary, especially given that many current teacher trainees may still be teaching in more than 30 years' time.

Taking these two concepts together, there would seem to be a danger that an influential apprenticeship of observation combined with an attitude firmly situated in the present, could lead to a belief system concerning technology-use that is likely to be far away from any future reality. Furthermore, teacher trainees coming from currently resource-scarce technology environments may believe that technology-use is not something that is likely to happen to any great extent in their context, regardless of global technological advancements.

Barriers to technology use

There have been a number of studies into barriers to incorporating technology into teaching (e.g. Goktas et al., 2009), with a small number focusing specifically on language teaching (e.g. Yunus, 2007). In these studies, barriers have often been divided into internal barriers, such as teachers' attitudes to or competence with technology, and external barriers, such as availability of resources or institutional governmental directives on technology use (e.g. Ertmer, 1999).

The significant effect of a person's beliefs on their adoption of a new idea or practice has also been well-documented. Ertmer et al. (2006) identified internal belief systems – inner drive, personal beliefs and computer self-efficacy – as significant factors influencing a teacher's use of technology and Mumtaz (2000) highlighted the importance of teachers' pedagogical beliefs in their adoption of technology for teaching and learning. In Sang et al's study (2009) of student teachers, attitudes towards computer use in education were recognised as “the strongest predictor of prospective computer use” (p. 11).

A particular barrier, central to this discussion, is lack of computer self-efficacy among teachers, which Chen (2010) identified as the most significant influence on a person's technology use. If self-efficacy is

taken to refer to a person's judgement of their ability to carry out an action to produce an expected outcome (Bandura, 1997), then computer self-efficacy correspondingly relates to a person's judgement of their ability to use computers effectively to achieve a given end. Self-efficacy could influence a teacher's openness to adopting new ideas and practices in general (Tschannen-Moran & Woolfolk Hoy, 2001; Pajares & Schunk, 2001) and could impact positively on computer-self efficacy (Sang et al., 2009; Paraskeva et al., 2008). Equally, computer anxiety could negatively affect computer self-efficacy (Conrad & Munro, 2008). Taking these factors into consideration, there would seem to be a need to develop teacher trainees' self-efficacy, both with and without technology.

The importance of face and perceived roles of the teacher have also shaped beliefs about and attitudes to technology adoption in the classroom. Davidson and Tomic (1994) suggested that teachers feared loss of professional standing with their students if their technological expertise appeared rudimentary, with Hughes (2005) noting that this was a pertinent issue even with novice teachers, who might be expected to be more at home in the digital age.

Changes to Teacher Trainees' Beliefs

Several studies (Cabaroglu & Roberts, 2000; Peacock, 2001; Riley, 2009) have suggested some beliefs about teaching and learning may be susceptible to change given the right conditions, and always subject to the individual's personal attributes and context (S. Borg, 2006). Peacock (2001) pointed out the value and importance of raising students' awareness of their pre-existing beliefs at the outset of a teacher training course and encouraging persistent confrontation with these beliefs in the light of ongoing course input. S. Borg (2006) similarly promoted the importance of guided reflection on beliefs as a means to provoking change in beliefs, together with trainer modelling of desired practice and the intertwining of theory and practice within training courses. Knowledge gained from course input and opportunities for "first-hand experience" were also cited as significant in impacting on teacher trainees' beliefs (Sugiyama, 2003, cited in Riley, 2009). Meanwhile, Burkhalter (2013) highlighted the impact fear could have as a barrier to change, suggesting that negative "fear-based" experiences of teachers led to "greater than usual resistance to adopting new methodologies" (p. 248). These studies highlight the need to overcome barriers in order to change teacher trainees' beliefs.

In relation specifically to technology in teaching and learning, helping teachers recognise and consider their beliefs and attitudes with regard to technology and how these beliefs affect their implementation or otherwise of technology in the classroom, was similarly considered beneficial for provoking change (John & Wheeler, 2008). In addition, providing training in specific technological tools and ensuring opportunities for teacher trainees to experiment with specific technologies, with the aim of developing user competence, confidence, and awareness of how technology can enhance learning, was also deemed positive in promoting a change in beliefs (Russell et al., 2003; Torkzadeh et al., 2006; Teo et al., 2009).

