BLENDED LEARNING IMPLEMENTATION IN SECONDARY EDUCATION FOR GIRLS: CASE STUDY TATWEER PROJECT IN SAUDI ARABIA

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ABSTRACT

Blended learning (BL) has been the subject of much research recently, and the present research adds to this growing body of knowledge as the first substantial study on BL in secondary education for girls in Saudi Arabia. Based on field work comprising interviews and questionnaires this research reports the results of an exploratory, empirical case study of a large-scale programme (Tatweer project) for the introduction of blended learning into 25 traditional secondary girls' schools in Saudi Arabia. Adopting the interpretive research paradigm the objective of the study is to gain rich insight into blended learning guided by the effect of BL on female education. The study demonstrates a number of positive effects of BL on students' engagement and self-development, however, problems with the workloads of students and the failure of teachers to integrate face-to-face learning with e-learning are also observed. Throughout the research Sharpe et al.'s (2006) 8-dimensional framework of BL is applied in a new way to assess the implementation level of BL. This results in the recommendation to extend this framework with an ethical dimension. Further recommendations of the work are to actively seek feedback from key stakeholder groups during BL implementation, to use BL for teacher training in BL, and to measure performance indicators like students' workloads during the transition of traditional schools to BL.

Keywords: Blended learning, transition to blended learning, female education, Tatweer project, Blended learning theory.

INTRODUCTION

Information technology has become an indispensible part of education in many countries, and some experts even predict the 'death of classroom textbooks', because they suppose that pupils will in future access textbooks electronically, e.g., with smartphones and e-readers (Garner, 2011). As a result the effective use of ICT in education has become a major focus of research in IS and education, which has resulted in a considerable body of knowledge and a number of practical approaches (Schmid et al., 2009, Tamim et al., 2011). Two of the more widely studied and adopted approaches for the use of ICT in education are e-learning (Dyke et al., 2007, Hung, 2012, Kariuki Njenga and Fourie, 2010, Keramati et al., 2011, Paechter and Maier, 2010) and blended learning (Bliuc et al., 2007, Garrison and Vaughan, 2008, Harnisch and Taylor-Murison, 2011, Heinze, 2008, Lin and Wang, 2012, López-Pérez et al., 2011, Mitchell and Honore, 2007, Sharpe et al., 2006, So and Bonk, 2010). Of these two approaches e-learning is the broader concept as it includes any use of ICT for the purpose of education, including pure online learning. Blended learning on the other hand, focuses on the effective integration of face-to-face teaching with e-learning and can therefore be seen as an approach in the middle of the spectrum of e-learning (Heinze, 2008). Recent research

demonstrates that the adoption and integration of information and communication technology (ICT) in education in practice is still a challenge. Two main areas have repeatedly been shown to play a critical role in the success of ICT integration in education. These are the professional development of teachers and organisational support for teachers (Benson and Anderson, 2010, Davis et al., 2009, Lawless and Pellegrino, 2007, Owston et al., 2008). For this reason these two areas receive special attention in this study. Regarding the extant body of research on ICT integration in education two observations can be made. First, most of it has focused on higher education, whereas secondary schools have received less attention (Harnisch and Taylor-Murison, 2011, Inan and Lowther, 2010). Second, most of the research took place in the US, the UK and other European countries, but very little was conducted in Arab countries (Al-Senaidi et al., 2009). These observations indicate a gap in the literature and the study presented in this research is an attempt to address this gap with an empirical, exploratory case study of the introduction of blended learning in secondary girls' schools in Saudi Arabia. In relation to the extant literature on blended learning this study can provide new insight because it was carried out in secondary schools, took place in an Arab country, and focused on female education. The focus on female education is a deliberate choice which is motivated by the fact that it is a relatively recent phenomenon in Saudi Arabia (Sabbagh, 1998, Baki, 2004). Political, cultural and religious factors dominate female education in the country in ways that are profoundly different from the situation in the US or European countries (Al-Mohame, 2008, Doumato, 2010, Hamdan, 2005). Accordingly, this aspect has found little attention in research on blended learning in the literature to date, and the present study aims to contribute to the literature in this area as well. The research setting is the Tatweer project (Tatweer 2010), which is a well-funded programme that aims at schools in Saudi Arabia which follow the traditional mode of face-to-face teaching where teachers and pupils normally interact in a physical classroom. The aim of the programme is to move these schools from the traditional teaching approach to blended learning.

