

# Teacher Self-Efficacy Beliefs and the Integration of Interactive Website Wikispaces Classroom

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## ABSTRACT

Some components of the knowledge and skills required for teaching using 21<sup>st</sup> century technology can be assessed with reasonable confidence. The researcher conducted a study intended to determine the factors that affect teacher self-efficacy—that is, their evaluation of their own competence using the interactive educational website Wikispaces Classroom in various teaching fields. The participants were 44 pre-service teachers from various levels of the education system. The study was based on qualitative and quantitative methods. To obtain the qualitative data, the researcher administered a pre-survey and post-survey to measure the teachers' self-efficacy beliefs regarding the integration of the interactive website at the initial use and after or teachers and asked them to clarify their perspectives on how high self-efficacy had affected their use of the interactive website. The researcher distributed a questionnaire to uncover these factors. The findings showed how the use of the technology affected the teachers' self-efficacy in their use of the interactive learning website.

## KEYWORDS

Interactive Website, Self-Efficacy, Technology Integration, Wikispaces Classroom

## INTRODUCTION

Technology has an essential role in society, and it is crucial in the field of education. Improvements in electronic information and communication-oriented systems and devices have enabled an expansion of the educational role of these technologies from being purely administrative aids, to facilitating interactive instruction. Improvements in technology have supported educators with numerous pedagogical tools (Owston, 1997; O'Donoghue, 2006). Smart-boards, data-shows, and a wireless Internet connection make it feasible to utilize didactic methods in the classroom that were not previously widely available. Policymakers and educational leaders now need to integrate this into curriculum design (Flanagan & Jacobsen, 2003). Thus, teachers have no choice but to keep themselves updated on new developments in technology.

In using technology, teachers' need should have particular attention. According to study done by Borko and Putnam (1996), the pedagogical approaches are important skills for teachers, but they do not guarantee to enhance the teaching quality. Researchers have recognized that self-efficacy with regard to technology integration has a major influence on teachers' digital skills, and that lack of these skills can obstruct their integration of technology (Bandura and Adams, 1977; Bingimlas, 2009). Thus, by embracing technology, teachers might expand their self-efficacy in their teaching

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experience. In turn, their students might appreciate their use of technology in teaching; thus, making learning more enjoyable.

The utilization of technology in education has driven the development of educational websites. In recent years, web 2.0 have been designed as learning aids that enable students to access educational materials themselves and interact with their teachers outside of the classroom. Teachers are thus required to understand how to incorporate this emerging technology into the educational process. There are various concerns about the pedagogical effectiveness of these technological developments, including concerns relating to teacher competence, and their own assessment of that.

The Saudi Arabian Ministry of Education has adopted a ten-year strategy to integrate information and communication technology into education (Computer and Information Centre, 2008, p. 2). One such technology is interactive websites, which the private school sector has been encouraged to adopt in its teaching (for example, wikis to improve students' language proficiency, especially writing skills). To the best of our knowledge, few studies in Saudi Arabia (SA) have investigated self-efficacy with using interactive websites in the population of early academic careers. Therefore, the aim of this research was to establish how teachers' perspectives on using web 2.0—Wikispaces Classroom—affect their self-efficacy with regards to utilising this technology to enhance the teaching process. A secondary aim of this study was to reveal factors that impact teachers' self-efficacy with regard to the use of an interactive website in teaching. The proposed study will be of significance to various stakeholders in the education sector. These include curriculum developers and educators, for whom this research will offer valuable information on preparing teachers to use technology effectively.

## **RESEARCH QUESTIONS**

This research is aimed at answering the following questions:

1. What is the difference in teachers' self-efficacy before and after using web 2.0?
2. What are teachers' perspectives on using web 2.0?
3. What factors affect teachers' perceptions of their own efficacy when using web 2.0?

## **LITERATURE REVIEW**

### **Self-Efficacy**

According to Bandura (1997), people with high levels of self-efficacy (i.e., those who believe in their ability to succeed and excel) are more likely to view a hard task as a challenge that requires mastering rather than as a problem to be avoided. Oliver and Shapiro (1993) define self-efficacy as a person's confidence in his or her ability to execute a particular undertaking. It influences decisions concerning what attitudes an individual will project and the energy an individual will expend on a task. In support of this, Ashton (1984) investigated teachers with high self-efficacy and found that they utilised more effective self-regulatory tactics. The person with higher self-efficacy is a motivated person who adopts specific behaviours to facilitate the performance of a particular task (Zimmerman, 2000; Bandura, 2001).

Self-efficacy is based on the principle that both external and internal elements influence human behaviour, determining what a person believes he can accomplish rather than what he can actually achieve (Bandura, 1997; Bandura, 2001). According to Henson (2002), teachers' thoughts about their teaching capacities will influence their teaching behaviours regarding self-efficacy. This causal relationship is normally indicative of triadic reciprocal causation or reciprocal determinism (Bandura, 1997). In support of this, Bandura (1997) and Albion (1999) identified two components of self-efficacy: efficacy expectation and efficacy outcome. With regard to the former, some studies suggest

that self-efficacy may influence decisions concerning attitudes with which activities are undertaken and determine how much effort is spent on them (Compeau & Higgins, 1995).

Moreover, self-efficacy may influence an individual's emotional response to his or her performance, as well as the individual's actual performance (Erdem, 2007). Pajares (1992, p. 325) states that 'Beliefs are instrumental in defining tasks and selecting the cognitive tools with which to interpret, plan, and make decisions regarding such tasks; hence, they play a critical role in defining behavior and organizing knowledge and information'.

In the context of SA, there are limited studies that have discussed teachers' self-efficacy when using technology. Previous studies have focused merely on students' self-efficacy when using web 2.0, such as examining the role of wikis in improving students' writing performance (Khan & Hameed, 2021) and students' perceptions towards integrating wikis in classroom learning (Aljafen, 2018).

