

Alignment Between Principal And Teacher Beliefs About Technology Use

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Abstract

This paper explores the link between principals' and teachers' beliefs regarding technology use in teaching and learning. Principals who have a clear vision for carrying out the pedagogical requirements for technological change in teaching and learning approaches can direct the use of technology to enhance the school learning environment. Quantitative questionnaire is developed and implemented in this study to determine principals' and teachers' existing pedagogical beliefs regarding technology use. Participants included 67 principals and 82 Arabic language teachers across technology-equipped secondary schools in Jeddah, Saudi Arabia. The results present a strong alignment between principal and teacher beliefs, in that both indicate positive constructivist beliefs, including improvement of teachers' and students' research skills, the promotion of students learning both inside and outside school and the belief that learning technologies convert teacher-centred teaching approaches to student-centred teaching approaches. Additionally, the study shows that principals' beliefs were always stronger than teachers' beliefs.

Key Words

Principal beliefs, teacher beliefs, technology integration

Introduction

Technology use has been a topic of discussion among researchers and educators for several years (Heirdsfield, Davis, Lennox, Walker, & Zhang, 2007). In this study, technology use refers to “a diverse set of technological tools used to communicate, and to create, disseminate, store, manage information and assist classroom teaching and learning” (Blurton, 1999 as cited in Tinio). Any facilities related to digital computers and the Internet are comprised. The use of technology tools has become a significant component of pedagogy in many parts of the world (Suanpang & Petocz, 2006). Educators and parents now consider integrating technologies into classroom teaching and learning activities as an effective and essential part of providing high-quality education and of increasing opportunities for life-long learning (Heirdsfield, Walker, Tambyah, & Beutel, 2011). In comparison to traditional learning, teaching through technology has several advantages, particularly in allowing for “learning anytime and anywhere” (Peerapat, 2010, p. 50). Classroom teaching and learning can be effective

by using technologies as interactive learning tools that support student-centred education and knowledge construction to obtain disciplinary knowledge as well as accommodate students' personal learning preferences (Tu, 2005).

In the last decade, a number of studies in the US, UK and Australia have been conducted regarding technology use (S. Jones, 2008; Kennedy, Judd, Churchward, Gray, & Krause, 2008; Kvavik & Caruso, 2009; Lenhart, Madden, Smith, & Macgill, 2009). In Saudi Arabia, the government allocated a large portion of its recent national budget to the development of public education. Currently, attempts are being made to encourage teachers in Saudi public education to teach through learning technologies as an integral part of traditional education, and this method is being applied in some schools in major cities (Hamed, 2012). In spite of these significant endeavours, using technology in the classroom remains a major challenge for teachers because they have to learn how to use technology, know how to identify and cope with the strengths and weaknesses of technology and select the most appropriate forms of technology for lesson activities (Al-Abdullatif, 2012). Along with the fact that learning technology implementation implies changes to the planning and delivery of lessons and, subsequently, a change in teaching approaches, it also involves changes in the student assessment processes. Rather than merely passing on knowledge, teachers are now facilitators who show students how to use technology and engage in a more self-directed learning process (Guri-Rosenblit, 2005).

The research literature on how teachers effectively use technology has primarily catalogued the availability and considerable increase in technology and online pedagogical approaches in higher education institutions (Bowen, Chingos, Lack, & Nygren, 2014). The majority of research has been conducted at the higher education level and is associated with the use of learning management systems, particularly in areas such as faculty participation (Maguire, 2005), involvement, adaptation (Baran, 2011; King, 2002), satisfaction (Bolliger & Wasilik, 2009), perception about the value and effectiveness of online learning implementation (Al-Abdullatif, 2012; Ulmer, Watson, & Derby, 2007) and ideas and approaches regarding teaching postgraduate online distance courses (Gonzalez, 2009). There is less research on the extent of the beliefs about technology use as an integral part of public school education.

