Affect and acceptability: exploring teachers' technology-related risk perceptions

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Affect and acceptability: exploring teachers' technology-related risk perceptions

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Educational change, such as technology integration, involves risk. Teachers are encouraged to "take risks", but what risks they are asked to take and how do they perceive these risks? Developing an understanding of teachers' technology-related risk perceptions can help explain their choices and behaviours. This paper presents a way to understand the complex weighing of teaching and technology values when teachers' choose, or choose not to, integrate technology in their teaching, through an investigation of technology-related risk perceptions. Findings suggest that teachers, regardless of personal and professional technology use, perceive the same risks when considering technology integration in the classroom; but there was considerable variance in the acceptability of these risks. Acceptability was strongly related to teachers' affect for technology and value of technology in teaching. The study employs the semantic image of "cost–benefit" as framework to identify and discuss teachers' rationales supporting their choice to integrate technology in their teaching.

Keywords: risk perceptions; teacher beliefs; technology integration; secondary education

Introduction

Change and innovation are not possible without taking risks. It is not necessarily the risk itself that is important, but the rationalisation of why something is *perceived* as a risk and how that perception influences choices and behaviours. A particular area of change and concern in education, at this time, is the integration of technology into teaching; specifically, why some teachers are willing to use technology while others do not. The problem is there is a tendency in research to demonize teachers who do not integrate technology, but we do not fully understand why they make this choice. I argue that it is important to look closely at teachers' perceived risks related to technology integration, to understand their rationalizations, beliefs and motivations underlying this choice.

Risk, as a phenomenon, is identified in a number of disciplines but it is largely "a taken-for-granted objective phenomenon" (Lupton, 1999, p. 2). Risk theory provides a way to analyze individuals' judgments of risk in terms of perception and acceptability. Perception and acceptability encompass why a task or behaviour is considered risky and how risky it is. It is difficult to know what an individual or a group understands to be risky or how they come to that determination. Risk perceptions are

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bound by context and individual experiences, therefore they must be considered in relation to specific tasks or behaviours. In the case of technology integration, it is important to note that the use and development of technology is a specific area of risk perception. Technology use changes the idea of what is *normal*, as individuals change their practices to be more *modern* (Douglas & Wildavsky, 1982; Luhmann, 2005).

In technology-related educational change, teachers are often expected to take risks and engage in new (modern) practices of learning and teaching. Modern practices could include interactive white boards, online teaching resources, emailing students and parents, etc. Teachers that do not take up these new practices are often identified as "recalcitrant" or "resistant" to change (van Veen, Sleegers, & van de Ven, 2005). To some, the choice to not integrate technology in teaching is much more complex than simple resistance, as teachers' beliefs about technology integration are a combination of values and beliefs about teaching and technology. Therefore, the choice to integrate technology into teaching would present, in part, a cost–benefit weighing of these two sets of beliefs. In this paper, I aim to explore this decision-making process to understand why some teachers *perceive* technology integration to be risky, while others do not. I argue that some teachers' low level of technology integration is not exclusively the product of resistance; rather teachers' decisions not to integrate technology can be legitimate concerns grounded within their beliefs about teaching and response to technology use.

This discussion primarily focuses on teachers' affective response to technology, as it influences their choice to integrate technology in teaching. Affect is the intuitive positive or negative response to a risk, understood as the affect heuristic (Slovic, Finucane, Peters, & McGregor, 2004). This conceptual approach helps us to look into teachers' judgement of perceived technology-related risk and subsequent decisions to integrating technology in teaching. This research is novel in that it brings together two fields of study: risk theory and educational technology. Risk theory provides a language and conceptual framework to understand teachers' values, beliefs and rationalizations influencing choices to integrate technology in teaching, beyond the simple use of, or resistance to, technology.

What can risk perceptions tell us?