Method

The Participants and Context

The study involved 47 Malaysian teacher trainees, 34 female and 13 male, aged between 20 and 21. They were all in their first year of a 4-year B.Ed. Teaching English as a Second Language (TESL) twinning programme, with the first three years taught at a university in the U.K. and the final year taught at a teacher training institute in Malaysia. None of the teacher trainees had any classroom teaching experience prior to starting the programme. The study was carried out over three months during the course of a 50-hour module based around the use of technology in English language teaching. Purposive sampling was used to select the participants, with the researchers using “their judgement to choose participants for the specific qualities they bring to the study” (Lankshear & Knobel, 2004, p. 148) in order to “provide data that are more specific and directly relevant to a research concern or interest” (Lankshear & Knobel, 2004, p. 149). Informed consent was obtained from all of the participants.

Data Collection

Three instruments were used for the collection of data: questionnaires, discussion boards and reflective writing.

Questionnaires

Initial and end of module questionnaires were used. The initial questionnaire (Appendix A) sought to identify teacher trainees’ attitudes towards technology and to allow self-assessment of their knowledge about and competency in using technology at the start of the module. The end of module questionnaire (Appendix B) was divided into three sections: Section A focused on the technological tools themselves, Section B focused on context and the potential for technology-use in the teacher trainees’ own context and Section C was comprised of open response questions concerning teacher trainees’ future use of technology.

Initially, information concerning the initial knowledge base and attitudes of the participants towards technology was required. Therefore an initial questionnaire was constructed as this allowed salient data to be collected efficiently, easily and quickly (Bell, 1999; Wagner, 2010). In terms of questionnaire design, the first part was adapted from an existing questionnaire in Dudeney and Hockly (2007), while the design of the second part followed established principles of questionnaire design (Brown, 2009; Cohen et al., 2001).

At the end of study, a questionnaire was constructed to facilitate an assessment of the degree to which attitudes to technology use had changed over the course of the module. This end of module questionnaire contained both open and closed questions, with open questions designed to “allow for a deeper exploration of one ... issue” and “generate more expansive, and often unpredicted, responses” (Brown, 2009, p. 203),

and closed questions designed “to collect numerical data to determine the differences and similarities among items” (Brown, 2009, p. 202).

In order to increase the validity and reliability of the study, both questionnaires were piloted among a small number of teacher trainees and colleagues, who were asked to comment on the design, language use and overall suitability of the questionnaires. As a result, a small number of amendments were made, such as the simplification of the instructions in the initial questionnaire and the rephrasing of two questions, which were felt to be open to misinterpretation, in section C of the end-of-module questionnaire.

Furthermore, the data from the questionnaires served to corroborate findings from other sources of data as part of the triangulation process, which in turn sought to “bring greater plausibility to the interpretation of results” (Hyland, 2009, p. 195).

Discussion boards

The practice of using within-group interaction for encouraging rich discussion and generating rich data as recognised within the context of focus group interviews (Dörnyei, 2007) can equally be applied to online discussion boards, which allow participants to contribute to the discussion thread posted by the facilitator and at the same time respond to the comments of fellow participants in the discussion and to any ensuing points that emerge within the discussion. Indeed, the use of asynchronous communication tools within higher education contexts as a means of encouraging collaborative knowledge-building, reflection, critical thinking, and higher-order thinking has been well-documented (for example Szabo & Schwartz, 2011; Johnson, 2006; Lee, 2013). In order to gather data using discussion boards, we posted questions or comments after five of the ten teaching sessions relating to the module, asking participants to comment on and discuss them with their fellow participants. For example, one discussion thread asked participants to comment on the question: How do you see yourself using (or not using) ICT in your future teaching career?

Reflective writing

S. Borg (2006) defined reflective writing as strategies requiring participants to “express in written form their thoughts, beliefs and attitudes, typically in relation to particular topics or experiences” (p. 249) and highlighted its value as a research method for studying language teacher cognition in that it allows for retrospective and introspective reflection on an event or experience and could thus offer some insights into thought processes and beliefs. With this in mind, the teacher trainees were asked to write retrospective accounts on their experience of learning about technology for learning and teaching English.

