TAKING CONCERNS INTO ACCOUNT: UNDERSTANDING THE TECHNOLOGY ADOPTION PROCESS FROM THE ESL TEACHERS' POINT OF VIEW

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ABSTRACT

The dual emphasis on technology literacy and English Language proficiency as prerequisites for Malaysia's successful participation in the new global economy has elevated the need to reconsider the role of technological innovations in English Language Teaching. This study addresses the need to understand the concerns expressed by teachers pertaining to technology adoption in order to facilitate institutionalization of technology in ESL instruction. By understanding the adoption process from the teachers' point of view, intervention measures relevant to the instructional context of the teachers can be better designed and developed. Using the Concerns-Based Adoption Model (CBAM) as the theoretical framework, findings of this study show that ESL teachers express technology adoption concerns characteristic of those of the typical non-user. The findings also indicate that the number of years which ESL teachers have in terms of technological adoption experience has no significant effect on resolving their self concern issues. Results of a one-way MANOVA further show no significant difference in terms of the level of self-concern intensity between the teachers who had and had not attended professional development programs on ICT integration. It is thus argued that efforts to facilitate adoption and institutionalization of technological innovations in ESL instruction must go beyond deployment of technological infrastructure or making ICT training a requirement for all. If left unattended and unresolved, teachers' continuous struggle with self-concern issues may inevitably become the cause for the discontinued use of technological innovations in their ESL practices.

Introduction

That our global village has become flat is perhaps an accurate analogy to describe the state we are currently experiencing in terms of greater accessibility to a wealth of information and knowledge, the facility of communicating information and knowledge to anyone across the globe, and the leveling of the playing field for innovative and competitive works. As Thomas Friedman (2005) succinctly puts it, we have arrived at the Age of *Flatism*, a phase in human civilization where the world has shrunk from a small size to a tiny size, bestowing a new found power

for individuals to collaborate and compete globally. The dawning of this new era also brings together waves of changes in the purpose and the means of educational pursuits, prompting nations across the globe to reconceptualise the educational goals for their citizens in order to stay ahead in the race for nation development and socio-economic progress.

A significant impact of the *flatism* phenomenon on educational practices in Malaysia is the renewed emphasis on the importance of mastery of the English Language, which has risen as the dominant language of communication for global economic, political and social exchange (Warschauer, 2004). The role of English is regarded as instrumental in realizing the nation's effort of producing technologically capable knowledge workers (Awang Had Salleh, 2003). With technology permeating all aspects of our lives today, the need for technology to become a part of English language practice has never been felt more greatly. The rise of English as the lingua franca of technology has subsequently created the need to reconsider the practice of English Language teaching and reexamine what its fundamental emphasis should be. As accentuated by Warschauer and Healey (1998:223), "it is now less a question of the role of computers in the language classroom and more a question of the role of the language classroom in an information technology society". The repositioning of the role of technology in the language classroom inexorably also calls to attention the need to redefine the role of English Language teachers in the Digital Age.

So pivotal is the need for English Language teachers in the country to be technologically literate that all pre-service teacher education programs in English Language Teaching (ELT), either referred to as the Teaching of English as a Second Language (TESL) or the Teaching of English to Speakers of Other Language (TESOL) programs, have now included several courses which specifically focus on the acquisition of the new electronic literacies in their programmes. The new electronic literacies include not only computer or technology literacy which generally addresses technological know-how, but also multimedia, web-based and computer-mediated communication literacies. The focus of such courses is on harnessing the English Language teachers' abilities to produce and interpret complex documents comprising texts, images, and sounds, in order to facilitate their pupils' communication and interaction with other users of the language using new modes and media, and for new purposes (Swenson, 2006; Noreen, 2004; Warschauer, 2000). Pedagogical applications of these new literacies are thus expected to be manifested in their planning for and delivery of English Language lessons in their respective classroom settings.