When researchers discuss *risk* they often mean *perceived risk*: peoples' evaluations of possible hazards (Rohrmann & Renn, 2000). Rohrmann and Renn (2000, p. 13) state, "there is no commonly accepted definition for the term risk – neither in the sciences nor in public understanding". While there has not been a common definition for the term, in most contexts *risk* refers to "the possibility of unwanted events"; *perceived risk* refers to peoples' "judgments and evaluations of hazards they (or their facilities, or the environment) are or might be exposed to" (p. 14). In the following discussion perceived risk is understood as the "judgment and evaluation of possible unwanted events". Research in the area of cultural risk theory tells us that individuals and groups perceive risk when they feel something they value is threatened (Wildavsky & Drake, 1990). Depending on the context, individual, or group some risks will be downplayed and others will be emphasized (Douglas & Wildavsky, 1982). In education, teachers' perceived risks related to technology integration would be based on their individual values and beliefs, as well as those of their school culture. The following discussion will focus on teachers' individual values, beliefs and expectations influencing risk perceptions.

Risk theory considers risk in two parts: perceived and acceptable, which is the judgment and intensity of risk (Luhmann, 2005). The perception of risk is further divided into two ways of knowing: experiential and analytical. The experiential system refers to an individual's relatively unconscious emotions and feelings related to a perceived risk, such as anxiety, excitement or concern towards a new technology. This is a quick "pleasure–pain" oriented response, where individuals will often choose what feels "good" (Epstein, 1994). These types of responses are rooted in experience and they are often difficult to change. Conversely, the analytical system is a conscious cost–benefit weighing of possible risks, which will often employ the use of logic and evidence to evaluate risks. This thought process is slower than the experiential response, but the individual has relatively conscious control of their decisions. Additionally, analytic perceptions are more likely to change (Slovic et al., 2004). Research has shown that risk perceptions are more strongly influenced by experiential affective emotions than analytical evaluation (Slovic, 2000). This phenomenon is known as the *affect heuristic* (see Slovic et al., 2004).

The affect heuristic is comprised of conceptualized and conditioned emotional responses based on previous experiences and perceptions, which are then inductively applied by an individual to judge risk and benefits in new situations (Slovic et al., 2004). In nature, the correlation between perceived risk and benefit is positively related: high risk, high benefit. Research has shown that the risk and benefit are *negatively* related in peoples' minds, which is attributed to *affect*. If a person has a positive affect for an activity, they will perceive it to be of high benefit and low risk. If they have a negative affect for an activity, they will see it as low benefit and high risk. Put simply, if a person feels good about a task or activity, they will see it as lower risk and higher benefit. Lower perceived risk suggests a person would find the risk more *acceptable*.

Individuals are more likely to have a positive affective response to tasks they feel able to successfully complete; thus manifesting as a high sense of efficacy (Bandura, 1989; Darby, 2008; Yeh, 2006). Teachers feeling confident about their practice will have high teaching-efficacy (Fullan, 2001). Individuals who feel confident about performing technology-related tasks will have a high level of computer-efficacy (Compeau & Higgins, 1995). Individuals' beliefs about their efficacy related to teaching and technology are domain specific, and they are not necessarily related. Some teachers will feel quite confident in their ability to teach, but they may not feel confident about their ability to use technology. Apart from their efficacies, teachers' general values and beliefs about technology are separate from their values and beliefs about teaching (Ertmer, 2005); but, research has shown teachers who highly value technology often feel students benefit from using ICT in the classroom (Howard, 2009).

The complex interaction between these values and beliefs underlie teachers' risk perceptions and decision-making related to integrate technology in teaching. Risk theory and analysis provide the tools to parse these values and beliefs, and they provide a language and framework through which these judgments and subsequent choices can be discussed.

Method

To create a detailed picture of the interacting values and beliefs, impacting on teachers' technology-related risk perceptions, it was necessary to apply a two-phase

mixed-methods design. In Phase 1 of the study, four previously validated measures were used to determine if teachers were more or less likely to take risks related to technology-integration in their teaching. Phase 2 was a constant comparison case study of two secondary schools and a total of eight teachers (four teachers at each school). The Phase 1 questionnaire was primarily used to select teachers for Phase 2 of the study. Results from Phase 1 are also used to inform Phase 2 findings.