To support technology use, the school principal must develop a vision of how school reform will be influenced by technology use (Chang, 2012). The development of this vision requires that the school principal understand the potential benefits of technology use in teaching and learning (Bailey, 1997; Bridges, 2003; Chang, 2012). Therefore, an exploratory study of the relationships between principal beliefs and teachers' beliefs may also contribute to developing a research-based understanding of the actual experiences and beliefs of principals and teachers as they manage the teaching and learning processes at their schools. While the study of teachers' beliefs is in itself important, identifying a connection between principals' and teachers' beliefs, either

positive or negative, is actually more relevant. Using technology in education is a new issue for Saudi Arabia, thus there is a lack of relevant research on the subject of the principals and teachers' beliefs about technology use. This paper seeks to address this identified gap in research and professional knowledge. The following three research questions are explored.

1. What are the beliefs associated with technology use in teaching and learning held by Saudi secondary school principals?
2. What are the beliefs associated with technology use in teaching and learning held by Saudi secondary school teachers?
3. How do teachers' beliefs about technology use relate to the beliefs of principals regarding technology use?

Literature Review

Technology use and constructivism. The literature seems to agree that teaching with use of technology differs from traditional classroom teaching and, as such, requires the development of its own pedagogies (Kreber & Kanuka, 2006). Kenny (2003); Porter (2004) demonstrated that implementing online learning systems was likely to be most effective when used in conjunction with other face-to-face pedagogical approaches. Given this, the researchers and educators have begun to turn their attention to pedagogical beliefs and meaningful technology use, especially that which emphasises collaborative learning techniques, long-term problem-based exploration and greater use of online learning environments (Lim, Hung, Wong, & Hu, 2004). These approaches represent the constructivist view of learning and teaching. The constructivist approach gives the learner an active role in meaning and knowledge construction. Students, rather than passively receiving knowledge from the teacher, can create knowledge, hypothesise, inquire, investigate, imagine and invent.

Johnson and Aragon (2003) pointed out the importance of associating a new philosophy of teaching and learning in online learning environments with learning theories. There is a close relationship between technologies and constructivism, and more benefits can be obtained from this relationship, such as encouraging both teacher and student to search digital resources and to read more and build their knowledge (Gilakjani, Leong, & Ismail, 2013). Constructivism is based on the perspective that 'students construct their meaning during learning based on their experiences and through a social negotiation of that meaning during the learning process' (Davidson-Shivers & Rasmussen, 2006, p. 45). This learner-centred approach focuses on encouraging ongoing interaction between students and engages them actively in constructing their own learning.

Constructivism has generated a number of teaching approaches based on the following principles: (a) active learning by encouraging students to participate in learning activities; (b) learning through opportunities to search for information and experiment; (c) scaffolded learning and collaborative learning (Harasim, 2012). Online collaborative

learning groups Informed by constructivist theory can be an appropriate pedagogical approach for some features of online technologies, including online seminars, discussion and group assignments that require students to work together. In collaborative theory and pedagogy, the teacher's role is to involve students in the language and activities associated with building discipline as well as the language and processes of the knowledge community. Establishing the processes of discussion and the problem to be discussed, provide students with feedback or analytical terms that lead them to discuss and understand the topic deeply, and supporting students to reach a level of intellectual convergence and come to a position on the topic or a resolution of the problem (Coll, Rochera, & de Gispert, 2014).

Benefits of technology use. The benefits of technology use can significantly impact classroom teaching and learning. A. Jones (2004) wrote a report on the results of Becta's online survey of 170 participants' perceptions in terms of barriers to ICT use in education. The report considered a lack of perceptions of benefits of ICT use is one of obstacles to implement ICT in teaching and learning process. Research exploring the impact of technology use has identified several benefits that could overcome some shortcomings of traditional or non-technology classroom teaching as well as some learning barriers. One of those significant benefits is providing students with a creative learning experience and removing the limitations of time and place (Alaugab, 2007) to support classroom-learning activities. One way this is achieved is by enabling students to broaden their knowledge and experience outside of school by using available online resources with their desired learning styles (Gail & Terry, 2011).

Mason and Rennie (2008) indicated additional positive qualities of technology use in the classroom, such as social media. They found that the use of technology enabled students to participate, think, contribute and become active in their learning. In addition, using technology in the classroom allows the teacher not only to incorporate multimedia but also to share information quickly and easily, providing a collaborative learning environment where students can communicate at any time. Other benefits of technology use are related to facilitating self-directed learning, problem-solving skills, higher-thinking skills and research skills for students along with collaborative feedback from both other students and the teacher in learner-centred environments (Seok, 2008).