Teacher Adoption Concerns

Diffusion of technological innovations or new technologies for learning in instructional settings does not necessarily result in changes in teachers' classroom practices (Carlson, 2002; Abd Rahman, 2000). However, such changes can be facilitated when teachers' concerns and other related factors are explored and understood (Ellsworth, 2000; Hall & Hord, 2001). What is meant by concerns in this case is the composite representation of the feelings, preoccupations, perceptions, thoughts and considerations, which teachers have pertaining to the adoption of innovation (Hall & Hord, 2001; Rakes & Casey, 2002), and it is further asserted that identification of the adoption concerns provides insights into the affective side of the curricular and instructional change process (George, Hall & Stiegelbauer, 2006).

The Concerns-Based Adoption Model (CBAM), which originated from the work of Frances Fuller at the Research and Development Centre for Teacher Education at the University of Texas at Austin in the late 1960s, is a framework that illuminates "the personal side of change" as experienced by teachers (Hall & Hord, 2001: viii). It describes the seven different reactions or stages of concern a teacher might experience when implementing a new idea or practice, and each stage signifies an affective aspect of the change process. The reactions are viewed as stages to reflect the developmental movements of the emergence and resolution of concerns about innovation, which in the context of this paper, refers to the introduction of new technologies for learning in ESL classroom practices to help achieve the intended objectives as outlined in the Malaysian ESL Curriculum.

These seven developmental stages can be categorized into three general stages, namely self-concerns, task concerns and impact concerns. These stages could also be viewed as progressing from "little to no concern, to personal or self-concerns, to concerns about the task of adopting the innovation, and finally to concerns about the impact of the innovation" (George, Hall & Stiegelbauer, 2006, p.8). Self-concern stages are reflective of concerns that are egocentric in nature, and at this general stage, the teachers are described as either expressing little or no involvement with the innovation in question (*Stage 0 – Awareness*) or expressing interest in knowing more about the innovation but the focus is still more on the impersonal, substantive aspects of the innovation, such as its general characteristics, effects, and requirements for use (*Stage 1 – Informational*) or expressing interest in understanding the personal ramifications of the innovation and its potential conflicts with existing personal commitment (*Stage 2 – Personal*). Though expressions of concerns, such as the above, may appear to be trivial, irrelevant or indicative of refusal or rejection of change, their legitimacy should

not be lightly dismissed. This is because such expressions of concerns are driven by individuals' need for reassurance and confirmation as they come to grips with something new or uncertain (Horsely & Loucks-Horsely, 1998).

Resolution of self-concerns leads to the emergence of task concerns and at this juncture teachers' preoccupation is with the processes and tasks of using the innovation. In particular, at this stage (*Stage 3 – Management*), the concerns centre on issues of organizing, managing and scheduling the innovation for efficient use (Loucks-Horsley, 1996). The final concerns category, Impact Concerns, constitutes three distinct stages namely, *Stage 4 – Consequence*, *Stage 5 – Collaboration*, and *Stage 6 – Renewal*. Teachers are considered to have arrived at *Stage 4 – Consequence* when the impact of the innovation on their pupils' performance and learning process becomes the focus. Teachers are said to have reached *Stage 5 – Collaboration* when they indicate intentions to collaborate or liaise with other teachers in order to maximize the innovation's effect in practice. The final concerns stage, *Stage 6 – Refocusing*, is reached when teachers begin to explore ways to reap more universal benefits from the innovation, which may include making necessary changes or even replacing it with what is perceived to be a better alternative. A summary of the CBAM's Stages of Concerns about an Innovation framework is presented in Table 1.

Table 1: The Stages of Concerns about an Innovation framework

	Stages of Concerns		Descriptions
Impact	6	Refocusing	• The individual focuses on exploring ways to reap more universal benefits from the innovation, including the possibility of making major changes to it or replacing it with a more powerful alternative.
	5	Collaboration	• The individual focuses on coordinating and cooperating with others regarding use of the innovation.
	4	Consequence	• The individual focuses on the innovation's impact on students in his or her immediate sphere of influence. Considerations include the relevance of the innovation for students; evaluation of student outcomes, including performance and competencies; and the changes needed to improve student outcomes.
Task	3	Management	• The indiviual focuses on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, and scheduling dominate.