Data Analysis

The data analysis procedures adopted followed standard steps for analysing qualitative data as described by Holliday (2009, p. 102-103) that is, the data was coded using key words or phrases, which led to themes

being generated and arguments being constructed around these themes, with extracts from the data used to support the arguments. The process of data analysis also followed several of the principles suggested by Dörnyei (2007, p. 242-244) with the focus being based on textual data, the process being iterative in the sense of moving back and forth between data collection and data analysis, and the analytical approach combining subjective intuition and more formalised analytical procedures.

The bulk of the data collected, from the discussion boards, reflective writing, and the final section of the end of module questionnaire, was qualitative, with quantitative data from the questionnaires used to support it. Full details of the quantitative data can be found in appendices A and B.

Findings and Discussion

Findings from the questionnaires, discussion boards and reflective writing demonstrated a range of influences on the participants' beliefs as well as indicating some degree of change in beliefs in more than 50% of the teacher trainees. This section considers the influences on beliefs noted and key changes to the participants' beliefs.

Apprenticeship of Observation and Presentism

The initial questionnaire (Section A, questions 3 and 12) indicated that the teacher trainees clearly perceived some challenges with only 38% agreeing or strongly agreeing that technology could be used easily within the time constraints of a lesson and 31% agreeing or strongly agreeing that technology was reliable. Given that trainees had had no first-hand experience of teaching, these responses would appear to relate to their observations as learners within the classroom. Teacher trainee 41 (TT41), for example, reflected in the end of module questionnaire:

“Before this I was quite sceptical on the idea of using technology in the classroom because I personally had been in those particular situations whereby teachers were trying to use technology. I did not see the effectiveness of it”.

This suggests that the apprenticeship of observation can play a role in shaping teacher trainees' beliefs about technology use in the classroom. However, whilst the apprenticeship of observation is clearly a factor, particularly in the initial stages of the module as the above comment from TT41 shows, it does not appear to hamper teacher trainees developing a growing awareness of the potential of using technology for teaching and learning purposes. Changes in the teacher trainees' beliefs in this regard can be divided into two particular areas, namely a greater awareness of the range of technological tools available and a more general awareness of the overall potential of technology for teaching and learning, as the TT9 reflected in the end of module questionnaire:

“Before this, the only ICT applications that I thought can be used for educational purposes are the Power Point, Word Process and the Internet websites...through this module, I discover that there are many more tools that can be applied and have more interesting features that can be used in the lower secondary school Malaysian context.”

This suggests that with regard to technology use, the impact of the apprenticeship of observation, whilst present, can be lessened given certain conditions as discussed later within section 5.

In the literature review it was seen that presentism could have a significant impact on a teacher’s beliefs about teaching and learning. In this study presentism clearly had a role in the participants’ beliefs with regard to use of technology in teaching. Teacher trainees had concerns over the reliability of the technological resources currently available and the practicality of their use in the classroom. Even in the end of module questionnaire (Section B, question 4), 71% of teacher trainees agreed or strongly agreed that it was difficult to imagine using many current ICT tools because of the lack of resources. This seems to indicate that many of the teacher trainees found it difficult to see beyond the current reality. Comments from the discussion boards supported this notion of the influence of presentism with a number of comments concerning accessibility, particularly in more rural areas, and technical problems such as reliability, connection speeds and lack of technical support. With the rapid and constant developments in technology, finding ways to combat presentism in relation to teacher trainees’ beliefs about technology use and to enable them to envision the possibilities within a technology-rich teaching environment of the future is needed.

Factors Affecting Technology Use

As discussed in the literature review, barriers to incorporating technology are often broken down into internal barriers, concerned with factors such as the knowledge, competence and self-efficacy within an individual, and external barriers, concerned with factors such as resources and training available. This distinction is continued in this section.

Internal factors influencing technology use

Confidence. Responses from the initial questionnaire (Section A, question 1, and Section B) suggested that the attitude of the teacher trainees towards technology use was generally very positive, with 93% agreeing or strongly agreeing that they enjoyed using technology, and that they had good levels of knowledge about certain tools, such as 89% claiming a high level of familiarity with both the Internet and Microsoft Word. This supports previous findings that second generation users are generally *tech-comfy* (Dudeney, 2009, cited in Pegrum, 2009, p. 43), that is, they show both enjoyment and competence in using technology for social, entertainment and informational purposes, such as Facebook, YouTube and Google.