MODERNISING FEMALE EDUCATION IN SAUDI ARABIA WITH BLENDED LEARNING

This study seeks to provide insight into the effects of the introduction and use of blended learning in Saudi Arabian schools for females, and therefore the observations take place in the country's cultural context. While there may be an overwhelming consensus in Western countries, e.g., the UK, that women should have equal rights and opportunities in all areas of life, there is no such consensus in Saudi Arabia at present. What may look 'normal or desirable' from such a Western perspective may not be 'normal or desirable' in the eyes of a majority of Saudi Arabians. This difference is also reflected in the fact that female education in the country has only been provided by the state since the 1960s, as well as ongoing restrictions on women in public, education and professional life. Understanding of this context is, therefore, a prerequisite for the study of the effects of BL in education in the country, and for this reason the literature review starts with an overview of the study's social, religious and political context. The recognition of the study's unique context at the start of the literature review is also important in order to relate it to a body of literature which has predominantly resulted from research in non-Arab settings. Awareness and appreciation of Saudi Arabia's culture is, therefore, important throughout the literature review. Also, the Tatweer project is introduced, from which the three schools participating in this study were selected. Tatweer is the largest, practical attempt to date to implement blended learning in schools in Saudi Arabia. Therefore, this project allows to study the practical challenges and opportunities of BL in the setting of ordinary, traditional schools. Taking into account that different forms of BL have been suggested in the literature, it is necessary to characterise the

type of BL that is actually implemented in the Tatweer project studied in this research. This recognises that the rich description and analysis of the perceptions of stakeholder groups attempted in this research may be dependent on the type of BL implementation. This study provides a rich description of the practical application of BL in female education in Saudi Arabia. However, only a small part of the extant literature has focused on Arab countries, and much of it is concerned with objective outcome measures, frequently related to performance or success factors.

Female education in the KSA

Saudi Arabia is an Islamic monarchy with a religiously strict and conservative government. Religion and government are closely intertwined and the legal system is based on Islamic teachings, for example, the shari'a is the basis of the country's legal code and the Qur'an is its constitution (Davis and Robinson, 2006). National legislation does not ensure gender equality; instead the official position of the government is that men and women are given comparable but not identical rights. Using this somewhat ambiguous rhetoric the government tries to reconcile opposing forces in society that range from religious fundamentalists to liberal intellectuals (Hamdan, 2005). Until 2001, Saudi women were considered solely as extensions to male guardians. First, a girl would be documented on her father's identity card. Subsequently, she would be 'transferred' to her husband's card upon marriage or that of an immediate male relative in the event of her father's death. Whilst females are now permitted to possess their own ID cards this can be inhibited by legal guardians and these cards are not compulsory for women (Hamdan, 2005, Al-Mohame, 2008). In practice the country's powerful religious scholars have a dominant position and interpret the Muslim religion in ways that ensure that the Saudi society is strictly delineated by gender, leaving relatively little opportunity for women to reach positions of formal power. These forces are resistant to change and their stance is widely supported by citizens of both sexes (Baki, 2004). There is, however, a progressive movement striving to ameliorate women's status within Islamic courts and to enhance their civil rights. Despite strong opposition from conservatives King Abdullah has supported aspects of liberal-feminist demands and some progress is underway (Doumato, 2010). The accepted role of women in the KSA is to act as good housewives and mothers. Outside this role their freedom is limited, for example, Saudi females are unable to travel without a male guardian's signed consent (Al-Mohame, 2008). In a European country like the United Kingdom this would be seen as a violation of women' human rights. In the context of the Saudi culture the perspective is very different, based on the view that Islam assigns appropriate rights and duties to each gender. While a woman needs a male guardian's consent to travel, it is in turn the duty of that guardian to ensure the safety and well-being of the women on the journey. Seen from this cultural perspective rights and duties of each gender are construed as balanced and fair (Al-Mohame, 2008). Officially, the rights and equal value of all people are recognised in Islam. Women's rights were determined in the Qur'an many centuries before they came to the fore in modern civil societies. Such rights include inheritance, property ownership, divorce, dowry and child custody (Al-Mohame, 2008). Undeniably, a number of limitations exist for Saudi women in society. Nevertheless, a number of positive developments can be mentioned: The growing role of women, indicated by campaigns to initiate pro-women's rights' bodies, establishment of a mobile centre where sexual harassment can be reported, and the launch of a programme to tackle violence against minors and women. More is still to be achieved in Saudi Arabia and to a large extent these developments may well be advanced by external influences, e.g., transforming nations in the region and international trading partners and allies.