### **The Importance of Teachers' Beliefs**

Teachers' lack of preparedness for the integration of technology begins at the pre-service stage. Reed et al. (1995), for example, reported computer anxiety in education majors due to a lack of computer experience. Teacher self-efficacy has an influence on the use of technology in classroom teaching. Facilitating positive self-efficacy with regards to technology will facilitate the successful integration of technology into contemporary teaching methods. According to Al-Awidi and Alghazo (2012, p. 938), instructors 'should encourage pre-service teachers to have positive attitudes and control over their thoughts and actions in order to help them to be active and reduce stress and negative attitudes'.

Self-efficacy increases a user's digital ability to teach with technology according to Albion (1996). He investigated the attitudes of teachers towards technology and the use of computers in elementary school classes, and the results indicated that low self-efficacy influenced their use of computers. Cassidy and Eachus (2002, p. 2) identify that 'Self-efficacy has repeatedly been reported as a major factor in understanding the frequency and success with which individuals use computers.

Educators who have high computer self-efficacy are more persistent at incorporating technology into meaningful learning experiences. Abbitt and Klett (2007)—who discovered that pre-service teachers' confidence with technology use was an imperative indicator of self-efficacy beliefs towards technology integration—support these results. Thus, when teachers' self-efficacy beliefs regarding the use of computers are increased, they are more likely to incorporate the use of computers into their classes as a teaching aid. Moreover, self-efficacy augments a teacher's routine by reinforcing perseverance, as well as the cognitive processing of information (Berry, 1987).

These studies suggest that teachers' self-efficacy beliefs are significant indicators of their levels of technology integration in practice. Belief is at the essence of why teachers adapt methods to improve pedagogical practices (Clark & Peterson, 1986). Teachers' conceptions of technology have a strong influence on their approval and utilisation of technological improvements (Henson, 2002). Therefore, self-efficacy determines how a teacher thinks, behaves and cultivates and maintains self-motivation with regards to adopting new teaching technologies.

### **Improving Self-Efficacy Beliefs**

One of Bandura's (1986) theory for improving self-efficacy, 'vicarious experience'—whereby other similar individuals are seen executing a behaviour successfully—is considered the most important. Vicarious experience facilitates the assessment of performance or capabilities in comparison to others.

Mastery experience is an effective tool for cultivating a stronger sense of efficacy in individuals whose performance is weak due to intense uneasiness and phobic defensive reactions (Bandura, 1994). It has been stated that pre-service teachers who have experience using technology may have higher levels of self-efficacy in integrating technology into teaching (Krause, 2010). Some researchers (Hoy & Woolfolk, 1990) have asserted that some dimensions decline during student teaching experience but experiencing success with the integration of technology seems to significantly increase self-efficacy.

From the perspective of self-efficacy theory, supporting and training instructors to work efficiently with computers within their teaching environments should be emphasised. According to Borchers et al. (1992), a skills development programme comprising various workshops for a given period could facilitate the development of both computer use and self-efficacy. This is best implemented in small steps. Brinkerhoff (2006) reported that after 90 hours of professional improvement, participants were more confident in their use of technology. When exposure and development occur over a lengthy period, there is adequate time to absorb the new technology gradually.

As well as investigating the effects of teacher training on reliable performance, Beers et al. (2000) also examined student awareness of classroom technology. Focusing on nine schools, these researchers interviewed and surveyed teachers and students from kindergarten through 12th grade. The teachers were placed in a training programme concentrating on the software packages Hyperstudio and PowerPoint. The training not only assisted the teachers in implementing the technology, but it also led them to further encourage their students to embrace technology. Additionally, Rakes et al. (2006) concluded that teachers who could utilise technology efficiently achieved more than their counterparts who could not.

### **Factors Affecting Teachers' Self-Efficacy**

Bandura (1986) describes four general sources of raised self-efficacy: verbal persuasion, vicarious learning experiences, physiological arousal and performance accomplishments. While these are considered standard, according to Henson (2002, p. 140), 'The investigation of factors that might influence efficacy is certainly warranted'. Therefore, the determination and understanding of particular features that play a significant role in improving efficacy beliefs regarding new technology constitutes an important step in increasing its use in the classroom.

Paraskeva et al. (2008) state that the personal characteristics, beliefs, self-efficacy and the behaviour of teachers should be considered when examining the effectiveness of new technologies in education. On the other hand, Kagima and Hausafus (2000) reported that higher education leaders can invest important resources into improving information technology infrastructure without facilitating faculty technology use.

Investigating the factors that affect faculty integration of technology is an important consideration when predicting the potential impact of these factors, particularly with regards to technology integration in teaching. Kagima and Hausafus (2000) concluded that there are strong relationships between computer self-efficacy and various factors that include computer experience, computer applications and gender—which are considered external factors. Additionally, lack of equipment (Pelgrum, 2001), lack of planning time (Sandholtz & Reilly, 2004) and lack of organisational support (Igbaria et al., 1995) can all influence teachers' self-efficacy.

The available literature is devoid of instruments to measure self-efficacy in teachers, specifically in relation to their use of interactive technology in the classroom. This study aims to contribute to the literature in this regard, investigating how technological developments are being incorporated into education and their effectiveness in aiding teaching and learning.

## **RESEARCH METHODOLOGY**

### **Research Design**

This study used a mixed research design, including both qualitative and quantitative methods. For the qualitative part of the study, an explanatory design was employed, group interview was used to determine teachers' perspectives. For the quantitative data, the Computer Technology Integration Survey (CTIS) was used to supplement and expand upon the findings from the qualitative part of the study.