As the initial questionnaire (Section A, questions 6, 7 and 9) demonstrated, the vast majority of the teacher trainees agreed or strongly agreed that teachers should know how to use technology in class (98%),

that they would be better teachers if they knew how to use technology properly (95%) and that they wanted to learn more about using technology in class (93%). However despite these positive attitudes towards technology, the initial questionnaire (Section A, question 8 and Section B) also showed that teacher trainees' confidence in their ability to use technology for professional purposes was clearly an issue for many, both in a general sense, with only 54% agreeing or strongly agreeing that they felt very confident about working with technology in class, and concerning specific tools, with for example only 9% claiming a good knowledge of interactive whiteboards. This suggestion of low computer self-efficacy could be seen in the reflective writing with TT29 suggesting a need to "fight the technophobe feeling". This resonates with the discussion in the literature review of the importance of and influence of internal barriers on a trainee teacher's use of technology in their teaching and Crawford and McKenzie's (2011) conclusion that second generation users were not as *tech-savvy* (Dudeney, 2009, cited in Pegrum, 2009, p. 43) or as able to use technological tools for professional purposes without appropriate training and opportunities for experimentation as might be assumed. Indeed, this need for training and practice opportunities was highlighted, with TT1 noting in her reflective writing that:

"practice is very important for us to gain the confidence in working with technology and learn how to control it and not to let it control us because lacking in practice to handle it will make us feel unsecured of the technology and bring down our self-esteem in front of the students."

Several teacher trainees also referred to an increase in confidence in their ability to use technology throughout the course of the module. As TT29 continued:

"through this module ...I have begun to find the core of strength and courage to use ICT for teaching and learning process... Besides, I have started to see more clearly advantages of using ICT in class and benefits it has to offer me."

Personal knowledge and competence. Just as the practical training given appeared to facilitate the development of the teacher trainees' self-confidence with respect to technology use, it also appeared to benefit the trainees in terms of their knowledge and competence in using technology, and awareness of its usefulness, for teaching purposes. For example, TT31, in her reflective writing, talking about exposure to different technological tools, highlighted that:

"these applications were unfamiliar to me before this but through ICT lessons I was exposed to how I can use these applications ... I managed to create variety of classroom activities and worksheets using the different types of applications."

In the end of module questionnaire (Section A), there was also a developing sense of the usefulness of specific tools, with for example 86% agreeing or strongly agreeing that interactive whiteboards were useful

for English language teaching and learning in the Malaysian context. There seems thus to be a clear sense of progress through the module and belief that internal barriers could be overcome. This supports the suggestion within the literature (Russell et al., 2003; Torkzadeh et al., 2006; Teo et al., 2009) that plentiful opportunities for hands-on experimentation with an array of technological tools can, by building teacher trainees' competence and confidence, promote a change in beliefs.

External factors influencing technology use

Teacher trainees' views on external barriers remained fairly constant across different data sources and over time. The central view was that there were a number of external barriers, perceived as difficult to overcome, that needed to be addressed if technology was going to be adopted and its use to become widespread. In the end of module questionnaire (Section B, question 5), for example, 86% agreed or strongly agreed that, in rural settings in particular, it was difficult to imagine using many ICT tools because of the lack of resources.

There was nevertheless a sense of optimism among the teacher trainees concerning technology use in their context, which seemed to originate from two main sources: a belief in the fundamental importance of technology in classroom teaching and increased confidence in their own ability to use it. Several reasons were given on the discussion boards for this belief that technology should be a central element in classroom teaching in the future. The most significant reason, mentioned by 45% of respondents, was its value as something fun and exciting, in attracting students' attention, and in making the lessons more interesting and motivating. Another important reason, given by 33% of respondents, was the effectiveness of technology in enhancing learning through the resources and software available.

Internal versus external factors

The overall suggestion from the study was that teacher trainees were generally less concerned with internal than with external barriers. For example, teacher trainees were concerned about a lack of resources, but from their own point of view, they considered themselves as becoming able to incorporate technology into their teaching.