Tatweer project and blended learning

The Tatweer project is short for "The King Abdullah Bin Abdul Aziz Project for Developing Public Education" (Al-Kinani, 2008, Al-Romi, 2008, Tatweer, 2010). Its general aim is to improve the quality of education, technical organization, teacher training, and learning outcomes through integration of information and communication technology with traditional learning in secondary schools for both girls and boys. The approach used for this purpose is blended learning, which is supposed to increase the efficiency and effectiveness of learning and to ensure that students learn modern skills needed to succeed in global knowledge economy. (Al-Kinani, 2008, Al-Romi, 2008). Launched in the year 2008, the programme's dimension becomes visible in the following figures: Its budget is SAR12 billion (USD3.2 billion), and it includes the training of more than 400,000 male and female teachers in school management, educational supervision, curriculum development, computer science, training, and self-development skills. Fifty secondary schools in different parts of the Kingdom have been already selected to implement the project. The project uses the latest ICT in education, and is modelled on successful experiments at schools took place in other countries. Tatweer is now implemented in each of the 13 provinces in two secondary schools (one for boys and one for girls) where the schools are provided with modern technological facilities (Al-Hakami, 2010, Al-Hakami, 2011, Al-Kinani, 2008, Tatweer, 2010). Before the Tatweer project some boys' schools in Saudi Arabia had already implemented blended learning, but the Tatweer project was the first time this learning approach was implemented in girls' schools, which were therefore not familiar with the approach. The Ministry of Education launched the Tatweer programme with the aim of implementing blended learning in the secondary school system of Saudi Arabia with particular attention to girls' schools, equipping them with appropriate technology. Before this project most of the schools were following the traditional style of teaching (Kempin, 2009, Tovar et al., 2007). While Tatweer is the first attempt in Saudi Arabia to introduce BL in girls' schools, ICT has been part of the curriculum since 1985, covering three major IT related subjects including Introduction to Computer Sciences, Systems Programming and The Use of Information Systems & Programming in Beginner's All-purpose Symbolic Instruction Code (BASIC). ICT education received more emphasis in the following years, which led to the introduction of computer studies in 1991 as part of the curriculum in all boys' secondary schools and later in girls' schools (MoE, 2005). Computer studies as a subject were made compulsory with two classes per week, lasting in a total of two hours. However, it should be noted that computer studies had already been included in the curriculum in public schools at primary, intermediate and secondary stages as an optional subject (MoE, 2004). The ongoing commitment of the Ministry of Education to build an infrastructure for information technology (IT) and its implementation in education and learning became visible in two further steps. The first step involved introducing IT as a compulsory subject in girls' schools and at the primary stage of education as of the 2003 academic year. Secondly, the introduction of the National Project (Watani), which is a project concerned with the use of computers as educational technology (Al-Gamdi and Abduljawad, 2002, Al-Hamed et al., 2004).