Use of technology places high expectations on students, since they are able to monitor the quality of their responses in activities until they are confident enough to submit them to their teacher. They have more time to think before answering questions, and they can do more research and review materials before submitting or discussing their work with classmates. Learning with technology is another method that can help students keep up with their classmates and discuss a lesson they do not understand. They can also ask a question via email or e-learning communication features (Trangratapit, 2010).

Finally, Hsieh and Dwyer (2009) study concluded that using various learning styles and approaches increased student achievement, self-esteem and self-confidence. Technology provides an opportunity for communication between teacher and students and among students about the lesson content. They communicate either in real time (synchronous) using teleconferences or in chat sessions with no present times (asynchronous), allowing them to participate in class at their preferred times without requiring them to be engaged at the same time (e.g., through email and online discussion forums).

Principal and teacher beliefs. Effective school technology use in teaching and learning requires principals to take the lead in obtaining teachers to develop a vision to the school technology use benefits for student learning (Bridges, 2003). Since beliefs are thought to influence and shape classroom practices (Ertmer & Ottenbreit-Leftwich, 2010; Prestridge, 2012), it is important to be able to identify the beliefs of teachers and principals of the school community. Building on work by Baylor and Ritchie (2002), researchers investigating factors that facilitate teacher use of classroom technology; teachers who perceive that the administrators value and promote the use of technology, it may be more widely valued and integrated in the classroom. A principal can play a critical role in facilitating teacher change when he/she believes in the significance of supporting teachers and giving them an opportunity to try new technological approaches to effectively implement modern educational technologies in the classroom (Somekh, 2008).

Studies that have explored the impacts of school principals on classroom practices indicated the importance of the principal's intervention, attitude, vision and understanding of technology use in education (Hew & Brush, 2007). Findings from the IEA Computers in Education study revealed that principals from schools using technology maintained a more positive attitude towards the impact of technology use in education than those from schools not using technology (Plomp & Pelgrum, 1991). Furthermore, Granger, Morbey, Lotherington, Owston, and Wideman (2002) noted that principals who actively supported their teachers and built a collaborative community and culture in the school enabled technological innovation to progress effectively. Other researchers also agree that principals who have the leadership ability to initiate and carry out the pedagogical requirements of technological change in teaching and learning approaches can also affect the use of technology to enhance the school learning environment (Baylor & Ritchie, 2002; Ertmer & Ottenbreit-Leftwich, 2010). Facilitating technology use in classrooms, having a plan, articulating the vision, rewarding teachers as they strive to integrate technology and sharing leadership are considered significant indicators that may affect teachers' classroom practices (Baylor & Ritchie, 2002).

However, a misalignment between principals' and teachers' beliefs about technology use is likely impeded when teachers' beliefs are ignored by principals or principals' beliefs are incongruent with teachers' beliefs. Haney, Lumpe, and Czerniak (2003)

stated that teachers with constructivist philosophies regarding effective classroom teaching and learning may be impeded by school community members whose images or beliefs are incongruent with theirs. Therefore, investigating the belief structures of both principals and teachers is needed to guide extant efforts of technology integration. This study sought to examine the belief structures of principals and teachers.

Summary. The literature review has highlighted that beliefs are the “driving forces” in shaping teaching and learning processes. Principals and teachers play interrelated roles in obtaining high-quality teaching and learning processes. In the technology context, principals and teachers are likely to express constructivist beliefs. These beliefs include student-centred classrooms; collaborative, active learning; personal learning preferences; effective learning inside and outside school; high expectations of students; promotion of high research skills; improvement in students’ learning achievements; and organisation of student learning. The literature also indicated that principals who have a clear vision of how to carry out the pedagogical requirements of technological change in teaching and learning approaches can better support the use of technology to enhance the school learning environment. The alignment between principals’ and teachers’ beliefs enhance the processes of teaching and learning at school.

Methodology

Research context. This paper reports the first stage of a PhD research project at an Australian university. This project aims to explore the beliefs of Saudi school principals and teachers about technology use in teaching and learning; it will also examine the connection between the beliefs of principals and teachers. Secondary schools principals and teachers were selected to participate in this study for the reason that the current project of the Saudi Ministry of Education pertaining to integrating technology into Saudi Arabian public education focuses on secondary schools, and some secondary classrooms now equipped with advanced technology.