## Participants

Random stratified sampling techniques were used when selecting the study participants. The researcher contacted 15 private school principals in the western region of SA via email to invite them to participate. Only five schools responded with their approval. Of the 60 teachers contacted, 44 from different disciplines in science and the humanities agreed to participate in this study, and they were each sent a pre-survey and a post-survey by email. The 44 teachers worked at three levels, elementary, middle and high, in SA. The teachers had recently started using an interactive website—Wikispaces Classroom—in teaching their courses. The sampling was undertaken after permission was granted from the relevant department administrators.

The teachers were of different nationalities: Canadian ( $n = 2$ ), Pakistani ( $n = 7$ ), Indian ( $n = 10$ ), Egyptian ( $n = 8$ ), Saudi ( $n = 14$ ) and American ( $n = 3$ ). Their ages ranged from 24 to 49 years. The average duration of their teaching experience in using computers was five years, while the duration of their experience in using the Wikispaces Classroom website was three months. The researcher chose to involve only teachers with short-term experience using the website in order to avoid '[generating] judgments about their academic capabilities without a clear activity or task in mind' (Pajares, 1996, p. 547).

After the pre-survey was collected, the participants received a free training course explaining how to use the website. The distribution of the participants' education levels was 60.2% with bachelor's degrees, 30.2% with master's degrees and 8.9% with PhD degrees. Male participants constituted approximately 64% of the sample ( $n = 28$ ), while approximately 36% ( $n = 16$ ) were female.

The pre-service teachers' conceptions were collected by examining their perceptions about using technology generally and its integration into teaching in particular. Their responses showed a willingness to use these technologies, and they reported favourable experiences and attitudes with regards to the integration of technology into teaching. Additionally, they indicated that technology-integrated teaching can be used to promote and facilitate learning outcomes, rendering learning more relevant to current students' interests. Their responses also suggested that technology-integrated teaching makes teaching more enjoyable and less tiresome. According to their perceptions, the propagation of confidence is a successful method for integrating teaching technologies into classrooms.

## Data Collection and Data Analysis

In the quantitative branch of the study, for the first research question, the researcher examined teacher self-efficacy. Quantitative data were collected using a survey instrument derived from the Computer Technology Integration Survey (CTIS) (Wang et al., 2004), and the data were gathered in two stages. These involved examining teacher self-efficacy integration during initial use and after and/or during the use of the interactive website Wikispaces Classroom (a pre-survey and a post-survey were taken).

The duration of data collection between the pre-survey and the post-survey was four months. The CTIS instrument (Wang et al., 2004) has been used to measure participant confidence and self-efficacy with regards to using interactive websites for teaching. Twenty-four well-worded questions are contained in the CTIS instrument, which are related to self-efficacy in effectively integrating technology into teaching. Every item is rated on a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree and 5 = strongly agree. The CTIS instrument was modified to suit the research topic with the addition of the following three items: 'I feel confident that I understand interactive website capabilities well enough to maximise them outside the classroom', 'I feel confident that I can answer the students' questions through online discussion' and 'I feel confident that I can carry out online and remote learning such as downloading video or managing an online discussion'. The researcher added these items in an effort to assess each teacher's ability to utilise and manage online tools and technology-based materials reliably. Improved combined totals on the CTIS scale provided a measure of improvement in self-efficacy with regards to the integration of technology into teaching modalities. By comparing the results of each survey, the researcher was able to measure teachers' self-efficiency during initial use and after the study. Comparisons of the

differences in self-efficacy beliefs towards using the Wikispaces classroom were performed using the repeated measures t-test, incorporating data from the pre-survey and the post-survey.

To address the second research question, which is What are teachers’ perspectives on using web 2.0?, the researcher interviewed 11 teachers. This sample of participants was chosen from those who reported high self-efficacy on the CTIS. The qualitative data obtained afforded deeper insights into teachers’ perspectives in relation to the use of the interactive website. This interview consisted of 10 semi-structured questions, both closed- and open-ended, in order to give the participants freedom to offer their perspectives. For example, teachers were asked, ‘How does the use of interactive websites affect your teaching methods?’, ‘In terms of significance, how do you rate or value interactive websites compared with other pedagogical technologies and why?’ and ‘How frequently/often would you use interactive websites in or out of the classroom?’ Teachers were asked to assign a rating for each prompt on a scale from one to five (5 being the strongest response and 1 being the weakest). These 10 semi-structured questions were coded inductively and collated into three themes fitting into three categories.

For the third research question, which is What factors affect teachers’ perceptions of their own efficacy when using web 2.0, the researcher used an open-response questionnaire as a qualitative instrument. This enabled consideration of the factors that influence self-efficacy with regard to the educational use of technology. The open-response items were useful for instrument development and validation. All 44 participants completed this questionnaire. It included 12 key questions, analysed in accordance with a code and predetermined categories. Once the factors were collated in accordance with the code, they were divided into two categories: external factors and internal factors. These categories represent the impact of the factors on the self-efficacy of personal, environmental and behavioural beliefs according to Bandura (2001).

## RESULTS

### Changes in Teachers’ Self-Efficacy

The repeated measures t-test was used to compare the means of the pre-test and post-test scores for teachers’ self-efficacy when using an interactive website. The results indicated that there was a significant increase in teachers’ self-confidence ( $t = -4.940, p = 0.01$ ). The total mean score of the pre-test was 3.5671 (SD = 0.6728), while the mean score of the post-test was 4.11 (SD = 0.5071). The analyses indicated that there were significant changes in the mean score for all items except three questions. Table 1 summarises the mean values and repeated measures t-test test results with regards to the pre- and post-tests for teacher self-efficacy.