Blended learning theory

The use of ICT in education is known as 'e-learning'. While this was already practiced before the internet become widely accessible and popular, for example by using computers in schools, it was the emergence of the internet that boosted e-learning (Heinze, 2008). Heinze identifies three major drivers that have helped promote e-learning: First, the expectation that e-learning would be more cost-effective than face-to-face learning, second, the hope that e-

learning could improve the quality of education, and third the intention to widen access to education to groups that were not easily covered by existing teaching facilities. Hung's (2012) metastudy of longitudinal trends in e-learning research, that covers published research between the years 2000 and 2008, shows that there is no single, generally accepted definition of e-learning in the literature. Instead, it can be said that most definitions offered in published research focus on either network-centric technologies, particularly the internet, or use a wider definition that encompasses the use of any electronic media to facilitate learning (Hung, 2012). Hung's study also shows a trend in e-learning research from a focus on technical aspects to a focus on its application in educational practice. One reason for this shift in focus may be suggested by another meta-analysis presented by Schmid et al. (2009). One finding of these authors is that moderate use of ICT in education is generally associated with improved student achievement, but that there is also evidence that overuse can result in sub-optimal outcomes. This indication that technology alone is not enough to optimise education is in tune with the conclusion that pedagogical factors are more relevant than technological factors offered by these authors. Schmid et al. also show that the use of technology to provide cognitive support (e.g., simulation software) appears to be more effective than the use of technology purely for presentation or delivery (e.g., presentational software). Tamim (2011) conducted an analysis of meta-analyses, not including Schmid et al. (2009), which lends independent support to Schmid et al.'s findings. In particular the view that pedagogical factors are more important than technological factors is confirmed by Tamim's study. Tamim and Schmidt et al.'s meta studies both show that ICT has been used in education beyond the point where it has positive effect on outcomes. While it is certainly difficult for providers of education to assess the effectiveness of ICT in education, there may also be an innovation bias at work. Njenga and Fourie (2010) provide some thoughts on this, and they remind of a simple fact: Education is a huge commercial market and this provides ample financial incentives to providers of educational technology to 'oversell' their products and sell expensive technologies based on promises that don't live up in reality (Kariuki Njenga and Fourie, 2010). Njenga and Fourie continue to elaborate on a number of critical issues in elearning where they see a need for critical technology evaluation instead of uncritical enthusiasm for technology. One of these issues is the belief propagated by commercial elearning providers that technology can effectively replace human interaction. While they confirm the necessity to take technological advances into account to improve education, they also conclude: 'In fact, what ICTs have shown is that there is an enormous need for human interaction, and there is a limit to the number of students an expert teacher can support online at any given time' (p. 203). This emphasis on the need for human interaction in e-learning is investigated in Paechter and Maier (2010). Their study shows that the preference of students for e-learning as alternative to face-to-face learning is strongly moderated by the nature of the learning materials and the desired learning outcomes. While e-learning can effectively substitute face-to-face learning in certain cases, there appear many situations where face-toface interaction appears to be much more suitable. Given Njenga and Fourie's critical stance it does not surprise that they note substantial body of literature that suggests that technological issues in e-learning are frequently overemphasised while human aspects, or as they call it 'soft-stuff' (p. 207), received too little attention in theory and practice in past years. This observation is concerning, because as noted earlier Schmid et al. (2009) and Tamim (2011) both conclude that technological factors are less important than pedagogical factors.

The importance of human aspects in e-learning is also emphasised in Dyke et al. (2007) which reminds that students are heterogeneous and that educators need to pay enough attention to individual and contextual factors. These individual variables are also identified as critical for e-learning success in Keramati, Afshari-Mofrad and Kamrani (2011) which shows

that humans can differ widely in their individual readiness for e-learning. These mixed findings on the benefits of e-learning call for a more integrative theoretical framework for the study of human and pedagogical aspects in relation to the use of ICT in education. One such framework is provided by the concept of blended learning (Tamim et al., 2011). Blended learning (BL) is a controversial concept that is subject to an ongoing debate in the academic community. It constitutes an ambitious attempt to include a number of aspects of technology use in education in a single concept. Broadly speaking it can be characterised as an integrative approach to learning that uses face-to-face and online instruction, resulting in an approach that is situated at the centre of the spectrum of e-learning modes (Heinze, 2008). As BL is an attempt to integrate a number of aspects which originated in different theoretical contexts in a single concept, it is inclusive in nature and rather general than specific. This is criticised by Oliver and Trigwell (2005), for example, who note that a number of different definitions of the term have been put forward in the literature. This makes the term over generalised so that it is often difficult to tell whether an educational approach is really BL or not, and they conclude that in the face of this vagueness it may be best to avoid the term altogether or to try to redefine it. While their criticism is certainly justified, it is not really clear how Oliver and Trigwell think the term can be redefined without just adding another attempt at definition to exactly the existing list of definitions they lament. Nevertheless, what their contribution makes clear is that BL as a term suffers from unclarity, and that this is an area where improvements should be sought, from a theoretical as well as a practical angle. One promising attempt to clarify BL as a concept is offered in (Sharpe et al., 2006). These authors don't try to provide a single, comprehensive, complete definition, instead they suggest 8 key dimensions of blended learning which can be used to characterise some key aspects of a concrete implementation of it in more detail. These 8 dimensions are listed in Table 1.