The Saudi Ministry of Education first integrated technology into Saudi Arabian public education as tools to administrative information such as store and process student records (Alshumaimeri, 2008). In 1991, computer literacy was introduced as compulsory subject into Saudi education particularly in the secondary schools with trend toward using technology as essential tool in course preparation, document production, and lesson content designing. However, this attempt was unsuccessful as it faced by lack of technology resources and professional development programs (Al-Sulaimani, 2010).

Since 2007 till now, the Education Development Project (Tatweer) that was lunched by Saudi Arabia’s King Abdullah aims to qualify educators and teachers to teach with technology and develop school curricula to fit with technology integration. This project is accompanied with equipping school with technology recourses including laptop computers, projectors and interactive whiteboards (Ministry of Education, 2007). In

addition to the technology resources equipment, the Ministry of Education arranged to conduct training programs related to how to use this equipment and that with about 400,000 teachers in various subjects. The schools also aim to be contacted to a network to enable teachers to include their teaching e-learning activities.

However, the important point that was not considered by educational reform is related understanding of existing principals' and teachers' beliefs, which seemed to underline what teachers did in practice.

Research design. A questionnaire of principals' and teachers' beliefs about technology use was used to gather data for the present study. The questionnaire instrument utilized closed questions for collecting quantitative data of principals' and teachers' beliefs regarding the benefits of using technology (see Appendix). This study informed the questionnaire results that focused on exploring what participants believe about technology use and examined the connection between principals' and teachers' beliefs. The data set in the questionnaire used a Likert-type scale ranking of 5 to 1, where (5) means strongly agree, (4) means agree, (3) means neutral, (2) means disagree and (1) means strongly disagree (see questionnaire appendix). There were nine questions regarding principals' and teachers' beliefs towards the benefits of technology use in teaching and learning in secondary classrooms. The questionnaire also included demographic questions regarding position, ICT certifications and years of experiences. When a respondent indicated a 'yes' answer for having ICT certifications, an open-ended follow-up question inquired into the type of ICT certifications the individual had.

Validity and reliability. Validity and reliability are considered the most important factors of effective research. Reliability refers to the degree to which a questionnaire instrument consistently measures whatever it is supposed to measure (Cohen, Manion, & Morrison, 2011). Although reliability is an essential contributor to validity, it is not a sufficient condition for validity, which refers to the degree to which an instrument actually measures the concept it is intended to measure (Drost, 2011).

Cronbach's alpha reliability coefficient is one of the most popular reliability coefficients for determining the internal consistency of different measurement instruments (Osburn, 2000). DeVellis (1991) stated that the accepted degree of reliability for an instrument is as follows: (a) below 0.60 is unacceptable, (b) between 0.60 and 0.65 is undesirable, (c) between 0.65 and 0.70 is minimally acceptable, (d) between 0.70 and 0.80 is acceptable, (e) between 0.80 and 0.90 is highly acceptable and (f) above 0.90 is strongly reliable. In this study, Cronbach's alpha reliability coefficient was used to determine the internal consistency of the scale (items 1-9) of principals' and teachers' beliefs about technology use and it had high reliability with a Cronbach Alpha = 0.832.

All the participants in this study were native Arabic speakers; therefore, to ensure their validity, the study instrument was translated into Arabic by an authorized translation centre in Saudi Arabia. Furthermore, to ensure validity, this study used a probability

(random) sample and collected data from various secondary school teachers and principals to effectively examine variations in teachers' and principals' beliefs. Cohen, Manion, Morrison, et al. (2011) stated that a probability (random) sample is one of the best methods of selecting a research sample, because it has less risk of bias compared to a non-probability sample (Gay, Mills, & Airasian, 2011). As a final way to ensure validity, a community of researchers and interested individuals evaluated both the principal and teacher questionnaires.

Procedure. The random sampling method involved the selection of a sample at random from a large population in which each person had an equal chance of being selected (Gay, Mills, & Airasian, 2009). According to the Department of Education, there are about 72 all-male public and private advanced technology secondary schools in the Jeddah province, with 72 principals and 135 Arabic language teachers. An invitation to attend a group information session for this research project was distributed by the Department of Education in Jeddah to all schools.