The study focused on secondary level (Grades 6–9[1]) teachers in Australia (New South Wales [NSW]) and the southeastern United States. It is common in risk analysis research to combine populations in different countries in an effort to collect as wide a sample as possible (Renn, 2004). Participating schools, in both countries, were identified through a purposive sampling strategy, based on their engagement in ICT-related change initiatives.[2] Recommendations were taken from the Learning Systems Institute (LSI) at Florida State University (USA), the NSW Department of Education and Training (DET; Australia) and the IntelTeach program in Australia. School principals identified participating teachers for both phases. Teachers from the two countries were not compared; rather, they were treated as one sample. The following two sections further outline the details of each data collection, participant selection and analysis.

Phase 1, identifying more or less likely

The selection questionnaire developed for Phase 1 included four measures that, while not directly, have considered teachers' risk perceptions and risk-taking habits. The four indicators were school culture (SCu), teaching-efficacy (TE; Lee, Dedrick, & Smith, 1991), computer-efficacy (CE; Compeau & Higgins, 1995), and playfulness and anxiety (Anx; Heinssen, Glass, & Knight, 1987; Play; Martocchio & Webster, 1992). The four measures selected for the questionnaire have been widely used in educational research literature, often referencing teachers' *taking risks*. The combination of these four measures created a point of comparison between teachers who were more likely to take risks (more acceptability of risk) and those who were not (less acceptability of risk). This conceptual framework was based on findings from literature suggesting that teachers showing low efficacies, high anxiety, and feeling that the school did not support a culture of experimentation would be less likely to take risks and change their teaching. Teachers with higher efficacy and experimentation, who felt supported by their school, were more likely to feel risks were acceptable.

The questionnaire (45 items) was directly administered to 175 teachers (10 schools in total) for voluntary completion in faculty meetings and workshops. In total, 91 teacher participants completed the questionnaire: 51 Australian teachers and 40 teachers from the United States. The questionnaire was found to possess adequate reliability ($\alpha = .882$). Internal reliability on each of the measures was also found to be adequate (all $> .7$). The mean for the four combined measures was 3.80, which was used as a median split to choose teachers who may showed more (MAR) or less (LAR) acceptability of technology-related risks. Independent samples t-tests confirmed that the teachers' scores from Australia and the United States were not statistically significantly different, $t(84) = -1.36$, $p = .154$. Therefore, the sample was homogenous and could be treated as one group for analysis.

Of the 10 schools participating in Phase 1 of the study, two rural schools were selected for the Phase 2 case studies: East Middle School (EMS) in Florida and

North High School (NHS) in New South Wales. Four teachers at each school were invited to participate in the case study: two MAR and two LAR. The final Phase 2 participant selection was based on ARS scores (see Table 1). The mean scores for the selected Phase 2 participants was not significantly different from the larger sample, $t(83)$ = -.131, p = .896. This does not suggest results were generalizable to, or representative of, the larger teaching populations in Australia or the United States; but the eight teachers were a valid sub-set of teachers participating in this study.

Phase 2, collecting teachers' risk perceptions

The majority of teacher and school data analyzed in this paper were collected in Phase 2 case studies. The case studies comprised of three rounds of semi-structured critical incident interviews (see Flick, 2006), semi-structured classroom observations, school document analysis, and key informant interviews. The teacher interview and observation schedules were based on three main themes: technology use, teaching and expectations of the school culture. Teachers' positive or negative affective response to experiences integrating technology were analysed on two points: scales of "goodness" or "badness" (Slovic et al., 2004, p. 312). Specifically, their talk about technology in terms of "feeling", e.g., anxiety or excitement, and their positive or negative assessment of using technology, e.g., it's not something I like to do, or I enjoy using technology. Further qualitative analysis was based on the four measures, as well as allowing new themes to arise out of the coding process (Flick, 2006). Observation data was analysed for frequency of technology use in teaching. Interview and observation data were member-checked and validated in each round of collection.