Self	2	Personal	• The individual is uncertain about the demands of the innovation, his or her adequacy to meet those demands, and/or his or her role with the innovation.
	1	Informational	• The individual indicates general awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself in relation to the innovation.
	0	Awareness (Unconcerned)	• The individual indicates little concern about or involvement with the innovation.

(George, Hall and Stiegelbauer, 2006: 8)

Adoption of Technological Innovations: What Affects Concerns?

Recent studies have identified several factors that bear weight on the types of concerns exhibited by teachers, namely, the relevance and appropriateness of technology training programmes (Lee, 2006; Woo, 2003; Rakes & Casey, 2002; Vaughn, 2002; Casey, 2000), and their depth of technology use in instructional practices (Casey, Harris & Rakes, 2004; Alfieri, 1998; Williams, 2001). The types of training that were perceived as capable of resolving teachers' self concerns are those that include explanation or demonstration on how technology can be integrated in instructional practices (Rakes & Casey, 2002), as well as those that are experiential in approach and include opportunities for teachers to address their immediate concerns over technology adoption (Lee, 2006). Findings of Lee's (2006) study, which examined the technology adoption concerns of ESL teachers in the Malaysian smart school context further indicate that despite the training received by the ESL teachers on technology adoption and the availability of the technological infrastructure in Malaysian smart schools, higher level concern stages, particularly the ones reflecting impact concerns, are yet to be within reach. It should thus come as no surprise if the lower concern levels are also prevalent among ESL teachers from the non-smart school environments.

Teachers' experience and familiarity with technology are also considered as important aspects in influencing their concerns expressions (Casey, Harris & Rakes, 2004). However, findings of recent studies on teachers' concerns indicate that this may or may not be the case. No significant difference in the stages of concerns was found in a study by Alfieri (1998) between those with some technology-based experience and those without it. However, in a later study by Williams (2001), it is suggested that those with the least amount of teaching experience expressed a higher level of self-concerns than those who have had more years of teaching

experience. Both of these studies were conducted in university settings in the United States.

Background of the Present Study

This study is part of a larger study that set out to investigate English Language teachers' stages of concerns about the adoption of technological innovations in their classroom practices. Almost all of the studies on ESL teachers' adoption experience and decisions have focused on educational settings in the Peninsula (Melor, 2007; Samuel & Zaitun, 2007, 2006; Lee, 2006). In the context of this paper, however, the Sarawak setting is used in order to add to the growing body of information on the technology adoption experience of the teachers in this state (Abd Wahed Rosli, 1998; Hong & Koh, 1998, 2002). Only two divisions in Sarawak, namely Kuching and Samarahan, are involved as both have undergone continuous infrastructural development in information and communication technology (ICT). Thus, that technological innovations would become ubiquitous in classroom instruction in the Kuching and Samarahan schools is perhaps a fair expectation. Based on this premise, the specific objectives of this study are:

1. To create a profile of the stages of concerns of Kuching and Samarahan English language teachers on the adoption of technological innovations based on the Stages of Concerns of the Concerns Based Adoption Model (CBAM).
2. To investigate whether there is any difference in the concern profiles of the teachers with respect to their years of using technological innovations in English Language teaching, and attendance at professional development programs on ICT.

Research Design

This study which has a descriptive research design uses the survey method of data collection. The main instrument was a self-completion questionnaire that measured quantitatively the ESL teachers' stages of concerns. This Stages of Concerns Questionnaire (SoCQ) includes 35 concern statements reflective of the Stages of Concerns about an Innovation Framework. Five statements represent each stage of concerns. The SoCQ is a diagnostic dimension of the Concerns-Based Adoption Model (CBAM), developed by the CBAM researchers, to provide a quick-scoring measure of the seven stages of concerns about an innovation. It uses a 0-7 Likert scale response format which the respondents mark based on how true each item

seems to them at the present time. High numbers indicate high concern, whereas low numbers indicate low concern. Apart from the statement of concerns, the SoCQ also includes a section on demographic information.