Table 1. Change in teacher’s self-efficacy before and after using an interactive website

	Pre-test		Post-test		t.score
	M	SD	M	SD	
1. I feel confident that I understand interactive website capabilities well enough to maximize them in my classroom.	3.625	0.897	4.025	0.974	-2.046*
2. I feel confident that I understand interactive website capabilities well enough to maximize them outside the classroom.	3.650	1.210	4.275	0.933	-2.502*
3. I feel confident that I have the skills necessary to use the interactive website for instruction.	3.500	1.084	4.237	1.025	-3.063**

Table 1 continued on next page

Table 1 continued

	Pre-test		Post-test		t.score
	M	SD	M	SD	
4. I feel confident that I can successfully teach subject content with appropriate use of the interactive website.	3.615	1.138	4.051	0.916	-2.211*
5. I feel confident in my ability to evaluate the interactive website for teaching and learning.	3.600	1.128	3.950	0.986	-1.798
6. I feel confident that I can use correct interactive website terminology when directing my students' computer use.	3.425	1.083	3.975	0.891	-2.855**
7. I feel confident I can help students when they have difficulty in using the interactive website	3.615	1.091	4.077	0.957	-2.573*
8. I feel confident I can effectively monitor students' project-based learning in or outside my classroom	3.425	1.238	4.225	0.947	-3.766**
9. I feel confident that I can motivate my students to participate in interactive website -based projects.	3.846	1.159	4.154	0.844	-1.551
10. I feel confident I can mentor students in appropriate uses of the interactive website.	3.410	1.044	4.077	0.984	-2.931**
11. I feel confident I can consistently use the interactive website in effective ways.	3.325	0.997	4.150	1.051	-3.901**
12. I feel confident I can provide individual feedback to students when they are using the interactive website.	3.325	0.997	4.100	0.744	-4.287**

### Instructors' Perceptions on the Use of the Interactive Website

Participants were urged to share their viewpoints and experiences pertaining to their usage of interactive teaching technology. The information showed three major themes specific to the usage of interactive technology in teaching: facilitating the teaching and learning process, enhancing teaching and learning methods and improving the efficacy of teachers and learners.

#### *Theme One: Facilitating Teaching and Learning Processes*

Participants found this technology to be helpful because the teachers could trace each learner's progress, projects and activities in real time. It makes it possible to discriminate the students who are succeeding from those who are not by the progress they are making on their projects. This information was useful when suggesting remediation and motivation, and it was a task occasionally. Teachers were also able to make progress with the outcomes by closely monitoring student advancement in the learning process. Generally, the technology can highlight a learner's weak areas that have not been previously identified. In addition, the technology is suitable for remote and online modes of learning. Interactive websites promote positive learner participation and also assist teachers to recognise and support

learners who need their assistance; hence, these websites were highly rated. According to Teacher A, the interactive teaching website helped teachers track learners' improvements both in individual activities and in project-based learning. The assistive interactional technology greatly boosted the tracking of learner outcomes. Moreover, the interactive website greatly supported discussion forums. Additionally, it assisted even the less confident students to join in. The participants reported that the website could transform their classrooms into technology-enhanced learning environments. Teacher D said the following:

*The incorporation of interactivity may transform classrooms into technology- enhanced learning environments which support, to a large extent, innovation, achievement and success. Students absorbed and understood information more easily than they do when taught via theory and verbal explanations alone, and they enjoyed studying as well.*

Most of the participants stated that the interactive website facilitated a dynamic teaching approach in which the learners have the opportunity to explore real-world problems and appreciate real challenges. This active and engaged learning inspires students to obtain deeper knowledge in the subjects they are studying. One participant commented that:

*The incorporation of simulation multimedia such as videos and sound save us time when explaining complex mathematical models and difficult concepts. Using an interactive website helps the teacher to give the students freedom to participate in discussion forums, even discuss the hazards and problems related to science projects. Often, they help each other by sharing tips and advice. Thus, learners are able to find information related to what they are studying in class and share this information via interactive websites.*

### ***Theme Two: Improving Teaching and Learning Methodology Through Technology***

New technology can change a teacher's view and teaching methods, moving them away from traditional, one-sided modes of teaching and towards more inclusive and interactive approaches. This encourages the active participation of students in the learning process, while the teacher serves as a facilitator. Thus, instead of the classroom being teacher centred, it becomes student centred. Teacher O commented that interactional websites are helpful in the classroom as well as in the external world. Conventionally, classrooms have been confined to four walls, a chalkboard and lines of chairs and tables. Many teachers still think that the conventional tools for learning, including teaching boards, textbooks and worksheets, are sufficient; in many classrooms, teaching entails one-way involvement, with the teacher at the front, instructing learners who grasp the facts taught inactively to reiterate the same on examinations. In contrast, technology assists learners to accumulate a large quantity of knowledge about any specific topic and is created for forum-based interaction. Therefore, learners can review a topic taught in class in collaboration with each. Moreover, excellence in teaching is achieved, which enables learners to gain knowledge in a simpler way.

Furthermore, interactive websites encourage teachers to use various internet resources, accompanying subject content and teaching tools. Therefore, a teacher is able to simply embed content directly from the web, such as video clips, explanatory images, polls and relevant documents for teaching the content as they deem appropriate, into the syllabus. The website provides a simple-to-use platform that allows teachers to create lesson projects, organise teams for classroom projects, assign tasks to students and, ultimately, develop classroom management strategies. This supportive approach promotes student motivation. It builds collaborative knowledge through work-group communities because it is easy to create not only individual projects but also group assignments within seconds. This increases the ease of technological integration into the learning curriculum. Teacher M said this:

*Interactive websites are so significant because we can upload a lot of multimedia, such as a podcast or video, so that the students can gain knowledge from authentic material. I can upload classroom activities instead of using copious amounts of paper. Thus, we can save our environment. I can assign projects to my students online using technological tools. I follow their progress on projects and motivate my students online. At the end of their projects, they can share their results with their class and their parents.*

Thus, these interactive technologies offer a platform on which teachers and learners can communicate and team up, even when away from the classroom. These technologies develop learner and class capabilities to participate, learn and accomplish classroom goals. One teacher asserted that learners could take part in discussions and could communicate the data of their exploratory tests with one another. This indicates that interactional websites are useful in aiding teachers to link with learners and other teachers from various parts of the world. Thus, teachers can gain knowledge about various teaching methodologies. In addition, students can check educational assignments by accessing their teacher's webpage. Consequently, interactive websites improve teachers' capabilities to connect with their learners.