Second generation concerns

Despite the teacher trainees appearing to be less concerned about the internal barriers frequently mentioned in the literature and discussed above, they did have a number of concerns which had not been expected among *tech-comfy* technology users and which could be described as internal. These concerns seemed to go beyond the internal factors already discussed, which related more to aspects such as attitudes to and confidence in using computers, and could be described as "second generation concerns" as they were concerns of *second generation* users of technology, those who have grown up with technology, who were

already enthusiastic technology users and who generally appeared positive about the potential uses of technology in the classroom. These new “second generation concerns” are discussed below.

Need for a wide knowledge. Despite teacher trainees’ growing confidence in their own ability to use technology in their teaching, there was also an awareness that the scope of their knowledge about technology and its use in teaching needed to be widened, with the trainees still considering themselves as partially rather than fully competent. TT41, discussing her views in her reflective writing at the end of the module suggested that: “it made me realise that what I know and think about technology is just a tip of an iceberg”.

Pressure to keep up-to-date. There was often a presumption that today’s teacher trainees were naturally drawn towards and up-to-date with current technological innovations, and that this would effortlessly translate to their classroom teaching. However, several teacher trainee trainees in this study felt a pressure to keep up-to-date with technological developments. As TT4 put it in his reflective writing: “I know the technology will keep on growing and there will be a lot more for me to learn in the future”.

Issues of face. Particularly in teaching contexts where the teacher is regarded as a figure of authority and the fount of all knowledge, the idea of using technology in the classroom could potentially lead to concerns about loss of face. Several teacher trainees also commented on this, suggesting that teachers, both now and in the future, may hold back from using technology because of a fear of loss of face. Referring to the current situation, TT8 wrote in her reflective writing: “I believe that is what accounts for why there are so many technophobes among teachers, and why they choose the conventional method of teaching instead...Students are simply more exposed, thus might know more than their own teachers”.

Classroom management. The teacher trainees appeared more concerned about controlling their class than more experienced teachers might be and, perhaps as a result, felt that using technology in the classroom might make the class less easy to control and create discipline problems. As TT45 commented in his reflective writing, “[students] can misuse the computer when the lesson is on to access any other websites.”

Conclusion

This study has explored the influences on teacher trainees’ beliefs regarding the use of technology in the English Language classroom, and identified particular concerns of second generation users of technology. Whilst some of these influences are seen to be strong, there is clearly some potential for positively affecting these at the training stage, and the framework proposed below seeks to foster opportunities for teacher trainees to grow in competence, confidence and awareness - *to expand their vision* - of how technology can be used to maximise its pedagogic value.

A Framework for Incorporating Technology into Language Teacher Training Programmes

Based on the findings and discussion above, a three-part framework around which to build teaching and learning using technology into teacher training programmes is put forward: *Addressing the past; developing in the present; and broadening perspectives in the future*. This framework aims to help teacher trainees, who as second generation users already have some familiarity with technology, in developing the appropriate skills to use technology in the classroom in an ever-changing digital environment. Though this particular study involved teacher trainees from Malaysia, they share many characteristics with other teacher trainees, particularly in Asian EFL contexts, and have also highlighted a number of concerns that resonate with previous studies discussed in the literature review, therefore the framework suggested could be applicable to a range of contexts.

Addressing the past

Overcoming any negative past experiences. This study reaffirms previous suggestions (Lortie 1975; Bailey et al., 1996; Warford & Reeves, 2003) that our apprenticeship of observation plays a role in the formulation of our views on teaching and learning and, in particular, on the potential for using technology in the language classroom. It also suggests that the overwhelming view among the trainees, based on observation of their teachers at secondary school, was that there were a number of obstacles preventing technology from being used effectively. Therefore, any training programme needs to be aware of this and to foster open-minded yet critically aware attitudes to technology-use in the language classroom. Giving examples of technology-use in a positive light, such as showing the potential of certain technological tools to engage and motivate students, can help trainees see beyond any previous negative experiences.