The participants in this study comprised those ESL secondary school teachers (N=709) currently serving in 59 secondary schools located in the Kuching and Samarahan Divisions in Sarawak. Exclusion of the ESL primary school teachers from these divisions in this study was based on the current absence of a 24-hour power supply and lack of availability of ICT infrastructure and SchoolNet facilities in a large number of primary schools in these divisions.

The profile of the SoCQ respondent groups in this study was generated based on the conversion of the raw score means for each of the seven stages of concerns into percentile scores based on the Stages of Concerns' Percentile Conversion Chart, obtained from the CBAM's SocQ manual by George, Hall and Stiegelbauer (2006). Descriptive data analysis (means and standard deviations) using respondents' raw scores from the Stages of Concerns questionnaire were also carried out using the SPSS 15.0 for Windows software, particularly in determining the differences in the respondents' concern profile based on the variables identified earlier. A one-way between groups multivariate analysis of variance (MANOVA) was used to find out whether the differences between and amongst the respondent groups on the stages of concerns were statistically significant. An alpha level of $p < .05$ was set for the MANOVA tests. Follow-up univariate analyses and post-hoc tests for significance were also carried out. The Benferroni adjustment procedure was applied for the univariate analyses in order to account for the possibility of inflated statistical errors.

Findings

Of the 709 SoCQs sent out, 518 completed ones were returned giving a 73.1% response rate. The findings of this study indicate that the composite profile of the ESL teachers in the Kuching and Samarahan Divisions in Sarawak, was representative of a non-user profile (see figure 1), characterized by George, Hall and Stiegelbauer (2006) where the self concerns stages have the highest level of intensity. The dip observed in the profile at *Stage 4 – Consequence* is described as reflecting the ESL teachers' minimal concern about the effect technological innovation might have on their pupils. The tailing-up of the profile at *Stage 6 – Refocusing* on the typical non-user profile suggests that they might have strong ideas about how to do things differently, and these ideas could either be positive or negative toward the innovation in question (George, Hall & Stiegelbauer, 2006).
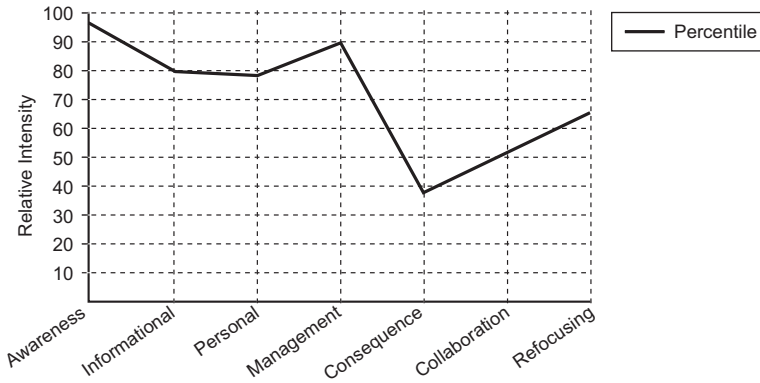
Figure 1: The Stages of Concern of Kuching and Samarahan's ESL teachers about adoption of technological innovations