Dimension	Explanation	Implementation		
		low	med.	high
delivery	the chosen combination of different modes, e.g., classroom- based vs. online education	٠	٠	•
technology	the use of different ICT, e.g., simulation software or the internet	•	•	•
chronology	the applied mixture of synchronous and asynchronous interventions by the teacher	•	•	•
locus	the place of learning, e.g., this can be a traditional classroom setting, a more authentic practice-based setting, or even a workplace		•	•
roles	the roles the teachers and students play, e.g., the traditional teacher-led, hierarchical setup, or a setup where the learners play a more active role in the development of their learning programme		•	•
pedagogy	the pedagogical approach, e.g., a theory-led approach to learning which strongly relies on extrinsic motivation and a final exam, or a problem-based approach which relies more on intrinsic motivation, where the learning process is motivated from observations, involves collaboration and uses alternative assessment strategies		•	•
focus	the overall aims of learning, e.g., whether the aims of the learning institution dominate or whether the (presumably different) aims of the learners are taken into account when shaping the learning programme			•
direction	the status of the learners, e.g., whether they are seen as equal partners in the ongoing learning process or not			•

Table 1: 8 Dimensions of blended learning (Sharpe et al., 2006).

The 8 dimensions illustrate the flexibility of the BL concept: It is not just a static mix of faceto-face and online aspects of learning and teaching, but a conceptual framework that allows to analyse and synthesise different blends with varying characteristics. This flexibility has the disadvantage that no single, simple, static and generally accepted definition of BL is found in the literature, as pointed out in Oliver and Trigwell (2005). The advantage of this flexibility is that BL can be localised, i.e., tailored to local requirements, within a theoretically sound framework (Heinze, 2008). As this will usually require a lot of experience with blended learning, it is certainly one main difficulty of BL implementation to find an optimal blend for a given situation (Benson and Anderson, 2010, Mitchell and Honore, 2007, Tamim et al., 2011). As Table1 shows, BL is not only concerned with technological aspects of learning, but also includes pedagogy. This recognises the interdependent nature of technology use and pedagogy and points to the need to integrate the 8 dimensions in a suitable way to achieve an effective blend. Some theoretical guidance in blending is offered in Sharpe et al. (2006) based on the 8 dimensions shown in Table 1. The authors identify three theoretical levels of blended learning implementation:

- A low level of BL implementation can be achieved if mainly the first three dimensions are addressed. In this case a predominantly traditional form of learning is 'modernised' by including modern ICT, particularly internet-based technologies, in the traditional teaching practice.
- An medium level of BL implementation can be achieved if the next three dimensions are addressed too. This results in a form of learning where the learning experience is significantly changed by moving the learning process more to the learner's environment, encouraging them to play an active role as co-designers of the learning program, accompanied by less direct intervention from teachers.
- At a high level of BL implementation all 8 dimensions are addressed. This fundamentally changes the learning experience when compared to traditional teaching, because the learners become equal partners in the management of their learning effort.