### ***Theme Three: Improving the Efficacy of Both Teachers and Learners***

In the opinion of one of the teachers, the website improved both students' and teachers' discussion skills. Its use helped the teachers give the students enough freedom to participate in discussion forums. It engendered a spirit of collaboration, critical thinking and technology skills, which students need to conduct advanced research in an interactive and collaborative environment. Teachers stated that these interactive websites offer platforms away from the classroom on which teachers and learners can communicate and team up in a pleasant ecosystem. Interactive technology equips teachers with the knowledge required to answer students' questions. It helps teachers explore ways to involve their students and mediate the network-learning framework. Interactive websites are particularly useful compared to other pedagogical technologies because they increase social interaction among learners and create a comfort zone and an open platform for them to interact in and experience peer learning.

Since it is new and trendy, students enjoy interacting via social media sites and interactive websites. One teacher added that with the use of interactive platforms, teachers are equipped with the skills to address learners' queries and impart knowledge to their learners with various online tools. In addition, it helps teachers to upgrade their teaching abilities. Moreover, the site advances teachers' skills in technical problem solving. Consequently, teachers can motivate learners to work on their projects innovatively. When teachers first begin to use interactive websites, they may encounter technical difficulties. The site develops teachers' abilities to solve technical problems. Teacher R commented that being part of professional advancement workshops to enhance skills makes it simple to guide learners on the use of information technologies for learning and to resolve technical issues when learners need assistance.

### **Features that Influence Self-Efficacy**

Based on an analysis of the data, the factors affecting self-efficacy of teachers were broadly classified into internal and external factors. These were further categorised in terms of their relationship to high self-efficacy, mild self-efficacy and low self-efficacy.

#### ***Internal Factors***

Teachers' beliefs on the importance of integrating interactive websites into education and improving their skills has been investigated. Teachers may have low self-efficacy if they have low-level academic qualifications, if they are not willing to accept change or if they are just looking to complete the course. Teacher W said this:

*In some schools there is a poor level of academic staff, and there is rigidness; they aren't accepting of change. They are motivated solely by the need to earn an income, rather than the act of teaching itself. Most of my colleagues think that this technology-based method of teaching is useless. But these websites should be a part of teaching.*

Teachers may be encouraged to learn about new teaching methods via workshops and seminars. Teachers can attend online forums to help them learn how technology can be used for teaching and learning. By attending workshops, teachers can polish their skills. Some of those who have attended workshops, even once, noted that the use of various tools is taught, while guidelines are provided to teachers to use this technology. Others not only attended the workshops but also conducted professional development workshops and conferences using such platforms. One teacher said this:

*This is the passion of many teachers. I try as much as possible to stay informed by reading articles and information online, but I have not attended any workshops to improve my skills because they are very rare in my area. I mostly push myself towards finding information and cultivating skills. It's all learned through self-persistence and need.*

### ***Students' Beliefs and Behaviours Relating to Interactive Website Technology***

Unfortunately, not all students can be convinced to participate either in project-based learning or in online discussion. How a teacher motivates students to participate in the learning process is important, but there are other factors at play. A student's performance and behaviour are difficult to direct or control with regards to online discussion. It follows that the teacher must take the initiative of setting up motivators that would commit the student to using the interactive technologies productively. Teacher H stated that certain learners did not have the enthusiasm to accept the new learning setup and to learn from multimedia forums. Such learners have to be motivated to become involved with the new technology by their teachers.

### **External Factors**

#### ***Mastery, Experience and Inadequate Training***

Mastery can be achieved by conducting training sessions on the latest interactive technologies. This includes encouraging teachers to appreciate that through interactive websites they can learn to use new technology. Teacher A said, 'If this method can assist any teacher in mastering the use of interactive websites, they will then have a chance to express their knowledge using such websites'.

The participants were asked if they had the skills to carry out training sessions for their colleagues. Many of the participants admitted to not having any capability, while others conveyed positivity. An unenthusiastic participant stated that they did not have sufficient proficiency to conduct a workshop and that they only had the ability to help their co-workers in school to guide them on the use of the website. In addition, they trained learners to present pictures and videos, which indicated what they studied and gained knowledge about in the class. One pessimistic participant said:

*I do not have enough experience to run a workshop. The only experience I have is helping my colleagues in our school. I mostly show them how to use this website. Also, I did train students on how to present videos and pictures that represented what they learned and developed in class.*

By conducting workshops, one does not merely contribute to the training of colleagues but can also help arrange online sessions for them to teach one another. It can make them aware of the importance of using the websites. Training workshops can be designed to assist colleagues in understanding the benefits of using interactive websites in teaching. By using interactive websites, it is possible to

train and develop the skills of others in a more effective way. Participants stressed these benefits by admitting that they could conduct interactional learning workshops. One of the participants stated:

*Being an ICT project head, they have helped tutors to understand several techniques and interactional methods, which make their lives and work simpler. Of those who were scared of not enthusiastically taking part in training others at forums, it was mainly because they considered themselves incompetent to train their co-workers. In addition, they felt that they needed more time to advance their own capabilities.*

### **Time Consuming**

The time spent going through different sites and searching for required material is extensive for many users, meaning that teachers generally need to devote extra time to this task. Teacher M emphasised that teachers are required to dedicate additional time to include web-based content in their classes, which is not feasible more frequently than twice a week. Moreover, learners may not have the additional time needed to take part in online tasks after completing their days at school.