The researcher conducted eight total information sessions, one for each of the eight school districts. At each information session, the researcher provided each participant with a written and verbal description of the research project and explained the purpose of the questionnaires. The researcher distributed information sheets along with the questionnaires to all participants in each information session. The questionnaire took approximately 20–25 minutes to complete.

Data analysis. The questionnaire was conducted on a sample of 67 principals and 82 teachers. The principal and teacher questionnaire included questions on background and demographic information, followed by questions about the benefits of technology use. Questionnaire data were analysed using the Statistical Package for the Social Sciences (SPSS). A descriptive statistical analysis of the responses, including frequency distributions, percentages, means (M) and standard deviations (SD), was performed for each statement of the questionnaire and for the overall responses. Inferential statistics through two types of tests—*independent samples t-test* and *One-Way ANOVA test*—were performed. These tests examined the differences in principals' and teachers' beliefs about the benefits of technology use in teaching and learning according to their position, ICT certifications and years of experience in technology-based teaching and learning.

An independent samples *t-test* was conducted with two independent variables (IV): position (the total beliefs of principals and the total beliefs of teachers) and ICT certifications. The null hypothesis was that there were significant differences between principals' and teachers' beliefs about the benefits of technology use in teaching and learning according to their position and ICT certifications. In these two cases, the reason for using an independent samples *t-test* was because it is equivalent to the one-way between-groups analysis of variance ANOVA. In short, it allows differences between

two groups to be inspected (Coakes, Steed, & Ong, 2010). The p-value of independent samples t-test at an alpha level of 0.05 was used for statistical significance. Results with a p-value greater than 0.05 led to the rejection of the null hypothesis, while results with a p-value below the alpha level of 0.05 led to retaining the null hypothesis, which statistically indicated that there were significant differences in participants' responses between different groups.

The one-way analysis of variance ANOVA was performed to compare the means of the different groups of independent variables for years of experience. In this analysis, the F-ratio was the ratio of between-groups variance to within-groups variance. The F-value was set at an alpha level of 0.05 between and within the three groups of years of experience in response to the benefits of technology use in teaching and learning. The null hypothesis was that there were significant differences between principals' and teachers' beliefs about the benefits of technology use in teaching and learning according to years of experience. If the p-value was greater than 0.05, the null hypothesis was rejected, and if the p-value was less than the alpha level of 0.05, it was retained, indicating statistically significant differences in participants' responses to the benefits of technology in teaching and learning across the three categories of years of experience.

In this study, qualitative data was collected from principals' and teachers' responses about their type of ICT certifications through an open-ended question following their 'yes' response to having ICT certifications. The qualitative data collected from both principals and teachers were analysed with the qualitative approaches suggested by (Bryman, 2012); Leedy and Ormrod (2013). According to this approach, analysis comprises numerous interrelated processes: transcribing comments, reducing texts from individual open-ended comments into initial concepts, aggregating or grouping the initial emergent concepts across all individual analysis and subsequently developing a picture of the interrelationships among these common concepts. The researchers used the obtained qualitative results to help interpret findings regarding the second hypothesis concerning the association between participants' beliefs and ICT certifications.

Results and Discussion

Principals' and teachers' beliefs. This paper analyses the connection between the beliefs of Saudi secondary school principals and teachers regarding technology use. Generally speaking, principals and teachers had positive beliefs towards technology use in classroom teaching and learning. All statements achieved an agreement percentage of no less than 78.6%. Additionally, the principals' responses were stronger than teachers' responses in each belief statement.