These three theoretical levels of BL implementation represent different levels of change. The more levels are addressed, the more profound will the change in a school be, and the change management literature suggests that it will also result in more potential for resistance (Clegg and Walsh, 2004). The three levels depicted in Table 1 are of course not the only possible levels, and other blends are possible subject to local conditions and requirements. This demonstrates the flexibility and opportunities found in BL as a concept, but naturally this additional degree of freedom in the theoretical model inevitably makes its successful implementation more challenging. The absence of a generally accepted theory framework at the moment also makes research into BL more exploratory in nature. Much of the current research tends to focus on specific aspects of BL, often the technology-supported ones, while more holistic or systemic issues receive less attention (Bliuc et al., 2007, Schmid et al., 2009). While the flexibility of BL creates opportunities for localisation, this additional degree of freedom in the theoretical model inevitably needs to be addressed when it is put into practice, making implementation issues more challenging.

METHODOLOGY Research approach

Since the researcher has a background as teacher in the same field in which current research has been undertaken, the researcher has decided to choose the interpretive paradigm is the most appropriate option because the research aims to explore the area of the blended learning environment through human perceptions and attitudes that make this approach the most appropriate for answering the research questions. Accordingly, the choice of the paradigm most relevant to addressing the research question had to consider that the study is mainly concerned with how certain events took place. Walsham (2006) argued that 'interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors. Our theories concerning reality are ways of making sense of the world, and shared meanings are a form of intersubjectivity rather than objectivity' (Walsham, 2006), (p.320). Also, Bharadwaj (2000) said, 'While research in information systems (IS) has traditionally been dominated by the positivist approach, the interpretive approach to IS research has in recent times gained significant attention.' In fact, IS research would be designed as interpretive, which focuses on the complexity of human behaviour for gaining a deeper understanding of meanings that people are assigned to individuals (Oni and Papazafeiropoulou, 2008, Myers, 1997). Interpretive methods of research in IS are "aimed at producing an understanding of the context of the information systems, and the process whereby the information system influences and is influenced by the context" (Klein and Myers, 1999, Walsham, 1995). Moreover, the interpretive philosophy allows alternative models of reality to be considered because it is based on the belief of science. According to Peter and Olson (1983), the interpretive perspective emphasizes the importance of factors relevant to the research process, such as social interaction and influence among researchers, the idiosyncrasies of individual researchers and their subjective interpretations as well as an understanding of how scientific knowledge develops (Peter and Olson 1983, cited in (Bharadwaj, 2000); (Prasad and Prasad, 2002).

Research methods

In the current research, the advantages of triangulation are appealing and would be used on the data type level so that both quantitative and qualitative data would be clinched. Also, this means that there would be a triangulation on the level of the data collection tools (Miller, 2003), so that tools for quantitative and qualitative data would be appraised for their relevance. In particular the quantitative data would be gathered from students only and not teachers. This is due to the practical constraints of not being able to have access to a large number of students and they are the once experiencing the blended learning process. Secondary school students are also likely to be more open in an anonymous questionnaire rather than in an interview with an unknown adult teacher. However, the main ideographic foundation for this research remains and the quantitative data would only be used to provide a context and richer understanding and not for nomothetic purposes. Also, Molina-Azorin (2012) states the importance of mix methods as: 'mixed methods research has the potential to reduce some of the problems associated with single methods, incorporating the strengths of both methodologies. In other words, mixed methods research tends to have the best of both worlds' (Molina-Azorin, 2012), (p.48) Thus, the following are the reasons for the triangulation use in this research: a) It would enrich the study and the understanding of the different schools as well as wider participants of the study b) The previous experience of the researcher as a teacher in Saudi Arabian education would inevitably introduce bias into the study and the use of quantitative data for students only, would help to reduce this.

RESULTS AND DISSCUTIONS Implementation level

As part of the triangulation method a student questionnaire (446 in total) was used to collect quantitative data to support and amend the perspective gained from the qualitative data

analysed in this study. It should be noted that the overall aim of this section is to examine and evaluate how effective Blended-Learning is among three girls' schools in Saudi Arabia; this section will also identify similarities and differences in students' views between the three schools. Analysis in this section was based on SPSS (Statistical Package for Social Sciences), and all questions/items in the questionnaire were coded in an SPSS file and analysed. The quantitative data collected from students through questionnaires hints at the implementation level achieved at the schools. Using the 8 dimensions presented in Sharpe et al. (2006) the following assessment can be derived from the data:

• Delivery: While multimedia technologies are used, face-to-face teaching is still the predominant delivery mode. While this was not formally assessed, the field notes of the researcher suggest that about 80% of the curriculum is delivered face-to-face, around 15% is delivered through ICT, and only a negligible fraction of about 5% is devoted to self-directed study. These impressions are confirmed in the interviews with the students documented in Table2. 68% (21 out of 31) of them acknowledge that face-to-face and technology are both used but complain about a lack of integration, and that the different delivery modes are not integrated well.