Developing in the present

Fostering computer self-efficacy. This study mirrors previous findings (Ertmer et al., 2006; Chen, 2010) that internal factors are more responsive to change and development than external barriers, and consequently recommends a primary focus within training programmes on internal factors in order to promote positive changes to beliefs in relation to technology. This focus should involve building teacher trainees' knowledge, competence and confidence in using technology in the language classroom. These key elements might be encouraged through the creation of a dynamic yet "safe" learning environment; that is, with the emphasis on "hands-on" activities, providing teacher trainees with plentiful opportunities to try out technological tools within a supportive environment. This would involve starting with tools trainees are familiar with in a personal context, establishing clear pedagogical benefits of using the technological tools for teaching and learning and demonstrating how they can be integrated into lessons. In this way, as trainees in the study noted, fears and anxieties related to technology use can be lowered and a "can-do" mentality is nurtured with trainees encouraged to push the boundaries of their knowledge and experiment with new tools.

Integrating technology. Knowing about and having the confidence to use tools is one thing, however beyond that, trainees still need to develop an awareness of how to integrate technology into their teaching. This might be done by allowing trainees to observe classes which incorporate technology, and more generally in training sessions to keep a focus on wider issues such as what language skills are being developed or what classroom management issues might arise.

Developing contextual awareness. Any training programme needs to recognise the importance of context and the realities of classroom environments, explicitly relating technology use to what is achievable in particular contexts and focusing on what adaptations might be necessary.

Working with external factors. There are a number of external factors relating to technology use in the language classroom which are relatively resistant to change and these factors, including lack of resources, cannot be ignored. The training programme needs to provide opportunities for the airing and discussion of such issues together with the collaborative quest for solutions, for example via discussion boards.

Broadening perspectives in the future

Widening the outlook. It is fundamental that training programmes attempt to expand the vision of trainees and thereby reduce the influence of presentism. This can be done, for example, via reflection tasks, to encourage a broader view of the future possibilities, and case studies, ideally based on language teaching in the trainees' own contexts, to show what can be done.

Creating "agents of change". Part of any training programme should aim to build trainees' skills and self-efficacy to the point where they feel empowered to act as teacher developers in their future working environments. This can be encouraged, for example, via discovery tasks involving trainees investigating a particular technological tool and giving feedback to the group on its potential uses in teaching and learning.

Keeping up-to-date beyond the programme. Guidance needs to be given to help trainees update their knowledge beyond their training programme. For example, teacher trainees can be directed towards specific blogs and discussion forums which develop good practice in using technology in the language classroom. Online training, conferences and resource-sharing sites also provide opportunities for ongoing development, particularly in teaching contexts with limited technology-related support in situ.

Limitations

There are of course limitations with the type of research undertaken in this study. In particular, it must be acknowledged that researchers are inescapably part of the social world that they are researching (Hammersley & Atkinson, 1983, p. 14) and as such need "to understand their part in, or influence on, the research" (Cohen et al., 2011, p. 225). In this case, with the researchers also being the course tutors, there are risks around the participants potentially giving the opinions that they think their tutors might want to

hear, rather than offering their true views. This risk was counteracted by the fact that data was collected through several different means, adding to the reliability of the data. Participant feedback on the findings and implications of this study was also obtained after the module had been completed, and therefore at a time when the participants were no longer being taught by the researchers, providing a useful check on the validity of the study.

Further Research

This study investigated the beliefs of pre-service teacher trainees about the use of technology for teaching and learning in the language classroom. A follow-up study exploring the extent to which these teacher trainees' beliefs change once they are in-service would provide insights into novice teachers' technology use in practice and so allow the framework suggested above to be refined in the light of classroom experience.

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Appendix A: Initial Questionnaire

[The results from this questionnaire have been collated and are given in percentages in the tables below.]

Section A - *Technophobe* or *techno-geek* - How do you feel about technology?

Please complete the questionnaire below (adapted from Dudeney and Hockly (2007))

Circle: 1 = strongly agree, 2 = agree, 3 = not sure, 4 = disagree, 5 = strongly disagree

		1	2	3	4	5	no response
1	I enjoy using technology.	62	31	7	0	0	0
2	I avoid using technology when I can.	0	2	16	40	42	0
3	I think technology can easily be used within the time constraints of a lesson.	11	27	51	9	2	0
4	I think that technology can help me to learn many new things.	73	25	2	0	0	0
5	Technology intimidates and threatens me.	0	11	16	31	42	0
6	Teachers should know how to use technology in class.	62	36	0	0	0	2
7	I would be a better teacher if I knew how to use technology properly.	64	31	5	0	0	0
8	I'm very confident when it comes to working with technology in class.	7	47	42	4	0	0
9	I want to learn more about using technology in class.	64	29	7	0	0	0
10	I believe that the Internet can really improve my teaching practice.	60	27	13	0	0	0
11	Changing the curriculum to integrate technology is impossible.	2	7	33	40	18	0
12	Technology is reliable.	0	31	51	16	2	0

Section B - Using ICT

Please complete the table below by putting a tick (✓) in the appropriate box.