### **Accessibility of Resources**

#### ***Supporting the Educational Institution***

Participants constantly emphasised that they needed knowledge advancement and implementation of practical methodologies of teaching. Teacher S asserted that as they were running private coaching classes, they offered workshops occasionally to motivate learners to use interactive websites, which are fairly effective.

In contrast, Teacher Z commented that the educational institution provided insufficient training programmes because of inadequate funds. It is common to confront technical issues when a teacher handles a novel technology. Teacher Y asserted that teachers generally encounter technical issues, such as the appearance of technical terms on the screen. In such a situation, they need the help of technical support specialists at their schools to assist them in troubleshooting. Some teachers and learners do not have computers or Wi-Fi connections in their homes or schools. Unfortunately, a feeble or undependable internet connection can hinder the tracking of learners' advancement. Such problems weaken teachers' self-reliance and efficiency in applying these methodologies in their teaching.

## **DISCUSSION**

The study revealed the teachers' perspectives regarding the use of technology to teach and how this influenced their self-efficacy in adopting new technology, such as the interactive website. The researcher used the CTIS, which employs a five-point Likert scale, to determine the difference in teachers' self-efficacy. A considerable increase in self-efficacy concerning integrating the interactive website occurred in the teachers who were exposed to various teaching experiences. The results of this study support various other studies, such as Ohmart (1992), Adams (1982), Housego (1992), Ertmer et al. (2003) and Salah (2008). These previous studies indicate that teachers with high self-efficacy tend to have a positive attitude towards using technology and derive more benefits when adopting such technology to help them achieve their goals.

According to Bandura (1977), performance accomplishments '[are] especially influential' because they are 'based on personal mastery experiences' (p. 195). The teachers expressed various perspectives on integrating an interactive website in their teaching. Some teachers stated that the website had transformed their classrooms by enhancing the learning environment, that students seemed to build collaborative knowledge communities and that it was easier and faster to design group or individual assignments. Moreover, using this technology enabled the exploration of real-world challenges, and

with this type of engaged and active learning, the students were inspired to pursue deeper knowledge of their subjects (Molebash & Dodges, 2003; Robert, 2003; Hopson & Simms, 2002).

Most of the teachers reflected that this new technology enhanced their pedagogical practice and learning and also changed the teachers' views on technology integration. According to Ertmer and Ottenbreit-Leftwich (2010), teachers' beliefs can play a significant role in successfully incorporating technology into the classroom setting and, more importantly, in the teacher's decision to use technology for instructional purposes. Some teachers stated that the website aided their teaching by enhancing both their own efficiency and that of the students. The interaction between the teachers and students increased, allowing for instantaneous feedback on both sides (Barker et al., 1989). Further, the technology gave the teachers a sense of 'ingenuity' in acquiring the skills needed to engage their students in using the electronic classroom technology and increase interaction (Davie & Wells, 1991). Without interaction, the teaching process is simply 'passing on content as if it were dogmatic truth' (Shale & Garrison, 1990).

The results of this study support Bandura's social cognitive theory, in which various patterns of factors, including personal, behavioural and environmental factors, affect one's self-efficacy. Negative attitudes towards insufficient integration, a lack of resources and equipment in the classroom and unsuccessful experiences are existing barriers that affect self-efficacy. The participants suggested that more workshops on the integration of technology would be beneficial, but time is always a concern.

According to Inan and Lowther (2010), a teacher's decision to use technology is based on the level of support that he or she receives. Moreover, instructors also feel that much time is spent on controlling students' behaviour and motivating them rather than on classroom instruction. Various explanations have been given for this unforeseen outcome, including that students may have specific expectations of technology and may no longer view it as assisting their learning (Christensen, 1999). Furthermore, it may also be that technology is not applied in a convenient way but is used as a transformative, student-centred tool for learning (Burbules & Callister, 2000). Therefore, these technological tools must follow a suitable pedagogy to be used in effective ways (Laurillard, 2002). As McFarlane (1997) indicated, using technology without a clear purpose and inventive tasks has little value.

## Implications

This implication is aimed at being useful to both teachers and policymakers to provide effective web 2.0 teaching. Language teachers should be trained to deliver online education and online learning tasks to elevate learners' involvement (Alashwal, 2019), and mentoring plans should be formulated so that skilled teachers with greater self-efficacy can demonstrate online teaching and online classroom supervision and evaluation to those who are less assured in their teaching.

Furthermore, the results highlighted the significance of creating a community, specifically with teachers' involvement and collective work, which led to the success of this programme (Al-Saggaf, 2004). Hence, policymakers should promote social learning with associations based on shared involvement, a well-supervised community and teachers' willingness to adopt leadership positions to maintain and foster analysis.

It is important to offer training or workshops where these would become an integral portion of the efforts of academic and technological designers. This will also promote a fruitful teaching practice, professional advancement, self-efficacy, enhanced assurance and elevated enthusiasm (Albalawi, 2007). Moreover, providing fixed seminars or induction for these teachers can serve as a medium for pedagogical methodologies employing web 2.0 aids.

In addition, there is a need for recurrent evaluation of the teaching methodologies and technology planning that teachers employ so that the application of the latest internet tools can be incorporated in education (Assulaimani, 2019). Such assessment will help to enhance the capability of school structures to offer the superior quality system assistance needed to achieve efficient technology application, particularly organisational assistance for efficient training and application; skilled

advancement; technical assistance for hardware, software and network setup; technology development; and programme assessment.

## **CONCLUSION**

The continued emergence of new technology is presenting new opportunities that teachers and students can use to enhance the teaching and learning process. The newly developed interactive website for learning, Wikispaces Classroom, presents a platform that teachers can use to enhance education. This technology, however, poses challenges to teachers regarding their self-efficacy in adopting such interactive educational tools as teaching aids. Notwithstanding a variety of related theoretical works and empirical studies, there is a lack of literature on this precise subject. This study sought to clarify various concerns related to the adoption and use of an interactive website in teaching.