Good experiences of students					
Factor	Count	Quotation			
learning is more effective	16	my understanding in lessons has become better than before. [SSD3]			
technology makes lessons more interesting	14	very exciting type of learning [SSJ4]			
pride to attend a very modern school	1	we are proud of our school compared with other traditional schools. [SSJ7]			
Bad experiences of students					
Factor	Count	Quotation			
face-to-face teaching and technology	20	many of the teachers using traditional learning. [SSJ2]			
are not integrated well enough		depending totally on student and leave the hard work on			
high	13	her [SSR13]			
some teachers not qualified to use	_	they do not know how to use the Smart-Board and computer.			
technology in class	12	[SSR5]			
not enough guidance from teachers	7	teachers doesn't facilitate learning using e-learning tools.			
lessons become narder to understand	/	I don't able to understand the lessons because in some cases			
change to BL was too fast	6	the learning randomly and there is no specific goals. [SSR2]			
there isn't enough maintenance of		The project came suddenly. [SSD1]			
ICT equipment	2	the maintenance of hardware and the computers didn't			
were unfair	2	process quickly. [5576]			
		the mark will be given to the entire group, so there is			
		injustice to the student through group activities. [SSR10]			
	1				
Suggestions from the students what could be done better					
Factor	Count	Ouotation			



more teacher training required14apply BL only to subjects where it is		My teachers need to have more training programs. [SSD7] such as mathematics we are not really interested. [SSR7]
suitable	6	

Table 2 (Display): Perception of the 24 students with a positive attitude towards BL

• Technology: A number of technologies are used for teaching, e.g., web-based training software, computer-assisted activities, PowerPoint and smart boards Figure 1. However, a look at Figure 2 shows that more sophisticated technologies like online discussion forums are rarely used. One of the reasons for this may be technical problems, which were a major concern throughout the Tatweer project.







Figure 2: How teachers encourage students to use computers and the internet

- Chronology: Most interventions of teachers are synchronous, and this is often the result of the delivery mode and technology used. As both of these tend to use rather traditional instruments and make little use of newer technologies like online discussion forums, it doesn't surprise that the traditional synchronous mode of teaching predominates.
- Locus, Roles and Pedagogy: Regarding these three dimensions the schools follow very much the line of traditional teaching. Instruction usually takes place in dedicated educational settings, the teacher is the undisputed person of authority and source of

initiative in this setting, and the pedagogical approach is characterised by theory-led, teacher orientated teaching.

• Focus and Direction: There is no indication that the focus or direction in the schools has shifted away from that of traditional schools. Instead, the goals of learners are not explicitly acknowledged, and the learning experience of the students is governed by the goals of the institution.