Analysis of data on years of technology adoption experience in ESL instruction showed that 60.6% (n=314) of the teachers had adopted technological innovations in their ESL instruction, whereas those who had not done so represented only 39.4% (n=204) of the overall SoCQ respondents in this study. The description of the stages of concerns on this variable, however, was based only on those who indicated the adoption of technological innovations in their ESL instruction. They were regrouped into two categories – less than five years of technology adoption experience (n = 134), and with five or more years of adoption experience (n =180). The concerns profile generated for both ESL teacher groups indicated that the level of intensity on each concerns stage was similar for this variable (see Figure 2).
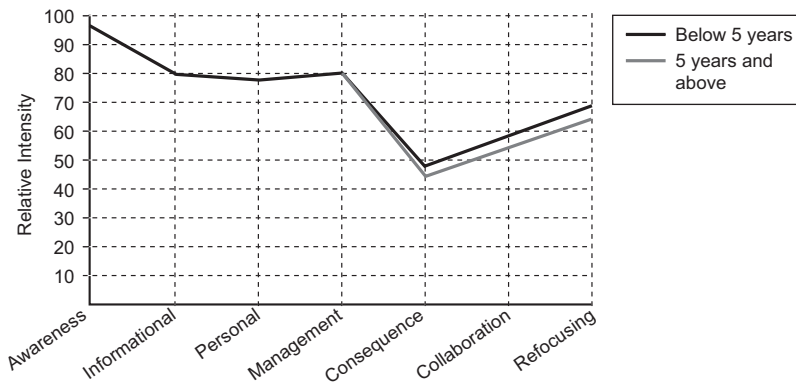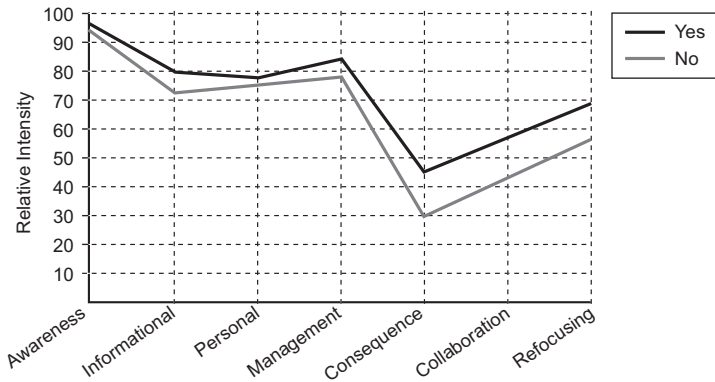

Figure 2: Concerns profile based on years of technology adoption in ESL

To ascertain whether there were statistically significant differences between the means of these two categories of ESL teachers on all the seven stages of concerns, a one-way MANOVA was carried out. Results of the multivariate test revealed that no significant effect ($p < .05$) was found between years of technology adoption experience in ESL and their scores on all the concerns stages (Pillai's trace = .023, $F (7, 306) = 1.037$, $p = .405$, partial eta squared = .023, n.s). Such findings thus indicate that the number of years which ESL teachers have in terms of technological adoption experience has no significant effect on their level of concern intensity on all the stages of concerns.

The majority of the ESL teachers, 66.8% (n=346), also indicated that they had attended professional development programmes on the use of technology in teaching. The remaining 33.2% (n=172 indicated that they had not. The graphical representation of the percentile scores of these two teacher groups shows that the respondents who had attended professional development programmes in ICT had a higher level of concern intensity on all seven stages compared to those who had not attended such professional development programmes (see figure 3). A slight increase was also noted on the profile of these respondents for *Stage 3 – Management*, indicating both groups expressed higher concern over logistical matters pertaining to the innovation adoption.   3: Concerns profile based on Attendance at ICT Training programmes

Figure 3: Concerns profile based on Attendence at ICT Training programmes

Results of a one-way MANOVA revealed a significant difference between both respondent groups in terms of their scores on the stages of concerns (Pillai's trace = .056, $F (7, 510) = 4.303$, $p = .000$, partial eta squared = .056). However, the follow-

up univariate analyses, using a Bonferroni adjusted alpha level of .007, indicates that a significant *F* ratio was only obtained for *Stage 4 – Consequence* (F1, 516 = 20.9, p = .000, partial eta squared = .039), *Stage 5 – Collaboration* (F1, 516 = 21.5, p = .000, partial eta squared = .040) and *Stage 6 – Refocusing* (F1, 516 = 18.6, p = .000, partial eta squared = .035). In other words, no significant differences were found between these two groups on their scores for both self and task concerns. Findings of this analysis further suggest that although those who had attended professional development programmes on technology had a significantly higher level of impact concerns; their intensity on self-concerns appeared to resemble those who have yet to participate in such development programmes.