Table 1

Principals and Teachers' Beliefs about Technology Use

Items	Principals (n = 67)		Teachers (n = 82)	
	M (SD)	%	M (SD)	%
Beliefs using technology....				
1. accommodates students' personal learning preferences.	4.37 (0.57)	87.45	4.26 (0.64)	85.2
2. promotes students' learning both inside and outside school.	4.63 (0.52)	92.6	4.48 (0.63)	89.6
3. converts teacher-centred teaching approaches to student-centred teaching approaches.	4.46 (0.61)	89.2	4.32 (0.80)	86.4
4. maintains high expectations of students.	3.99 (0.73)	79.8	3.93 (0.83)	78.6
5. is more effective than non-technology-based classroom learning.	4.16 (0.91)	83.2	4.01 (0.98)	80.2
6. improves the research skills of teachers and students.	4.63 (0.52)	92.6	4.61 (0.58)	92.2
7. enhances collaboration among students.	4.40 (0.78)	88.0	4.09 (0.96)	81.8
8. improves students' learning achievements.	4.24 (0.82)	84.8	4.28 (0.74)	85.6
9. helps to organize student	4.27 (0.79)	85.4	4.11 (0.74)	82.2
Grand Mean	4.35 (0.45)	87.0	4.23 (0.52)	84.6

Principals' beliefs. The overall belief of principals about integrating learning technologies in classroom-based language teaching and learning is positive (M=4.3499, SD=0.515). Principals responded “strongly agree” to three statements. The first statement was “learning technologies promote students’ learning both inside and outside school” (M=4.63, SD=0.517). Approximately 92.6% of principals strongly agreed with this statement. The statement “learning technologies improve the research skills of teachers and students” (M=4.63, SD= 0.517) was second in terms of principals’ strongly held views. Many principals agreed that learning technologies convert teacher-centred

teaching approaches to student-centred teaching approaches, which was the third statement. Approximately 89.2% of principals agreed with this statement. The three statements most strongly supported by principals' refer to constructivist beliefs that focus on meeting student's needs and helping students become independent learners. The least agreed upon statement among principals is that "learning technologies maintain high expectations of students."

Teachers' beliefs. The overall belief of teachers about the value of integrating learning technologies in the classroom-based language teaching and learning is also positive, with "agree" responses at a mean score of 4.23. The first strong belief indicated by the teachers' responses was to the statement "learning technologies improve the research skills of teachers and students" (M=4.61, SD=0.583). Approximately 92.2% of teachers strongly agreed with this statement. The second strongest belief shown by teachers' response was to the statement "learning technologies promote students' learning both inside and outside school" (M=4.48, SD=0.633). Further, a large number of teachers agreed that learning technologies convert teacher-centred teaching approaches to student-centred teaching approaches. It is noted that the three more strongly agreed statements of teacher beliefs were actually the same more strongly agreed statements of principal beliefs that supported constructivist beliefs. The least agreed upon statement among teachers is "learning technologies maintain high expectations of students" (M=3.95, SD=0.783), which was the weakest of the principal beliefs.

Alignment between principals' and teachers' beliefs. The results shown in Table 1 indicate that teachers' beliefs were consistent with principals' beliefs. There is strong alignment between principals' beliefs and teachers' beliefs at various sublevels. Both principals and teachers indicated positive views regarding integrating learning technologies into classroom teaching and the learning process. Both groups shared strong beliefs that technology improves the research skills of teachers and students and that it promotes students' learning both inside and outside school. Principals and teachers agreed that learning technologies convert teacher-centred teaching approaches to student-centred teaching approaches.

Test of hypotheses. The first hypothesis postulated that there were significant differences between principals' and teachers' beliefs about the benefits of technology

use in teaching and learning. The analysis demonstrated that there were no significant differences between the principals’ and teachers’ beliefs, as evidenced by the independent samples t-test (see Table 2).

Table 2

Differences in Principals’ and Teachers’ Beliefs

<i>IV</i>		<i>N</i>	<i>M</i>	<i>SD</i>	Independent Samples T-Test Result			
					<i>t</i>	<i>Df</i>	<i>P</i>	<i>MD</i>
Position	Principal	67	4.3499	0.449	1.492	147	*0.138	0.120
	Teacher	82	4.230	0.515				

The significance level is 0.05

The independent samples t-test was not statistically significant ($t(147) = 1.492$, $p = 0.138$, $p > 0.05$). The mean differences ($MD = 0.120$) were very small between the mean belief total for principals ($M = 4.3499$, $SD = 0.449$) and the mean belief total for teachers ($M = 4.23$, $SD = 0.515$). This finding means that principals and teachers held similar beliefs about the benefits of technology use in teaching and learning. This result also supports the alignment between principals’ and teachers’ beliefs associated with the benefits of technology use in teaching and learning.