CONCLUSIONS

Saudi Arabia is a conservative Islamic country where the options of women to study technical subjects are limited by laws and national culture. Blended learning, on the other hand, is a modern approach to education that focuses on the use of ICT in education. If blended learning is introduced at girls' schools in Saudi Arabia, a straightforward question is to ask whether there is a culture clash, where the gender-induced restrictions of a national culture conflict with the idea of self-development in BL. Is it possible that the self-development promoted in BL will finally result in emancipation of female students, thus posing a challenge to Saudi culture? This study is the first large, interpretive study of the application of BL in girls' secondary schools in Saudi Arabia. In line with the interpretive position adopted in the study the research provides rich insight into the practical aspects of BL in this Arab country. One contribution of this research is, therefore, to complement the large body of literature on BL in IS and education that comes from a predominantly non-Arab background with a substantial empirical study in a conservative, Arab country. One obvious question that arises from this new setting for interpretive BL research is whether BL is compatible with Saudi culture, or more generally, Arab culture. The question whether specific adoption barriers to ICT in education exist is investigated in Al-Senaidi, Lin and Poirot (2009). These authors conduct an empirical study in an Arab country, Oman, which shares most of its border with Saudi Arabia, and their research does not indicate any barriers specific to Arab culture. The present study comes to a similar conclusion in the case of the Tatweer project in Saudi Arabia. Indeed, no evidence for a cultural conflict was found. A key question that must be asked here is: Can this finding be generalised? The answer suggested in this study is that the degree of potential conflict between BL and a given national culture can depend on the implementation level of BL. Al-Senaidi, Lin and Poirot's study is restricted to technologycentric use of ICT in education, which is comparable to a low level of BL implementation. In this way their findings are in line with the findings in the present study. However, the present study extends this by suggesting that the implementation level of BL is a contingency factor that moderates the potential for cultural conflicts. The discussion in this study suggests that the reason why this study and Al-Senaidi, Lin and Poirot's study do not suggest a cultural conflict between Arab culture and BL is mainly owed to the fact that in both studies a low level of BL implementation in the sense of Sharpe et al.'s (2006) 8 dimensions of BL was witnessed. However, a reading of Sharpe et al.'s rather idealistic high level of BL implementation reveals the idea to treat students as equal partners in schools. If BL genuinely led to equal treatment of girls in Saudi Arabia's schools, then women might in a next step also demand equal rights in society in general, and this would fundamentally clash with the present situation in Saudi Arabia.

It appears likely, therefore, that a high level of BL would be in conflict with the current political, cultural and religious status quo in the country, and would be regarded as unsuitable by the authorities. It is important to note that the above explanation makes use of Sharpe et al.'s framework of 8 dimensions, which proved to be useful in this study several times. This is of course a limitation, as this framework is only one theoretical model of BL, and others have

been proposed in the literature. It is also noteworthy that the reference to values in national culture is, of course, closely related to ethics. Two observations made during the practical part of this study were, on the one hand, that serious problems in the Tatweer project existed, and, on the other hand, that it was not difficult to find evidence for their existence. The evidence from students, teachers and staff was very helpful in constructing a relatively comprehensive and consistent picture of the state of the project. Interestingly, this study was the first attempt at the schools in the study to collect feedback from these three stakeholder groups in a systematic and comprehensive manner. Given the valuable information gained from the empirical part of the research, the indifference of the managers of the Tatweer project to this source of information is surprising. Effective corrective action at the scale of the Tatweer project requires reliable, comprehensive and timely feedback from the major stakeholders in the change process. The practical experience from this study is that it is feasible to collect this information from students, teachers and staff directly with acceptable effort. The instruments used in this study and the resulting experience can be used initially to collect data. However, as the instruments used in the present study were developed for the data collection needs of an academic study they are presumably not ideal for the information requirements of management. Nevertheless, the positive experience with the instruments in this study can be used as basis for the development of instruments that are more focused on the purpose of programme management. This results in a clear recommendation for future programmes of the kind of the Tatweer project to establish a formal activity as part of the change programme, with the purpose of ongoing feedback collection. The study demonstrates that this feedback is invaluable to identify important issues early, and in the view of the author this is one of the most effective and efficient ways to steer such a programme to success.

The results show that significant changes were achieved during the implementation of the Tatweer programme for the transition of traditional secondary schools for girls in Saudi Arabia to blended learning. Blended learning improves the confidence of female students, allowing them to learn at their own convenience and creating a genuine interest in the use of computers, and has other positive effects. Unsurprisingly, the research also revealed that the Tatweer programme faced many challenges. Some of these were mastered, some others persisted and led to significant, ongoing problems. Problems were described and analysed, reasons and consequences investigated, and some solutions and further research proposed. As this is an exploratory study, many of the results are at a relatively early stage and will have to sustain the critical scrutiny of other researchers first. However, the researcher is confident that the results will pass this test and will help to narrow the gap between the professional world and the academic world in blended learning.

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