The following sections present findings in two parts: technology and teaching. Data from Phase 1 and 2 are combined to examine how teachers' values and beliefs influenced the perception and acceptability of risk.

Perception and acceptability

Analysis of teachers' talk about perceived risks[3] relating to technology-integration revealed three areas of concern:

- Ability to problem-solve.
- Value of technology integration.
- Loss of time.

All eight of the teachers perceived similar risks. They judged these risks in relation to overall cost or benefit to student achievement and learning. Education, can be understood as the "conditions and arrangements where learning takes place" (Selwyn, 2011, p. 5), thus the relative value of any change would be measured in terms of its impact on and, benefit to learners. The difference between the MAR and LAR groups was their acceptability of these risks, which related to their computer-efficacy and value of technology in teaching.

Technology: ability and problem-solving

One of the significant differences between LAR and MAR teachers' was their familiarity using technology and confidence solving technology-related issues in the

Table 1. Phase 2 participants and acceptability of risk scores.

		Years teaching	Curriculum area	Grade	TE[a]	SCu	CE[b]	Play&Anx[c]	ARS[d]
LAR	Kerry (FL)	16–20	Career Planning	7–8	4.00	4.45	2.60	2.51	**3.39**
LAR	Judith (NSW)	20+	Mathematics	7–10	4.17	3.91	2.80	2.67	**3.39**
LAR	Kelly (FL)	11–15	Reading	6–7	4.33	3.91	2.00	3.52	**3.44**
LAR	Simon (NSW)	20+	English	7–9	3.67	4.45	2.50	3.20	**3.45**
MAR	Beau (FL)	1–2	World civics	6	4.00	3.55	4.00	4.00	**3.89**
MAR	Elizabeth (NSW)	11–15	ESE**	7–10	4.83	3.55	4.60	3.94	**4.23**
MAR	Danielle (FL)	3–5	ESE	6–8	4.83	4.00	4.50	3.63	**4.24**
MAR	Molly (NSW)	6–8	Science	7–9	4.50	4.55	4.60	4.27	**4.48**

Notes. (a) The teaching-efficacy, and school culture measures used a 5-point Likert-type scale ranging from 1 = "strongly disagree" to 5 = "strongly agree"; (b) the computer-efficacy measure was a 6-point Likert-type scale ranging from 0 = "couldn't do that" to 5 = "totally confident"; (c) playfulness and anxiety measures were combined and averaged to create the Play&Anx indicator. The calculated scores are 1 = "less likely to show playfulness" to 5 = "more likely to show playfulness"; (d) Acceptability of Risk Scale (ARS) is a five-point scale, 1 = "less likely to take risks" (LAR), and 5 = "more likely to take risks" (MAR); ** Exceptional Student Education (Special Education).

classroom. This finding was reflected in participants' computer-efficacy (CE) scores (see Table 1). LAR teachers had a substantially lower perception of their computer-efficacy and higher anxiety (Play&Anx) when compared to MAR teachers. Further, LAR teachers' talk suggested a strong negative affect towards using technology:

> [Are you apprehensive or anxious about using – in teaching – the new technology?] Well, yeah, because I'm not real good at things like that [laughs]. (Kelly, Florida LAR teacher)

> I'm not all that comfortable... If there is something wrong with the computers, or something you can't get out of it, I don't have the tools to cope with that. (Judith, NSW LAR teacher)

LAR teachers frequently used words such as "frustrated" and "uncomfortable" when speaking about using technology. They believed they were not "real good at things like that" and that they could not "cope" with technology-related problems, thus revealing a low sense of their computer-efficacy (Kelly, CE $M = 2.00$; Judith, CE $M = 2.80$) and a negative affective response towards technology use. These beliefs directly influenced their decision to use technology in their teaching:

> Another thing that turns me off, is when something goes wrong and the computer is not working... unless there is another teacher to call on for support, I wouldn't be able to sort out the problem. That's why I don't take the class to the computer room... (Judith, NSW LAR teacher)

Judith's belief that something may go "wrong" and statements such as "another thing that turns me off" illustrate her negative affect for technology integration. She has fully anticipated there would be a problem with the technology if she used it in her teaching; and her experience is when something does go wrong, she is not able to fix it. Classroom observations confirmed Judith's, and other LAR teachers', perceived risks were valid. In fact, they were unable to solve most technology-related problems when teaching, and there was little technology support available for teachers to access during class time. As a result, instruction time was lost when technology failed to work properly. Therefore, their experiences reinforced their negative affective response to technology use and technology integration.

Conversely, MAR teachers' talk about technology use suggested a high level of computer-efficacy and positive affect for integration. These beliefs are illustrated through their confidence working with technology:

> I am usually pretty good at figuring stuff out and being able to move around on the computer and email... I can do what I need to do... (Beau, Florida MAR teacher)

> I am good with computers... once I know the technology and I have someone to explain it to me I will be alright and I can improve it... (Molly, NSW MAR teacher)

The MAR teachers felt they were "good" at using technology, solving problems and that they could even "improve" their skills. These comments show a playful rather than anxious approach to technology and high computer-efficacy (Beau, CE $M = 4.00$; Molly, CE $M = 4.60$), which suggests a positive affect for technology use. In relation to using technology in teaching, Danielle, a NSW MAR teacher,

commented, "I have a Smartboard... it has been pretty cool... it is definitely getting better [in teaching] the more I use it". The Smartboard being "pretty cool" motivated her, which suggests a positive affect towards the board. She did not highlight the possible risks related to using the Smartboard in her teaching; rather she focused on her progress using it.

These findings suggest, as teachers' computer-efficacy decreased, the perceived risks related to technology integration increased. Thus, the acceptability of risk decreased. Acceptability exhibited a relation to teachers' ability to problem solve technology while teaching. Danielle felt she could problem-solve technology issues, so she found risks associated with technology integration acceptable. For example, she stated she was "trying to do things a little bit different [in teaching] to see how it works. Sometimes it works and sometimes they don't". This is a very different approach to Judith, who had a lower computer-efficacy and felt the risks of integrating technology were unacceptable. Specifically, she expressed clear negative affective responses for technology use and was unable to solve technology problems when teaching. Overall, LAR teachers felt the risks of anxiety and frustration using technology while teaching were simply unacceptable.

Teaching: value of technology and loss of time

Concerning technology and teaching, LAR and MAR teachers tended to have different conceptions of quality teaching and the value of technology in teaching. LAR teachers were more likely to discuss quality teaching in relation to students' academic achievement and standardized test results, and they did not generally see technology supporting these outcomes. MAR teachers were more likely to talk about quality teaching in terms of student engagement and the learning experience, and they *did* tend to see technology supporting this aim. Teachers' cost–benefit analysis of technology integration and teaching often centered on *loss of time*: time teaching in the classroom and lesson preparation time. Both groups saw loss of time as a cost of technology integration, but there were differences in the acceptance of this cost.