The second hypothesis stated that there were significant differences between principals and teachers’ beliefs about the benefits of technology use in teaching and learning for those who have ICT certifications. This hypothesis was tested using independent samples t-test (see Table 3).

Table 3

ICT Certifications Differences in the Principals' and Teachers' Beliefs

<i>IV</i>		<i>N</i>	<i>M</i>	<i>SD</i>	Independent Samples T-Test Result			
					<i>t</i>	<i>df</i>	<i>P</i>	<i>MD</i>
ICT	Yes	47	4.240	0.502				
Certifications	No	102	4.380	0.448	-1.646	147	0.102	-0.140

The significance level is 0.05

The t-test was not statistically significant ($p = 0.102$, $p > 0.05$). The mean differences between those who did not have ICT certification ($M = 4.380$, $SD = 0.448$) and those who had ICT certifications ($M = 4.240$, $SD = 0.502$) was very small ($MD = -0.140$), indicating that the principals' and teachers' beliefs were not affected by whether or not they had ICT certifications. This lack of significance likely resulted from the fact that ICT certifications focus more on technical competencies than on technology-based teaching and learning pedagogies. Qualitative data was collected from the questionnaire's open-ended questions regarding the ICT certifications section. The researcher read and thematically analysed all of the comments of principals and teachers who responded that they had ICT certifications. The principals and teachers indicated several ICT certifications revolving around technical competencies, including the technical use of presentation software (e.g., PowerPoint), graphic creation (e.g., Photoshop), multimedia authoring (e.g., Flash), web design and blackboard learning management systems.

The third hypothesis stated that there are significant differences between principals' and teachers' beliefs about the benefits of technology use in teaching and learning according to their years of experience in technology-based teaching and learning. To determine the impact of years of experience on beliefs, a one-way ANOVA test was performed to compare the means of the different groups of independent variables and years of experiences (see Table 4).

Table 4

Years of Experience and Differences in the Principals' and Teachers' Beliefs

<i>IV</i>	<i>N</i>	<i>M</i>	<i>SD</i>	Source	One-Way ANOVA Result	
					<i>F</i>	<i>P</i>
Years of experiences	≤ 5 years	27	4.193	Between Groups	0.618	0.540
	6-9 years	37	4.282	Within Groups		
	10 years and above	85	4.313	Total		

The significance level is 0.05

The one-way ANOVA test demonstrated that there were no statistically significant differences between and within the three groups ($F = 0.618, p = 0.540, p > 0.05$). This finding was likely due to the small sample size (67 principals and 82 teachers) as there was a noticeable gradual increase in the mean belief total for principals and teachers when they had more years of experience in technology-based teaching and learning. The mean belief total for the group of principals and teachers who had ≤ 5 years of experience was 4.193, while the mean belief total for the group of principals and teachers who had 6–9 years of experience was 4.282. That figure increased to 4.313 for principals and teachers who had 10 years or more of experience.

Limitations and Future Research

Although the results of this study point to a strong alignment between principals' and teachers' beliefs regarding the benefits of technology use in teaching and learning, there are limitations that must be indicated. First, the participants were from secondary schools equipped with advanced technological infrastructure; they have PCs connected to broadband Internet and interactive whiteboards in their classrooms. Also, these schools were located in Jeddah, which is the second principal city in Saudi Arabia with advanced technological infrastructure in most secondary schools. Thus, it is expected

that the principals and teachers in Jeddah province would have more experience using ICT and learning compared to other parts of the country.

A related limitation of this study is that participants (principals and teachers) in this research are from boys' secondary schools in Saudi Arabia. According to the education system practiced in the country, boys' and girls' education strictly is segregated at all levels, including teaching staff. Therefore, the results of this investigation might not be generalizable to girls' secondary schools. As such, further research should be conducted to examine the relationship between principals' and teachers' beliefs in the country's female educational sector.

The third limitation to this study relates to the potential bias that may have resulted from using a questionnaire to investigate the complex phenomenon of principals' and teachers' beliefs. A more in-depth investigation of principal and teacher beliefs will be needed, using a mixed methodology with the incorporation of semi-structured interviews. Interviews based on survey questions may lead to further comparison of beliefs obtained by two instruments or help researchers to infer teachers' and principals' implicit beliefs.