## **CONFLICT OF INTEREST**

The authors of this publication declare there is no conflict of interest.

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## REFERENCES

- Abbitt, J., & Klett, M. (2007). Identifying influences on attitudes and self-efficacy beliefs towards technology integration among pre-service educators. *Electronic Journal for the Integration of Technology in Education*, 6(1), 28–42.
- Adams, D. (1982). Teacher development: A look at changes in teacher perceptions and behavior across time. *Journal of Teacher Education*, 33(4), 40–43. doi:10.1177/002248718203300410
- Al-Awidi, M., & Alghazo, I. M. (2012). The effect of student teaching experience on preservice elementary teachers' self-efficacy beliefs for technology integration in the UAE. *Educational Technology Research and Development*, 60(5), 923–941. doi:10.1007/s11423-012-9239-4
- Al-Saggaf, Y. (2004). The effect of online community on offline community in Saudi Arabia. *The Electronic Journal on Information Systems in Developing Countries*, 16(1), 1–16. doi:10.1002/j.1681-4835.2004.tb00103.x
- Alashwal, M. (2019). *Faculty Perceptions and Use of Web 2.0 Tools in Saudi Arabian Higher Education* [Doctoral dissertation]. University of Central Florida.
- Albalawi, S. (2007). *Critical factors related to the implementation of web-based instruction by higher-education faculty at three universities in the Kingdom of Saudi Arabia* [Doctoral dissertation]. University of West Florida.
- Albion, P. (1999). Self-efficacy beliefs as an indicator of teachers' preparedness for teaching with technology. In *Proceedings of the 10th International Conference of the Society for Information Technology and Teacher Education (SITE 1999)* (pp. 1602-1608). Academic Press.
- Albion, R. (1996). Student-teachers' use of computers during teaching practice in primary classrooms. *Asia-Pacific Journal of Teacher Education*, 24(1), 63–73. doi:10.1080/1359866960240106
- Aljafen, S. (2018). *Traditional VS. Wiki: Saudi Students' Performance in and Perceptions of Collaborative Writing in Wiki* [ Doctorate Dissertation]. The University of Tennessee.
- Ashton, P. (1984). Teacher efficacy: A motivational paradigm for effective teacher education. *Journal of Teacher Education*, 35(5), 28–32. doi:10.1177/002248718403500507
- Assulaïmani, T. (2019). The future of teaching English in Saudi Arabia. *Universal Journal of Educational Research*, 7(8), 1623–1634. doi:10.13189/ujer.2019.070801
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. doi:10.1037/0033-295X.84.2.191 PMID:847061
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71–81). Academic Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1–26. doi:10.1146/annurev.psych.52.1.1 PMID:11148297
- Bandura, A. (2002). Social cognitive theory in cultural context. *Applied Psychology*, 51(2), 269–290. doi:10.1111/1464-0597.00092
- Bandura, A., & Adams, E. (1977). Analysis of self-efficacy theory of behavioral <sup>change</sup>. *Cognitive Therapy and Research*, 1(4), 287–310. doi:10.1007/BF01663995
- Barker, O., Frisbie, G., & Patrick, R. (1989). Concepts: Broadening the definition of distance education in light of the new telecommunications technologies. *American Journal of Distance Education*, 3(1), 20–29. doi:10.1080/08923648909526647
- Beers, M., Paquette, K., & Warren, J. (2000). Student view of classroom technology use. *Society for Information Technology and Teacher Education International Conference*, 2000(1), 1534-1538.

- Berry, M. (1987, September). *A self-efficacy model of memory performance*. Paper presented at the meeting of the American Psychological Association, New York.
- Bingimlas, A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science and Technology Education*, 5(3), 235–245. doi:10.12973/ejmste/75275
- Borchers, A., Shroyer, G., & Enochs, G. (1992). A staff development model to encourage the use of microcomputers in science teaching in rural schools. *School Science and Mathematics*, 92(7), 384–391. doi:10.1111/j.1949-8594.1992.tb15614.x
- Borko, H., & Putnam, R. (1996). Learning to teach. In D. Berliner & R. Calfee (Eds.), *Handbook of educational psychology* (pp. 673–708). MacMillan.
- Brinkerhoff, J. (2006). Effects of a long-duration, professional development academy on technology skills, computer self-efficacy, and technology integration beliefs and practices. *Journal of Research on Technology in Education*, 39(1), 22–43. doi:10.1080/15391523.2006.10782471
- Burbules, N., & Callister, T. Jr. (2000). *Watch IT: The promises and risk of new information technologies for education*. Westview Press.
- Cassidy, S., & Eachus, P. (2002). Developing the computer user self-efficacy (CUSE) scale Investigating the relationship between computer self-efficacy, gender and experience with computers. *Journal of Educational Computing Research*, 26(2), 133–153. doi:10.2190/JGJR-0KVL-HRF7-GCNV
- Christensen, K. (1999). *A comparison of student performance in human development classes using three different modes of delivery: Online, face-to-face, and combined* [Doctoral dissertation]. Drake University.
- Clark, M., & Peterson, L. (1986). Teachers' thought processes. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 255–296). Macmillan.
- Compeau, R., & Higgins, A. (1995). Computer self-efficacy: Development of a measure and initial test. *Management Information Systems Quarterly*, 19(2), 189–211. doi:10.2307/249688
- Davie, E., & Wells, R. (1991). Empowering the learner through computer-mediated communication. *American Journal of Distance Education*, 5(1), 15–23. doi:10.1080/08923649109526728
- Erdem, M. (2007). Self-efficacy levels of teachers in information and computer literacy. *World Applied Sciences Journal*, 2(4), 399–405.
- Ertmer, P., Conklin, D., Lewandowski, J., Osika, E., Selo, M., & Wignall, E. (2003). Increasing preservice teachers' capacity for technology integration through the use of electronic models. *Teacher Education Quarterly*, 30(1), 95–112.
- Ertmer, P., & Ottenbreit-Leftwich, T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education*, 42(3), 255–284. doi:10.1080/15391523.2010.10782551
- Flanagan, L., & Jacobsen, M. (2003). Technology leadership for the twenty-first century <sup>principal</sup>. *Journal of Educational Administration*, 41(2), 124–142. doi:10.1108/09578230310464648
- Henson, R. (2002). From adolescent angst to adulthood: Substantive implications and measurement dilemmas in the development of teacher efficacy research. *Educational Psychologist*, 37(3), 137–150. doi:10.1207/S15326985EP3703\_1
- Hopson, H., Simms, L., & Knezek, A. (2002). Using a technology-enriched environment to improve higher-order thinking skills. *Journal of Research on Technology in Education*, 34(2), 109–120. doi:10.1080/15391523.2001.10782338
- Housego, B. (1992). Monitoring student teachers' feelings of preparedness to teach and teacher efficacy in a new elementary teacher education program. *Journal of Education for Teaching*, 18(3), 259–272. doi:10.1080/0260747920180304
- Hoy, K., & Woolfolk, E. (1990). Socialization of student teachers. *American Educational Research Journal*, 27(2), 279–300. doi:10.3102/00028312027002279