The following excerpt illustrates how LAR teachers generally valued technology in teaching:

> Technology is not going to help. It's silent reading or independent working that you can do there... Then, all readings you need to read out loud, the story, and then have them read to each other. It works better, I've found. (Kelly, Florida LAR teacher)

Kelly believed students would not significantly benefit from technology integration and did not value it in teaching. Kelly's questionnaire results showed she had a high level of teaching-efficacy (TE $M = 4.33$), which indicates she would feel confident and positive about the quality of her teaching without integrating technology. Her computer-efficacy score is quite low (CE $M = 2.00$), which suggests she would not have a positive affect for technology use and would see it has a higher risk when used in the classroom. Judith, also showing a positive level of teaching-efficacy (TE $M = 4.17$) and low computer-efficacy (CE $M = 2.80$), had similar beliefs:

> I work off of the whiteboard, the textbook, overheads. I don't use PowerPoints, stuff like that. I can see the relevance, but the risk of impending failure... the amount of time you would spend doing something like that is not in proportion to the volume. (Judith, NSW LAR teacher)

Judith believed she was an effective teacher without integrating technology. Her comments clearly outlined her decision to not integrate technology – she saw the relevance, but the risk of failure and cost of time was unacceptable. Considering Judith's low computer-efficacy, it is quite possible planning and teaching with technology would be time consuming and her anxiety using technology would negatively affect student learning. Indeed, both Judith and Kelly expressed a negative affective response to technology integration. They did not value the use of technology in teaching and saw little benefit to student learning, thus there was little motivation to use it as a teaching tool. With the added cost lost time due to technology-related problems, their decision to not integrate technology into teaching becomes clearer. The MAR teachers, with much higher levels of computer-efficacy (all CE $M > 4.00$) and comparable scores on teaching-efficacy, exhibited different beliefs about technology integration:

> I would like to implement anything [technology] that is going to work to help these kids learn. If someone came up with a new something and said, this is the best thing ever, I'd say, OK let me try it. All the help I can get. (Danielle, Florida MAR teacher)

> With all the different learning styles you have to present your material in all those different ways, so all those different learning styles have a sense of equity to learn what you are presenting... anything that is visual or technology based format, adds to the curriculum, it's wonderful. (Elizabeth, NSW MAR teacher)

MRB teachers had an openness to any teaching practice that would improve students' learning experience. They believed students needed to learn through multiple delivery channels, which they felt was supported by technology. They valued technology, which suggests integration was part of their conception of teaching. Although, at times, MRB did not feel technology supported this value:

> I'll try it, figure out if I can use it. If I don't need it, it's a time waster...If it is something that is going to help me professionally in the future, delivering the material in a different format, then I will make time. (Elizabeth, NSW MAR teacher)

The previous illustrates Elizabeth evaluation of technology integration. She weighs the benefit of a technology tool, against the time-costs of learning or teaching with it. This suggests, as a teacher's perceived benefit of technology in teaching decreases, their perception of lost time increases. Further, while MAR teachers valued technology, they held benefit to learning and teaching over technology integration.

The how and why of acceptability

The previous section illustrated some of teachers' perceived risks related to technology integration, specifically those in relation to technology use and value of technology in teaching. Using the affect heuristic and the semantic image of cost–benefit has provided the tools to analyze interplay between teachers' technology and teaching values and beliefs. Thus, we can identify teachers' judgments of acceptable or unacceptable risks related to technology integration. This analysis has presented two key aspects of teachers' technology-related risk perceptions.

First, all teachers perceived the same risks. This is the first step to understanding acceptance of technology integration. MAR teachers valued technology in teaching more, and they had higher computer-efficacy, which resulted in a higher positive affect for technology integration and lower perceived risk. Although, while MAR teachers valued technology and often felt it was worth the time to integrate technology in teaching, was not a fixed belief. This was illustrated in Elizabeth's comment about some technology tools not being worth the time to learn, based on a judgement of possible benefit. The LAR teachers had lower computer-efficacy and did not value technology in teaching, so they exhibited a more negative affective response to technology integration. As a result, they saw technology use to be higher risk. It is important to note, for LAR teachers technology integration was often higher risk. They were unable to problem-solve technology issues when teaching, which led to an increased risk of lost instruction time. If LAR teachers valued technology use in teaching the loss of class time could have been an acceptable cost of integration, but this was not the case. The LAR teachers did not believe student learning benefited from technology integration, therefore it was not worth the cost of lost instruction time or their own possible anxiety and frustration using technology.