Finally, this study only focused on the beliefs of principals and teachers. Future research could continue to examine the link between principals' and teachers' beliefs about the benefits of learning technology and classroom practices. Such research could aid in understanding consistencies and inconsistencies between principals' and teachers' beliefs and teachers' classroom practices of technology-based pedagogical approaches.

Practical Implications

Ultimately, this study aimed to increase understanding of how teachers' beliefs concerning technology use in teaching and learning relate to those of principals. Such an understanding could help create awareness among school principals about their potential effect on teachers' beliefs and behaviours and how these relationships may affect the classroom climate. The results showed that there is strong alignment between principals' and teachers' beliefs. Therefore, principals should think seriously about their pedagogical beliefs when they direct teachers' practices regarding learning technology

use in teaching and learning. They need to tailor their support to the teachers' different beliefs and practices, a practice which requires knowledge and experience. Keeping abreast of technology-based benefits, strategies, pedagogies and technical competencies will help principals successfully direct the use of learning technologies in teaching and learning. Identification of principals' and teachers' beliefs about the benefits of technology is the first step to updating skills and knowledge.

Conclusions and Implications

The current study is important and relevant for several reasons. First, it explores the beliefs of a group of 67 principals and 82 teachers in schools in Saudi Arabia equipped with technology. The participants provided a snapshot of what principals and teachers think, know and believe when they integrate technologies into the teaching and learning process. Participants expressed beliefs that were generated from learning theories. The first third strongly agreed with statements of principals' and teachers' beliefs are related to constructivist pedagogical beliefs such as improvement of research skills, the promotion of student learning inside and outside school and the belief that learning technologies converts teacher-centred teaching approaches to student-centred teaching approaches. As these three strongly agreed belief statements inform constructivist beliefs, Tamar and Rivka (2007) stated that such constructivist beliefs can meet students' needs and help students become independent learners. This findings is also linked with the existing literature noting that the principals with positive attitudes towards technology are more likely to positively affect the school use of technology than principals who might have negative beliefs about technology use (Plomp & Pelgrum, 1991).

Second, the study offers a significant contribution to the exploration of teachers' beliefs, which is consistent with principals' beliefs about the benefits of integrating technologies in the context of language teaching and learning. The study revealed the possible impact of principals' beliefs on teachers' beliefs. This finding supports Baylor and Ritchie (2002), who suggest that if teachers perceive that the administrators value and promote the use of technology, technology may be more widely valued and integrated in the classroom.

Finally, belief identification encourages principals to reflect on their own views and construct their views with teachers. Additionally, the study shows that principals' strong beliefs were higher than those of teachers. This may indicate that principals are the active decision makers and to a great extent similar to those recommended in the literature that the school leadership should create change-oriented environments supporting experimentation and innovation, as well as include teachers in the decision-making process (Reio Jr, & Lasky, 2007). This could be mean that principals who are strongly interested in technologies may reinforce the importance of integrating technologies, thereby directing and influencing its use by teachers in the classroom.

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Appendix

Questionnaire: Principals and teachers' beliefs about technology use in Saudi Arabia

*Technology: Interactive whiteboard, computers, Internet, educational software, generic software, digital projector, etc.

A. Demographic information

1. Years of experience ≤ 5 years 6-9 years 10 years and above
2. ICT Certification: No Yes, (Please provide details).....
3. Position Principal Teacher

B. Beliefs about technology use

Please rate your beliefs about the following benefits of technology use

- 1- I believe that technology accommodates students' personal learning preferences. Strongly Agree Agree Neutral Disagree Strongly Disagree
- 2- I believe that technology promotes students' learning both inside and outside school. Strongly Agree Agree Neutral Disagree Strongly Disagree
- 3- I believe that technology converts teacher-centred teaching approaches to student-centred teaching approaches. Strongly Agree Agree Neutral Disagree Strongly Disagree
- 4- I believe that Strongly Agree Neutral Disagree Strongly

technology maintains high expectations of students.

Agree

Disagree

5- I believe technology is more effective than traditional classroom learning.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

6- I believe that technology improves the research skills of teachers and students.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

7- I believe that technology enhances collaboration among students.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

8- I believe that technology can improve students' learning achievements.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

9- I believe that teaching which incorporates technology helps to organize student learning.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree