



CAN MOBILE LEARNING TECHNOLOGY CLOSE THE GAP CAUSED BY GENDER SEGREGATION IN THE SAUDI EDUCATIONAL INSTITUTIONS?

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ABSTRACT

Aim/Purpose	This paper investigates the educational gap between males and females caused by gender segregation in Saudi educational institutions and the role of Mobile Learning Technology (MLT) in bridging this gap through the emphasis on teaching practices, learning resources, and opportunities, as well as participation in campus life.
Background	There is a gender gap over the access to educational opportunities and facilities raised by the segregation in educational institutions in Saudi Arabia. In Saudi society, school campuses have been always been restricted due to the cultural and social values of the native people. The practice of segregation extends across all social aspects of life including education. This has resulted in a gender preferred educational system that highly favors males over females in terms of teaching, learning opportunities, facilities, and resources, as well as the participation of activities on campus. This has become disadvantageous for female students because it has limited their equal access to learning opportunities, sometimes trained by less experienced instructors, and has led thus to an unfair academic performance.
Methodology	An online surveying system was used with a population of all female students who are enrolled in 13 colleges located in Jeddah. The size of the population was 15,171 students. The sampling technique was probabilistic random in which only 300 questionnaires were received back, and only 187 out of 300 questionnaires were fully answered. The study is descriptive, and it used a quantitative survey method with a cross-sectional collected data.
Contribution	This study supported instructors and higher education administrators in adopting MLT to overcome some cultural gaps caused due to segregation by adding literature on MLT contribution to the enhancement of higher education oppor-

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	tunities for women in Saudi Arabia. This study is the first of its kind in the context of Saudi Arabia to delve into the role of MLT in closing the gender gap through making an effective Saudi higher education system policy.
Findings	There are some challenges experienced by Mobile Learning Technology to close the gap caused by gender segregation in the Saudi educational institutions in relation to some dimensions that include demographic data, teaching gap, content, educational opportunities, participation in campus life, and the use of mobile learning.
Recommendations for Practitioners	This study recommends that the educators should consider the need to implement Mobile Learning Technology in the educational system of Saudi Arabia as a means of bridging the everlasting gap of gender separation, especially in schools, and also to empower female students to compete at the same level with their counterpart male students.
Recommendations for Researchers	Further research is expected to focus on effective implementation in Mobile Learning in female campuses as well as government assistance of promoting Mobile Learning in both public and private schools of female campuses.
Impact on Society	The study findings could be highly beneficial for understanding the problems that confront equality and transparency in education between male and female and how Information and Communication Technology (ICT) tools could help guarantee equality in education.
Future Research	Future studies could be extended to other areas of assisted online education tools. Furthermore, measures can be implemented to enhance transparency and equality between males and females in education, which could be associated with satisfaction levels for both sides.
Keywords	mobile learning, gender gap, Saudi Arabia, higher education

INTRODUCTION

With the advent of the 21st century, Information and Communication Technology (ICT) has increasingly become an integrated component of our lives and has rapidly changed the dynamics of the educational environment, in particular. It is a dominant force in all aspects of lives most especially education. The role it plays in improving formal education mostly for students and teachers has been highly meaningful and crucial. Both local and global organizations have taken these opportunities of advancement in ICT to promote equal educational opportunities for all, especially among genders. In fact, the assistance of ICT helped the United Nations establish *Education for All (EFL)* movement to achieve equal educational opportunities for all genders by 2015 (UNESCO, 2015a). UNESCO, a UN agency for education, science, and culture, established *Mobile Learning Week* initiative to explore the possibilities and challenges of mobile learning in promoting quality of learning for all (Traxler & Vosloo, 2014). The 2015 *mobile learning week* was dedicated to empowering women and girls through equitable access, gender-sensitive content and pedagogy, literacy, and skill development (UNESCO, 2015b).

Equal education between genders has been a world phenomenal issue for years now, with countries such as Saudi Arabia seeking to bridge the big gap that exists in their educational institutions across the Kingdom. The World Economic Forum, an independent international organization which measures gender-based disparities across countries and tracks their annual progress through Global Gender Gap Index Report, ranked Saudi Arabia 138 out of 144 countries in overall gender gap that includes four indices: economic participation, educational attainment, health and survival, and political empowerment in 2017 (World Economic Forum, 2017). A better ranking, however, was seen on the educational attainment index, where Saudi Arabia was ranked 98 out of the 144 countries. This,

however, still makes equal gender education for the government of Saudi Arabia a fundamental factor and issue.

A gender gap in Saudi Arabia, nevertheless, must be questioned qualitatively rather than quantitatively. The reason behind such questioning is the socio-cultural nature of the Saudi context where gender disparity is in the quality of education that different genders receive. The commonest practices in Saudi education is the segregation between male and female campuses to meet religious, social, and cultural requirements. Therefore, students in the two counter-campus study with same-gender professors, whereby male professors may only teach female students remotely through a one-way video conferencing and two-way audio communication in the case when a shortage of female professors occurs on female campus (Alahmari & Amirault, 2017; Yamin, 2015). This clearly shows the extent of the gender gap that exists is due to cultural factors where male teachers have limited access to female students. In this sense, inequality in educational opportunities is further grounded and advancements are not guaranteed on both campuses.

This study aims to explore the gender gap in higher education within Saudi Arabia through the emphasis on teaching practices, learning resources, and opportunities, as well as participation in campus life. The study also aims to bridge the perceived gender gap by leveraging mobile learning technology in higher education.

RESEARCH QUESTIONS

1. What is the gender gap that exists in teaching as perceived by Saudi female college students?
2. What is the gender gap that exists in learning opportunities and resources as perceived by Saudi female college students?
3. What gender gap exists from the participation of activities in campus life as perceived by Saudi female college students?
4. What is the role of mobile learning technology in addressing the gender gap in Saudi higher education?

LITERATURE REVIEW

GENDER ROLE THEORY

According to Wood and Eagly (2010), gender role refers to the shared knowledge toward the appropriate or acceptable behavior of male and female. It is also a sociocultural construct that labels individuals as men or women. This sociocultural construct, therefore, has also defined the gender functions of both males and females in terms of education, labor, and social interaction within the societies and communities we live in. The two functions of gender roles are manifested either as the descriptive function or prescriptive, where the descriptive identifies the ideal behavior for each gender, while the prescriptive function identifies the admirable behavior of each gender, to gain social approval (Wood & Eagly, 2010). Again, Eagly and Wood (2012) clarified the emergence of gender roles in society through a set of stereotypes that fit each gender based on the observations of family and society. To illustrate, men are perceived as assertive, tough, and task-oriented in nature, which gives them more access to power, education, and employment. Whereas women are perceived as supportive and nurturing which gives them more access to family and society care-taking roles (Eagly & Wood, 2012; Wood & Eagly, 2010). These gender-based stereotypes functionalize the Saudi educational policy where women are differentiated not only in their subjects of study but in their schools as well. This gender-segregated education system has resulted in a greater male-female inequality that later on restricts women from attaining certain social life roles in the community and or employment opportunities. In Saudi universities, strategic positions of male and female campuses are occupied by men with the only exception of Princes Nourah Abdulrahman University (being the world's largest

women university) located and based in Saudi Arabia, which is administered by women (El-Sanabary, 1994; Princess Nourah Bint Abdulrahman University, 2018).

Gender-based stereotypes have a great influence on the Saudi educational policy system, one that will be discussed in the next section. Saudi educational policy has mainly been an advocate of the supportive role of women through the development of jobs that only fit their nature such as teaching and nursing. This is showcased in the kingdoms' social consensus where women have had less participation in public affairs (van Geel, 2016). However, gender equality has been subjected to negotiation in time where women have gained some access to public powers and jobs such as working in intermingling environments, and just recently last year women were allowed to drive (Al-Mayman & Al-Kinani, 2018). Nevertheless, public educational institutions still enforce rigid policies toward gender-segregated education, which does not reflect the ongoing negotiation about gender roles in Saudi culture. This amplifies the fact that gender role negotiations should be observed and implemented in the Saudi education system to diminish these gender stereotypes and empower Saudi women. To explore the influence of gender in Saudi culture, the next section discusses the Saudi educational policy regarding women in detail.

WOMEN IN SAUDI EDUCATIONAL NATIONAL POLICY

According to Saudi Educational Policy (Ministry of Education, 1970), girl's education in Saudi Arabia targets preparing girls through Islamic instructions to be well-mannered such as successful housewives, ideal wives, and good mothers. Also, this aims to prepare girls for jobs that suit their nature such as teaching, nursing, medical, and social work services. Moreover, a girl's education must take place in a segregated environment where boys and girls are physically segregated to prevent any gender-mixing except pre-school levels where gender-mixing is allowed.

To understand gender-segregation emphasis in Saudi educational policy, we should trace back the evolvement of education in Saudi Arabia. The Ministry of Education was founded in 1953 with public schools for boys (not girls) opening for the first time in that year. During the 1950s, an increase in popular demand for formal girls' education started to emerge after some young Saudi men who had been educated abroad expressed their need for "educationally compatible wives" (AlMunajjed, 1997). To address these conservative concerns that arose over time, the Saudi government established two separate governmental bodies: Ministry of Knowledge for boy's education, and General Presidency for Girls Education. The latter one was assigned to the conservatives who represent the Islamic school of thought to ensure the accordance of the female educational practice with the Islamic heritage (Le Renard, 2008; Profanter, 2014). Girls studied different curriculum from boys, with girls curriculum centering around religion in nature and did not adhere to curriculum design and requirements for formal education (Alharbi, 2014; Hamdan, 2005). The two separate educational entities for boys and girls were merged in 2002, and later in 2006 after King Abdullah launched his project for education development in 2005 that unified the curriculum across Saudi schools, however, gender-segregation still existed (Alsuwaida, 2016).

In an attempt to level the scale of gender-segregation in the educational system of Saudi Arabia, the government institutionalized Princess Nourah Bint Abdulrahman University (PNU) which is meant to accommodate only women making it the largest women university in the world serving 50,000 women (Profanter, 2014). However, there are still some majors that are made available for men in other universities that are not available yet for women at PNU such as engineering majors but are planned to start soon (Princess Nourah Bint Abdulrahman University, 2018). Such a late move towards offering equitable educational opportunities is aligned with Saudi Vision 2030 and recent labor market needs.

Bawazeer (2015) deduced in her research that education is gendered in Jeddah in three factors. First, the enforcement of gender segregation in schools throughout the whole school years. Second, the exclusion of females from physical education and or any physical activity throughout the whole

school year. Third, major subjects such as home management or home economics mandated for only female students during middle school. These factors easily showcase the high range of inequality in Saudi higher education where courses offered are gender-segregated as well as on campuses and being taught by same-gender instructors.

SAUDI WOMEN'S EXPERIENCE WITH EDUCATIONAL TECHNOLOGY

The peerless non-presence of Saudi women in public has realized the need to utilize information and communication technology to bridge the gap for Saudi women higher education. One of the factors that manifest this is the increasing shortage of female faculty members and the use of Closed-Circuit Television (CCTV) as a solution. However, on the contrary, CCTV was customized to fit the Saudi social norms, whereas a two-way audio communication and video (from an instructor to a student) is the only one way for male instructors to teach and interact with women in the education sector (Alahmari & Amirault, 2017; Hamdan, 2005; Yamin, 2015). Needless to say, Closed-Circuit Television (CCTV), as found by Al-Saadat and Afifi (1990) and Naaj et al. (2012), has succeeded in bridging the gender gap in Saudi higher education where female students who were taught by expert male professors scored better results than female students who were taught by female professors. Moreover, students agreed that gender-mixed class discussion through CCTV is effective (Al-Saadat & Afifi, 1990; Mirza, 2007).

E-Learning is another ICT alternative that is proposed by the Saudi government to reach the unreached including women especially. In 2006, Saudi Arabia launched a National eLearning Center to promote female education in a culture-sensitive environment where boys and girls are not allowed to mix and same-gender instructors are the only way of teaching (Al Alhareth et al., 2013). Saudi women found eLearning a new format of learning that motivated them to pursue their higher education where they can study at home and overcome mobility obstacles in terms of traveling to campuses, as well as conform to the social norms of the country (Alkhatabi, 2016). However, Saudi female students reported that male authority and segregation are the most social barriers in eLearning (Al Alhareth, 2013). Hence, the Saudi government should put more investment in eLearning for women and eliminate barriers that restrict women from pursuing their higher education such as segregation (Mayan et al., 2014). However, technology is not enough to lean on as a way of bridging the gap between the two genders in education as women need to be empowered to access eLearning in disregard to their male guardianships and the capacity of women must also be considered when implementing eLearning for Saudi women (Al Alhareth, 2014).

Aside from the use of eLearning, researchers have further found the possibilities of technology in Saudi women education through mobile learning. Saudi female higher education students showed positive attitudes toward mobile learning regardless of their academic levels or experience levels with mobile applications (Bin Mubayrik, 2017; Omer & Almasabi, 2017). Interestingly, Saudi student use of mobile learning outweighed their professors' use and most of that use was outside classrooms implying the advantage of the use of mobile technology in schools (Gannam & Alebaikan, 2016). However, Alsanosi (2013) found that Saudi female students needed more training on the use of mobile learning in and out of the classrooms to optimize the benefits of mobile learning in higher education. In another study, Alomran (2013) found some cultural and religious restrictions that prevented students from using mobile learning effectively such as the fear of its usage being a mode of communication between the opposite genders inside schools. On the other hand, Alsubaie and Alghamedi (2014) asserted that mobile learning application improved new female teachers' performance in their onboarding training programs.

Although the effectiveness of mobile learning in Saudi female higher education has been proven through the aforementioned studies, there is no national plan to adopt it in higher education compared to other educational technology such as eLearning and Closed-Circuit Television (CCTV). However, there have been some initiatives from individual universities to employ mobile learning technology in the learning process (Al-Shehri, 2013). Universities such as King Abdulaziz University,

Taif University, and Prince Sattam University have started their initiatives to use mobile learning; even though there are great variations in the implementation plans between these universities. King Abdulaziz University, for example, designed a game-based mobile learning system to increase students' activeness during learning (King Abdulaziz University, 2017). On the other hand, Prince Sattam University utilized the regular application of their learning management system (Blackboard) with consideration for instructional designed principles of mobile learning content. Thus, teachers might design their content for PCs while students accessing the content through their mobile devices and that results in compatibility obstacles (Omer & Almasabi, 2017; Prince Sattam University, 2015).

In addition to eLearning, the progress that can be made by the Saudi government is in establishing a national plan for mobile learning in higher education either as a stand-alone or supportive educational solution. Such a plan will provide Saudi universities with general guidelines to integrate mobile learning into students' learning activities rather than individual initiatives. A national mobile learning plan will unify the efforts towards global best practices of mobile learning in higher education, and it will minimize the variations among universities in the implementation. Another advantage of this plan is overcoming the challenges that each university is facing now such as lack of wireless networks and shortage in mobile learning training subjects. In the case of eLearning, the National Center for eLearning (NCL) provides extensive training workshops each semester for the various faculty members in universities across Saudi Arabia. More, NCL controls the quality of eLearning in Saudi universities (National Center for eLearning, 2018). Therefore, NCL should extend its focus to include mobile learning applications in higher education and propose a plan to the Saudi government to approve it and enforce it across universities.

RESEARCH METHOD

The undertaken study is descriptive: it explores the gender gap as perceived by Saudi female college students. It employs a quantitative survey method, and the data were collected in a cross-sectional approach. A questionnaire was sent and administered through an online surveying system due to its rapid turnaround and low cost. The population of this study is all-female college students who were enrolled in 13 colleges located in Jeddah for the semester of Fall 2018. The size of the population was 15,171 students enrolling from those 13 different colleges. Questionnaires were sent to the whole population through the university emailing system. According to statistics, we used probabilistic random sampling where every individual in the population had an equal probability of being included in the study (Creswell, 2014). The received back questionnaires were 300, and only 187 out of the 300 questionnaires were fully completed.

However, the questionnaire items in specific resulted after a series of workshops with interested groups. Later, a few items were dropped from the questionnaire based on their validity and relevance with the specific research purpose. The questionnaire consisted of five sections: demographic data, teaching gap, content and educational opportunities, participation in campus life, and the use of mobile learning. The demographic section consisted of six questions: name, age, marital status, school year, mobile learning usage, and whether or not a student had the previous course with a male professor. The second section was about a perceived gap in teaching, where students were asked if they perceive any teaching gap through studying with the same-gender instructor. The third section asked if students perceived any gap in the availability in contents and educational opportunities compared to their male peers. The fourth section looked for gaps in the level of female students' participation in campus life as compared to their male peers. Finally, the fifth section regards female students' perceptions of how mobile learning can be used to bridge the reported existing gaps. Face and content validities of the questionnaire were established through a critical review of the questionnaire by two faculty members in the field of Educational Technology. Table 1 depicts the psychometric analysis of the questionnaire items.

Table 1. Correlation Coefficient of the Questionnaire Items

Scale	Item Number	Correlation Coefficient	Scale	Item Number	Correlation Coefficient
Gaps in teaching	1	.522**	Mobile learning closing reported gaps	33	.806**
	2	.727**		34	.771**
	3	.595**		35	.750**
	4	.755**		36	.807**
	5	.455**		37	.755**
	6	.659**		38	.687**
	7	.663**		39	.807**
	8	.708**		40	.771**
	9	.774**		41	.651**
	10	.624**		42	.810**
	11	.474**		43	.861**
Gaps in contents and educational opportunities	12	.609**	44	.646**	
	13	.592**	45	.772**	
	14	.675**	46	.710**	
	15	.717**	47	.831**	
	16	.706**	48	.810**	
	17	.534**	49	.853**	
	18	.701**	50	.764**	
	19	.615**	51	.875**	
	20	.774**	52	.798**	
	21	.649**	53	.758**	
Gaps in participation in campus life	22	.554**			
	23	.799**			
	24	.762**			
	25	.702**			
	26	.729**			
	27	.597**			
	28	.527**			
	29	.711**			
	30	.569**			
	31	.514**			
	32	.515**			

**Correlation is significant at the 0.01 level

As shown in Table 1, the correlation coefficient of items under each scale is respectively ranging between (0.455 - 0.774), (0.534 - 0.774), (0.514 - 0.799) and (0.646 - 0.875), which indicate significant correlation of items under each scale and the fit of these items for the current study purposes. Gaps in teaching, content and educational opportunities, participation in campus life, and mobile learning all were within a good significant correlation.

In Table 2, Cronbach's alpha was used in establishing the reliability and closeness of existing gaps female college students experienced where all values in the range of 0.85, are considered "good"; however, the total score for a few others was 0.928 which reflects high reliability of the instrument (Kline, 2000).

Table 2. Values of Cronbach’s Alpha Reliability Coefficient for the Questionnaire Scales

Scale	Cronbach’s Alpha
Gaps in teaching	0.847
Gaps in content and educational opportunities	0.850
Gaps in participation in campus life	0.853
Mobile learning closing reported gaps	0.964
Overall score	0.928

Table 2 showcases the reliability of what female college students perceived as gaps in teaching, content and educational opportunities, as well as participation in campus life. The table revealed that students saw mobile learning as a reliable way of closing any gendered gap that existed in the educational system of Saudi Arabia. Mobile learning showed a score of 0.964 reflecting high reliability, while the other gaps reflected good reliability with scores ranging from 0.847 to 0.853.

DEMOGRAPHIC PROFILES

As shown in Table 3, most of the participants were singles 88% with only 34% of the participants studying majors in science, technology, and mathematics. The majority of the participants were in their first two academic years of college (60%) while 40% were in their last two years of college. Roughly, all the participants are using mobile learning in their current learning state (97%), and only 37% of the participants have had any previous course with male instructors through a gender-segregated class. The age variable was excluded because no variance was found between the participants who mostly fell in the age category (22-24).

Table 3. Demographic Profiles of the Participants

Variables	<i>n</i> (%) N= 187
<i>Marital Status</i>	
Singles	164 (88)
Non-Singles	23 (12)
<i>Majors</i>	
STEM Majors	64 (34)
Non-STEM Majors	105 (57)
Undecided	17 (9)
<i>School Year (Academic Levels)</i>	
Freshmen & Sophomores	112 (60)
Juniors & Seniors	75 (40)
<i>m-Learning Use in Current Learning</i>	
Yes	182 (97)
No	5 (2)
<i>Previous Course with Male Professor</i>	
Yes	69 (37)
No	118 (63)

RESULTS AND DISCUSSION

For the interpretation of data gathered in this study and for good analysis, the standard deviation was used in a statistical data set. The standard deviation measures how concentrated the data are around the mean: the more concentrated, the smaller the standard deviation (Rumsey, 2019).

For this study, participants were asked to select their level of agreement with the statements based on the 5 points Likert scale i.e., where Strongly agree= 5, Somewhat agree= 4, Neutral= 3, Somewhat

disagree= 2, Strongly disagree= 1. The means of questionnaire items gathered ranged between (1 – 5), and the score interval used to interpret the results was calculated with the formula: $(5-1)/5= 0.80$. Using this, the range of the mean was interpreted as (1.00-1.79) very high gap, (1.80-2.59) high gap, (2.60-3.39) gap, (3.40-4.19) low gap, (4.20-5.00) very low gap.

Table 4. Likert Scale Means, Standard Deviations, and Interpretation

Sub-Scale	Mean	SD	Interpretation
Gaps in teaching	3.24	0.77	Moderate
Gaps in content and educational opportunities	3.34	0.90	Moderate
Gaps in participation on campus life	2.95	0.88	Moderate
Mobile learning closing the reported gaps	4.29	0.73	Very low gap

According to Table 4, the gaps in teaching, content, and educational opportunities, as well as participation on campus life, scored means between 2.95 and 3.34. which confirms that Saudi female college students perceived moderate gaps in these three sub-scales. Mobile Learning scored a Mean of 4.29, which points to high perceptions of Saudi female college students towards mobile learning in closing reported gender gaps.

Table 5. Reported Gaps in Teaching

Statement	Mean	SD
Female professors set difficult exams in the same manner as male professors do for male students	2.78	1.33
Ease of course on female campuses as compared to the ease of course on male campuses	2.80	1.34
Female professors assign the same quantity of assignments that male professors assign to male students	2.91	1.33
Female professors interact with female students in the same manner that male professors interact with male students	2.98	1.21

In Table 5, participants identified four gaps in teaching methods they experienced as compared to male peers on male campuses. These gaps were the difficult levels in exams (mean= 2.78), course easiness (mean= 2.80), assignment quantity (mean= 2.91) and instructors' interaction (mean= 2.98). Therefore, it could be easily perceived that Saudi female college students assumed that their male peers on male campuses were seen superior hence were given much attention and enjoyed better teaching methods which in turn granted them better scores and grades in exams as compared to them. Table 5 also shows that female college students viewed their male counterparts on male campuses as having everything higher and better including questions set in exams and instructor's interaction. Male students enjoy good teaching interaction from male instructors as compared to female students. Meaningful interactions in schools are highly encouraged as this helps students to ask better questions and understand course requirements. Having a one-on-one interaction leads to a friendly and cordial relationship between students and teachers (Hong et al., 2017).

AlMunajjed (1997) indicated that women in Saudi Arabia do not receive the same quality of education as men because teachers and instructors within male campuses are better trained. The findings of AlMunajjed (1997) go on to state that more than 34 percent of male instructors teaching at male universities hold doctorates compared to only three percent of those who teach at women's universities and colleges. Saudi women are also not able to enjoy the 200 libraries mostly affiliated with schools, universities, and religious institutions or the 70 public libraries except through a male relative liaison or restricted visiting hours (Hamdan, 2005).

Arebi (1994) also states that libraries for women are just a few and often poorly equipped. This explains, in part, some of the challenges Saudi women have to overcome to attain the level of education that could be viewed to be equivalent to that of the men in the kingdom and the same reason why in Table 5 female students perceived ease of course at a 2.80 Mean. It is also one of the challenges that Saudi women face during employment as they are often made to take a course that is only for nursing, caretaking, or teaching (Rajkhan, 2014). Although in the literature gender bias is seen as a potential influencer for student rating in terms of teaching, research has also shown an insignificant effect of gender bias in course evaluation (Punyanunt-Carter & Carter, 2015).

Table 6. Reported Gaps in Content and Educational Opportunities

Statement	Mean	SD
Availability of training and internship opportunities for female students is similar to that of male students	2.84	1.29
Availability of instructional opportunities for female students is similar to that of male students	2.96	1.33

Interestingly, Table 6 depicts that the participants reported fewer gaps in educational opportunities compared to their male peers. Training and internship opportunities have the greatest gap (mean= 2.84) while instructional opportunities such as pursuing higher degrees scored the second-highest gap (mean= 2.96). From this data, therefore, one could deduce that Saudi female college students think their male peers received better training and instructional opportunities as compared to them. Jamjoom and Kelly (2013) asserted that Saudi female college students have a limitation in accessing training and internship opportunities especially in science majors, and that is reflected in their professional experience after graduation. This finding is not surprising in a gender-segregated society where all training has to maintain complete physical segregation between genders to avoid the mixing of male and female students. Such a requirement can however not be met by all businesses, especially small businesses. To address this issue, the 2030 Saudi vision has launched a fast-track to feminize some industries such as clothing and cosmetics industries (Bint Abdullah, 2018). Saudi feminization programs will open new training and internship opportunities for girls while satisfying social and cultural requirements.

Table 7. Reported Gaps in Participation in Campus Life

Statement	Mean	SD
female students' complaints are executed by university officials in the same manner to that of male students'	2.38	1.32
female students are allowed to express views and opinions in the same manner as male students'	2.69	1.31
female students are given equal opportunity in the representation of school competitions as compared to male students	2.89	1.33
female students' extracurricular activities are observed in the same manner as that of male students.	2.92	1.34
university officials reach out in support to female students in the same manner as compared to male students'	2.92	1.31

As shown in Table 7, Saudi female college students found gaps compared to their male peers in the following areas: complaints to university officials (mean= 2.38), expression of views and opinion (mean= 2.69), representation of school competitions (mean= 2.89), extracurricular activities (mean= 2.92) and personal interactions and support from university officials (mean= 2.92). Other gaps were reported but with lower significance such as obstacles in transport to and from university campuses and recognition of female students' achievements compared to male students.

From the interpretation of Table 7 and contrary to Bakoban and Aljarallah (2015), Saudi female students do indeed think that their male peers are enjoying more and better extracurricular activities than they do. When it does come to a relationship with university officials, due to the social and cultural barriers, female students are not allowed to show up in male campuses and offices of the university president or vice president to object or even to meet them in public to communicate or suggest anything that matters to them or that enables them in becoming successful students. Female students, rather, have to communicate with university officials through other channels such as emails or social networks, which leaves them to feel inequitable to their male peers. Also, female students' participation in national competitions requires the permission of their guardians as well as a strict cultural observation at the venue of the competition, which then indicates complications and restrictions preventing smooth participation. Moreover, unlike female students on female campuses, male campuses recognize male students' achievements through the posting of photos on official websites of the university as well as social networks which leaves female students feeling their accomplishments are less appreciated and been neglected. Findings from Al-Ansari et al. (2016) also confirms that the predominance of males decreases the level of Saudi female students' participation in off-class activities, which leads to significant dissatisfaction of female students with school-organized activities.

Table 8. T-test for the Two Groups in Participation in Campus Life

Sub-scale	Previous course with a male professor?				<i>t</i>	<i>df</i>	Sig.
	No		Yes				
	N=69		N= 118				
	M	SD	M	SD			
Participation in Campus Life	3.09	1.01	2.87	0.79	2.97	185	0.003

Table 8 depicts another interesting finding that there is a significant difference in the participation in campus life between participants who took a course with a male professor before and those who did not. Female students who happened to have been taught by male professors reported greater gap participation in campus life (Mean= 2.87, SD= 0.79) while students who were not taught by male professors reported less gap (Mean= 3.09, SD= 1.01). T-test for the two groups shows the significant difference where $t = 2.97$, $p < .05$. The table proves that by the level of interaction, those female students who were taught by male professors in the form of communication on a weekly basis get much exposure of the studied courses as well as in-depth explanations of concepts, leads them to participate more on-campus activities than their female colleagues who did not study from a male professor.

In the fifth section of the questionnaire, participants were asked about their perceptions of mobile learning to bridge the gaps resulted by gender segregation. The question was presented as follows: "Please select your agreement level with following statements considering that Mobile Learning here is the use of mobile technology in your learning processes (e.g. logging into Blackboard, accessing content materials, joining social network groups or websites that related to your courses or your university)."

Table 9, however, shows Saudi female college students significantly perceived the potential of mobile learning in bridging the reported gaps that existed in teaching, content, educational opportunities, and participation in campus life.

Table 9. Bridging the Gaps through Mobile Learning

Statement	Mean	SD
Submittal of assignments and projects without traveling to the campus	4.53	0.86
Access course materials and resources anytime and anywhere	4.48	0.87
Studying and learning anytime and anywhere	4.43	0.9
Catch-up with lectures during absences from school	4.4	1.06
Continuation of learning outside the classroom	4.4	0.9
Follow-up on university events	4.39	0.91
Live discussion with male professors	4.37	0.99
Taking courses with well-known male professors	4.36	0.95
Get timely information and feedback from my male professors	4.33	0.98
Get academic advice from male professors	4.32	0.98
Easier ways to comprehend courses outline and programs	4.3	0.93
Interact with a male professor while preserving religious and social traditions	4.28	1.04
Share accomplishments with the university community	4.28	1.04
Work in groups with colleagues without traveling	4.28	1.03
Medium to learn with professors that I cannot meet	4.25	0.96
Convenient for the discussion of subjects and course with male colleagues without meeting them in person	4.14	1.13
Deliver my complaint and suggestions	4.13	1.16
Share course materials and notes with male colleagues	4.13	1.08
Fill the gendered gap of female faculty members	4.07	1.21
Get the same quality of education that male students receive	4.07	1.11
Interact with male colleagues while preserving religious and social traditions	4.03	1.18

From Table 9, it could be readily understood that female students perceived submitting assignments and projects without traveling to campus as the highest way of bridging the reported gaps they lack as compared to their male colleagues studying at male campuses with a mean of 4.53 and SD of 0.86. Access to course material and resources anytime and anywhere came in as the second-highest with (4.48 Mean and 0.87 SD), showcasing that indeed with mobile learning implemented in schools, female students will also enjoy access to not just certain course materials and books, but also enjoy the interaction between male professors, and review course content on the move. Asabere (2013), explains the benefits and importance of mobile learning as an enhancement interaction between instructors and learners, a way to practice and encourage self-centered learning with great focus along with facilitating collaboration among students and instructors through both asynchronous and synchronous communication techniques.

Table 9 also reveals a high interest of female students of using mobile learning as a way to have more meaningful interactions with male professors in a manner in which they could not have or were allowed to have due to social, religious, and cultural values of Saudi Arabia, as seen from the data of live discussion with male professors (4.37 Mean and 0.99 SD). Getting timely information and feedback from male professors came up with 4.33 Mean and 0.98 SD and getting academic advice from male professors with 4.32 Mean and SD of 0.98. Sarrab et al. (2012) emphasize the need for Mobile Learning in schools as it enhances two-way interaction and supports direct communication between students and their teachers, in such a way that encourages shy or hesitant students to communicate more easily than in classrooms. Additionally, teachers of large groups can use Mobile Learning-direct interaction to give direct instruction to all students.

CONCLUSION

The discovery of Mobile learning (ML) introduces a more convenient way for students as well as teachers to make learning easier, interesting, focused, and most importantly available anywhere and anytime. Its usage in classrooms and as a mode of education has indeed benefited many different nations. Now as a way of bridging the gap of the gendered-educational system that favors boys more than girls in the Kingdom of Saudi Arabia, this paper sought to understand the perceptions of female students about teaching practices of instructors, availability of learning and resource opportunities given to them, as well as participation of activities on campus life, and suggests a solution of the usage of mobile learning in closing the gender gap in Saudi higher education.

Gender segregation was and is a very strong pillar in the socio-cultural society of Saudi Arabia and hence the education system as well. Female campuses are regularly administered and taught by female instructors with limitations to certain courses and subjects as compared to male campuses. There also exist gendered privileges made to male students when it comes to the availability of course materials and other research facilities over female students in the completion of a course or subject. Experienced male instructors who could impact the rightful teaching knowledge to students in a course or subject are only available for male students on male campuses, leaving female students inequitable.

Data gathered by this paper highly suggest that female students view Mobile Learning (ML) as a constructive and practical approach to use in bridging the one-sided gendered educational system of Saudi Arabia. Female students saw Mobile Learning (ML) as an easy way to access course materials and resources anytime and anywhere, being able to catch up with lectures when absent as well as submit assignments and projects without traveling to the campus. Female students surprisingly viewed Mobile Learning (ML) as a way to also be able to have a live discussion with male professors, get academic advice, timely information, and feedback from male professors. This made female students observe a bit of fairness in comparison to their male counterparts on male campuses as course materials, assignments can be viewed and retrieved anywhere, any time and there could be a one on one interaction with male professors and instructors without having to be in the same vicinity.

Mobile Learning (ML) is indeed a global advantage that should be implemented in the educational system of Saudi Arabia as a means of bridging the everlasting gap of gender separation, especially in schools to also address the empowerment of female students to compete at the same level with their counterpart male students.

A recommendation, however, of further and intrusive research should be conducted. One that will focus on effective implementation of Mobile Learning in female campuses as well as government assistance of promoting Mobile Learning in both public and private schools of female campuses.

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