Discussion

The concerns profile of the respondents in this study represent the "typical non-user" profile, which is characterized by concern being the highest at the earlier stages and lowest at the later stages. Having such a composite profile indicates that task and impact-related concerns have yet to become the focus of the teachers for they continue to deal with the need to resolve the concerns that they have pertaining to their own ability to effectively adopt technological innovations in their respective ESL instruction. Such findings echo those obtained by Lee (2006) who found that ESL teachers in Malaysian smart school settings had expressed intense self-concerns with regard to the new technologies introduced for instruction.

What can be inferred from this is that, despite the evidence suggesting that a large majority of the teachers, either from the smart or non-smart school settings, have had the opportunity to acquire the new electronic literacies via the professional development in ICT programmes that they have attended, findings of this study, nonetheless, reveal that the manifestation of the new electronic literacies in actual practice is not without constraints. In particular, the constraints are in the form of the teachers' own feelings of inadequacy of their ability to effectively adopt or integrate technological innovations in their ESL lessons. Questions as to why such feelings continue to arise must be addressed and resolved so that later concerns, which are more focused on aspects pertaining to the management and exploration of other innovative ways to infuse the technological innovations into practice, can emerge.

It is further asserted that ESL teachers' acquisition of the new electronic literacies may not necessarily result in changes in their classroom practices. Similarly the assumption that the expected changes in instructional practice would eventually take place over time once the teachers are familiar with the technology that they have at their disposal can also be dispelled. As evident in this study,

the number of years that the ESL teachers have in terms of technology adoption experience was shown to have no significant effect on resolving their self-concern issues. In other words, mere exposure to the requisite technological knowledge and skills in training programmes does not assure that technological innovations would be institutionalized in ESL instruction.

There are several implications that can be drawn from the findings of this study. First, there is the need to reconsider the nature of existing professional development programmes on technology literacy carried out with teachers. A one-off type of training programme or professional development programme on technology adoption carried out as single training events and on a short-term basis, must be complemented with on-going interventions to specifically address and resolve the concerns expressed by teachers based on their day-to-day adoption attempts. Similar calls have also been made in earlier adoption studies which highlight the need to have programmes that are more experiential in approach and include concerns-resolution as one of the key programme features (Lee, 2006; Woo, 2003; Rakes & Casey, 2002; Vaughn, 2002; Casey, 2000).

Second, teachers' expressions of concern about the adoption of technological innovations must be acknowledged as critical input when designing professional development programmes for they help illuminate the affective side of the adoption process, which, as this study has shown, can only be effectively gauged by getting teachers to express the concerns that they have when adopting the innovations. Listing out the kind of electronic literacies the ESL teachers must have and showcasing exemplary practices on how such literacies can take place in practice must not be the only aspects being addressed and given emphasis. Apart from adding value to the design and development of technology implementation plans, such invaluable input should also be viewed as complementing the nation's efforts towards reinventing pedagogical practices in all schools in the country via technology innovations as the primary enabler.

Finally, it is pertinent to acknowledge that although the institutionalization of technological innovations hinges on individual ESL teachers' readiness and willingness to embrace and adopt the change, without supportive conditions or measures undertaken to facilitate the on-going change process, either by their schools or other administrative bodies entrusted with the task of implementing the change, the intended innovations may not have a lasting presence in ESL instruction. Thus, by gaining insights into the composite concern profile of ESL teachers and their level of intensity on each stage of concerns, intervention or assistive measures that address the concerns expressed can be developed to enable them to cope with and resolve their concerns about the adoption of technological innovations.

Conclusion

Institutionalization of technological innovations in classroom instruction is an outcome that can only be achieved when the internal constraints, translated in the CBAM model as concerns which are expressed by teachers throughout the adoption process, are adequately addressed and resolved. The teachers' concern profile about the adoption of technological innovation provides an invaluable insight into the affective side of the adoption process. It serves as a lens into the feelings, thoughts and preoccupation of the teachers as they strive to meet the expectations placed upon them to make technology-based instruction a significant feature of their teaching practices. If left unattended and unresolved, teachers' continuous struggle with self-concern issues may inevitably become the cause for the discontinued usage of technological innovations in their ESL practices.

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