- Igbaria, M., Iivari, J., & Maragahh, H. (1995). Why do individuals use computer technology? A Finnish case study. *Information & Management*, 29(5), 227–238. doi:10.1016/0378-7206(95)00031-0
- Inan, A., & Lowther, L. (2010a). Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development*, 58(2), 137–154. doi:10.1007/s11423-009-9132-y
- Kagima, K., & Hausafus, O. (2000). Integration of electronic communication in higher education: Contributions of faculty computer self-efficacy. *The Internet and Higher Education*, 2(4), 221–235. doi:10.1016/S1096-7516(00)00027-0
- Khan, I., & Hameed, M. (2021). An analysis of Wiki writing on writing performance in Saudi EFL learners: Exploring new pedagogies in COVID times. *TESOL International Journal*, 16(1), 57–72.
- Krause, J. (2010). *The impact of physical education student teaching experiences on technology integration self-efficacy*. University of Virginia.
- Laurillard, D. (2002). *Rethinking university teaching: A framework for the effective use of educational technology* (2nd ed.). Routledge. doi:10.4324/9780203160329
- McFarlane, A. (1997). What are we and how did we get here? In A. McFarlane (Ed.), *Information technology and authentic learning: Realizing the potential of computers in the primary classroom*. Routledge.
- Merriam, S. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Molebash, P., & Dodge, B. (2003). Kickstarting inquiry with webquests and web inquiry projects. *Social Education*, 67(3), 158–162.
- O'Donoghue, J. (Ed.). (2006). *Technology supported learning and teaching: A staff perspective*. IGI Global. doi:10.4018/978-1-59140-962-5
- Ohmart, H. (1992). *The effects of an efficacy intervention on teachers' efficacy feelings* [Unpublished doctoral dissertation]. University of Kansas.
- Oliver, A., & Shapiro, F. (1993). Self-efficacy and computers. *Journal of Computer-Based Instruction*, 20, 81–85.
- Owston, D. (1997). The world wide web: A technology to enhance teaching and Learning. *Educational Researcher*, 26(2), 27–33. doi:10.2307/1176036
- Pajares, F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307–332. doi:10.3102/00346543062003307
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543–578. doi:10.3102/00346543066004543
- Paraskeva, F., Bouta, H., & Papagianni, A. (2008). Individual characteristics and computer self-efficacy in secondary education teachers to integrate technology in educational practice. *Computers & Education*, 50(3), 1084–1091. doi:10.1016/j.compedu.2006.10.006
- Pelgrum, J. (2001). Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. *Computers & Education*, 37(2), 163–178. doi:10.1016/S0360-1315(01)00045-8
- Rakes, C., Fields, V. S., & Cox, K. E. (2006). The influence of teachers' technology use on instructional practices. *Journal of Research on Technology in Education*, 38(4), 409–424. doi:10.1080/15391523.2006.10782467
- Reed, W., Ervin, J., & Oughton, J. (1995). Computers and elementary education students: A ten-year analysis. *Journal of Computing in Education*, 27(3), 297–317.
- Robert, S. (2003). *Using computer and technology in the social studies classroom: A study of practical pedagogy* [Unpublished doctoral dissertation]. Georgia State University, Atlanta, GA.
- Salah, K. (2008). Computer self-efficacy of university faculty in Lebanon. *Educational Technology Research and Development*, 56(2), 229–240. doi:10.1007/s11423-007-9084-z
- Sandholtz, J., & Reilly, B. (2004). Teachers, not technicians: Rethinking technical expectations for teachers. *Teachers College Record*, 106(3), 487–512. doi:10.1111/j.1467-9620.2004.00348.x

Shale, D., & Garrison, D. R. (1990). Education and communication. In D. R. Garrison & D. Shale (Eds.), *Education at a distance* (pp. 23-39). Malabar, FL: Robert E. Krieger Publishing Company.

Wang, L., Ertmer, P., & Newby, T. (2004). Increasing preservice teachers' self-efficacy beliefs for technology integration. *Journal of Research on Technology in Education*, 36(3), 231–250. doi:10.1080/15391523.2004.10782414

Watters, J., & Ginns, I. (1995). *Origins of, and changes in preservice teachers' science teaching self-efficacy*. Paper presented at the Annual Meeting of National Association for Research in Science Teaching, San Francisco, CA.

Yan, W., & Piper, D. (2003). The relationship between leadership, self-efficacy, computer experience, attitudes, and teachers' implementation of computers in the classroom. *Society for Information Technology and Teacher Education International Conference, 2003*(1), 1057-1060.

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