How much do you know about the following?	A lot (%)	A bit (%)	Nothing (%)
E-mail	74	26	0
The Internet	89	11	0
Word	89	11	0
PowerPoint	79	21	0
Blackboard	4	79	17
WebQuests	0	21	79
Wikis	66	30	4
Blogs	36	53	11
Podcasts	11	15	74
Referencing tools	2	26	72
Authoring software	2	15	83
YouTube	79	19	2
DVDs	70	28	2
CD ROMs	64	34	2
IWBs	9	19	72
Chat	70	24	6
Discussion forums	23	64	13
Web 2.0	2	6	92

Appendix B: End of Module Questionnaire

[The results from this questionnaire have been collated and are given in percentages in the tables below.]

Section A - About the tools

Please complete the questionnaire below.

Circle: 1 = strongly agree, 2 = agree, 3 = not sure, 4 = disagree, 5 = strongly disagree

For English language teaching and learning in a Malaysian context:

		1	2	3	4	5	no response
1	Tools such as Word and PowerPoint are useful.	93	5	0	0	1	-

2	Material from authentic websites is useful.	60	34	2	2	0	2
3	Material from ELT-specific websites is useful.	79	19	0	2	0	-
4	Blogs are useful.	14	53	31	2	0	-
5	Wikis are useful.	26	53	17	2	2	-
6	Podcasts are useful.	24	57	17	2	0	-
7	Discussion boards are useful.	57	38	5	0	0	-
8	Email is useful	57	38	5	0	0	-
9	Email exchange projects are useful.	36	43	19	2	0	-
10	WebQuests are useful.	29	52	14	5	0	-
11	Authoring software, such as <i>hot potatoes</i> is useful.	71	25	2	2	0	-
12	Referencing tools, such as online encyclopaedias, are useful.	64	26	10	0	0	-
13	Video clips websites are useful.	45	41	12	2	0	-
14	Interactive whiteboards are useful.	36	50	12	2	0	-
15	CD-ROMs are useful.	26	50	17	7	0	-
16	DVDs are useful.	26	48	17	9	0	-
17	Technology such as mobile devices is useful.	33	33	22	10	2	-

Section B – About the context

Circle: 1 = strongly agree, 2 = agree, 3 = not sure, 4 = disagree, 5 = strongly disagree

For English language teaching and learning in a Malaysian context:

		1	2	3	4	5	no response
1	Some schools are well-equipped with ICT resources.	22	38	24	14	2	-
2	My secondary school was well-equipped with ICT resources.	12	33	19	26	10	-
3	The ICT resources available in my secondary school were well used.	5	14	33	33	12	3
4	It is generally difficult to imagine using many current ICT tools because of lack of resources.	26	45	17	12	0	-
5	In rural settings in particular, it is difficult to imagine using many current ICT tools because of lack of resources.	69	17	9	5	0	-
6	It is possible to use some ICT resources in more urban settings.	55	31	9	5	0	-

Section C – Your views

Please add your own comments on the subject of using ICT for English language teaching and learning in a Malaysian context.

1. What are your general views on using ICT for English language teaching and learning in a Malaysian context?
2. Which tools do you think you would/could use?
3. Thinking back to the start of this module, what did you feel about the potential for using ICT in Malaysian schools?
4. Now, at the end of the module, what do you feel about the potential for using ICT in Malaysian schools?
5. Do you feel you might have any specific future role to play in terms of increasing the use of ICT in Malaysian schools?
6. How do you feel about the fact that you are likely to know more about ICT and its potential uses in English language teaching than many more experienced teachers in the schools you will be working in? What are the implications of this?

ⁱ The term ICT (Information and Communication Technology) is also used by the teacher trainees in the study and, for the purposes of this study, carries the same meaning as the term technology.