Second, Elizabeth's valuation of the benefits from technology use showed analytical process of risk perception. She her initial positive affective response to technology, through the experiential system, determined this risk is acceptable. It did not cause anxiety and she felt good about it. She then moved to an analytic evaluation of technology integration based on her knowledge of technology and her belief that technology could support her teaching. This was quite different to the LAR teachers' evaluations. Judith's perceptions came from the experiential system. Judith had a very strong negative affective response to technology use. Her perceptions were based on negative experiences and feelings of anxiety; therefore, technology use was an unacceptable risk. Research has shown it is more difficult to change risk perceptions derived from the experiential system, than the analytical system (Epstein, 1994; Slovic et al., 2004). This suggests it would be of value to determine where teachers' risk perceptions are focused, on the analytical benefit to teaching or the more experiential feelings of anxiety and discomfort. Future research is needed to more clearly define teachers' risk perceptions and understand the influence of affect. While cost–benefit analysis gives us a window into the weighing of values and beliefs between technology and teaching, the strength of negative affect comes from the experiential system. Most importantly, it is necessary to determine how negative affect can be addressed through professional development, school leadership and the creation of positive experiences using technology in teaching. This consideration highlights that this discussion has provided insight into teachers' *individual* risk perceptions, it does not address the influence of external cultural values and beliefs. One of the values, on many educational agendas, is the desire to prepare students for work and life in the "twenty-first century". This goal often includes the integration of technology in teaching and learning (see Moyle, 2010). Future research will need to examine how aspects of school and subject area culture interact with teachers' affective responses to technology use as well as the value of technology in teaching.

Conclusion

This paper has examined why and how some teachers perceived technology integration to be risky and others do not. The identification of teachers' affective response to

technology-related risks discussed through the affect heuristic and the conceptual framework of cost–benefit proved to be useful. The most significant finding of this study is that teachers perceived the same risks, but varied in acceptability of those risks. With increased positive affect towards technology use, risks related to technology integration became more acceptable. Positive affect was related to high computer-efficacy, and the ability to problem-solve technology issues when teaching. Teachers felt there was a time cost related to technology use, which was often weighted against the perceived benefit of technology in teaching. The cost of lost time in teaching was found to be more acceptable with increased positive affect towards technology use.

It is possible that some teachers' "resistance" to technology integration is a function of a negative affective response to technology, thus a lower acceptance of risk. Indeed, it was difficult for the LAR teachers to use technology in their teaching and they felt anxious about their inability to problem-solve technology related issues. Further, the teachers did not value technology in teaching, and the risks became even less acceptable. In terms of minimizing these risk perceptions, the strong negative affective responses inducted in experiential evaluation of risk need to be addressed before engaging in an analytic discussion of the value of technology in teaching. Anxiety as a stronger mediator in technology use (Hackbarth, Grover, & Yi, 2003). Individuals who have positive beliefs about technology integration are less likely to anticipate anxiety related to technology use in the classroom and more likely to develop their confidence through repeated use (Mueller et al., 2008). The cost–benefit semantic image gives educational technology provides a framework to analyze the nature of teachers' risk perceptions, particularly in relation to their affective responses to technology integration. This approach gives us the ability to look at the complexities of low technology integration, rather than only at the visible resistance. In the end, technology related change is not possible without taking risks. Therefore, some how, for technology-related change to occur teachers need to feel positively about technology, teaching and the possibility of taking a risk.

Notes

1. The case study middle school in the United States was Grades 6–8. The Australian Junior school included Grades 7–10. Teachers included in the case study were teaching in Grades 6–9.
2. Schools identified were participating in the IntelTeach program (Intel, nd), or in a United States Department of Education Comprehensive School Reform project (United States Department of Education [USDOE], 2004).
3. There is an additional risk consideration relating to culture (or group): fulfilling cultural expectations. This paper does not address the external value and beliefs influencing teachers' risk perceptions.

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