

The Impact of Gender on English Professors' Use of Computer Technologies in Moroccan Universities

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Abstract

To prepare students to face the challenges of the twenty-first century, teachers should integrate computer technologies into their teaching practices. These modern technologies are very beneficial for both teachers and students. They help teachers develop professional through the use of various ways of teaching. Students, on the other hand, can increase their achievements in the sense that they access several materials. The use of ICT in classroom practices is extremely significant for providing opportunities for students to function appropriately in an information age. This paper aims to explore the effect of the gender factor on English professors' use of computer technologies in Moroccan higher education institutions. Descriptive analysis of means, and standard deviations were employed to analyse the collected data. Also, inferential statistics, especially the Independent-samples t- test, were used to determine the impact of gender on ICT implementation in the classrooms. The findings revealed that there were statistically significant differences in the means of males and females when using ICT in their classroom practices, $t(161) = -3.921, p < 0.05$.

Key-words: computer technologies, teaching practices, professors' gender, higher education.

Introduction

In the last decades, much research has been carried out to investigate the use of the new technologies in the field of education. During this time, there has been a shift from the focus on what computers could offer students to how to make effective and successful use of computer technology to facilitate learning (Chapelle, 2001). Hence, the integration of computer technologies in English Language Teaching (ELT) has become the interest of different educational stakeholders and policymakers since Information and Communication Technologies (ICT) provide several effective instruments that can boost both English language learning and teaching (Steel & Hudson, 2001). Higher educational institutions have recognized the importance of incorporating these new innovative gadgets within classroom practices. Indeed, these institutions have understood that computer technology could play a big part in transforming all the levels of education. For this reason, universities and other higher educational institutions are determined to provide the necessary devices and effective training for professors to achieve successful implementation of ICT in the classroom (Sahin & Thompson, 2006).

Like various countries, Morocco has undertaken numerous innovative and comprehensive educational reforms in an effort to ameliorate and update the quality of Moroccan educational

system. One of the most fundamental components of the last educational plan to reform Moroccan educational system is the integration of computer technologies in the teaching and learning processes to improve the quality of education provided for Moroccan students. Incorporating computer technology in education has become an important strategy to prepare learners cope with life in the 21st century. Indeed, Article 10 of the National Charter of Education and training of 1999 stresses the inclusion of ICT in education. It also backs up equipping Moroccan schools, universities and other institutions with many sophisticated instructional technologies. As a result of this plan, the Ministry of Moroccan Higher Education has been working hard to promote educational standards through attempting to computerise instruction in various schools and universities (Hamdy, 2007; Fatmi, 2011; Alj & Benjelloun, 2013).

Because of the great influence of computers on individuals and communities as a whole, higher education institutions have decided to integrate the new instructional technologies in teaching and learning processes as a way to help learners achieve the necessary skills to succeed in the digital age of the 21st century. More specifically, these technologies are thought to help students achieve a higher level of English language proficiency (Kay, 1999). Actually, several studies have indicated that the infusion of information technology into curricula could be advantageous for both teachers and learners. These technologies can help learners increase their achievement and boost their motivation. Teachers, on the other hand, can promote their professional development through adopting new and innovative educational approaches (Gulek, 2003). Integrating computers, smart phones and other technological instruments in education can reform classical strategies of teaching, motivate learners to be more autonomous and self-reliant, and boost students' achievements and teachers' performance (Abu-Rmaileh & Hamdan, 2006). Successful integration of ICT depends on several factors. One of these different factors is professor's gender. This paper aims to investigate the effect of gender on professors' use of computer technologies in Moroccan universities. This simply means that it intends to answer the following research question: Are there any statistically differences in professors' integration of ICTs based on their gender?

Literature Review

1. The Use of Computer Technologies for Pedagogical Purposes

Molnar (1997) mentioned that there are two fundamental roles of schooling. The first important function is conveying culture and values to the next generation. The second significant mission is teaching students the right skills to cope with the real world. Moreover, without having technologically skilful human resources, our students cannot participate effectively in this era which is described as the period of global information (Molnar,1997). Educational institutions did a magnificent work at preparing learners for an industrial age but not for the information age. Learners are in need of group and interpersonal skills, lifelong learning competences and qualifications to make effective use of technology to access information. A sophisticated technology-driven world is producing its own education in order to create the proper kind of citizens to be successful in the information age (Sherritt & Bason, 1996). Thus, schools and universities are required to prepare students to compete in today's technological world (Heflich, 1997). Indeed, the adoption of technology within our educational systems will profoundly transform classroom practices. Mckenzie (2000) maintained that the increasing demand for the workforce which is capable of matching job markets' needs has compelled different educational institutions to change their classroom practice and adopt technologically based instruction.

It is apparent that computer technology has become an important part of our daily lives. "Whether or not we touch a computer, it is almost impossible to escape its daily influence on

us; from speedy information transmittal, printouts, and receipts, to control of lights and temperature of our workplaces” (Deaton, 1990,p.1). If schools and universities tend to prepare learners for today’s job market, they should encourage the integration of computer technologies into the curriculum (Soine, 1996). If these educational institutions are not utilizing ICT, they are neglecting a significant portion of their learners’ environment (Cummings, 1998). In fact ,“ convergence of the economic necessities called into question the effectiveness of the educational system to prepare the future workforce with adequate amounts of human capital (knowledge, skills, and dispositions) to compete in world markets and economies” (Hornbeck & Salamon, 1991,p.65)

Therefore; teachers, in this information technological age, should know both the subject matter they instruct and the different effective ways this subject matter may be changed using computer technologies (Misha & Koehler, 2006). They are required to develop sufficient knowledge about technologies such as computers, the Internet and digital videos. This knowledge should incorporate how to install and remove several significant software programmes. In other words, they are required to master the necessary skills to operate different software tools especially word processors, Internet browsers, spreadsheets, and email (Misha & Koehler) . This is due to the fact that there has been a shift from a focus on information transmission through books and chalk to a concentration on information processing via computers and the internet (Barker, 1994).

2. Teachers’ Gender and Computer Technology Integration

There are different views regarding the relationship between teachers’ gender and the integration of computer technology across the curriculum. Several research studies have investigated the impact of this demographic variable on the use of computer technology for teaching purposes. For example, Mathews (1998) conducted an investigation on teachers’ attitudes regarding the use of educational technology with participants consisting of 5862 teachers. The researcher found that teachers’ gender is a predictor of instructors’ attitudes toward the implementation of ICT for pedagogical objectives. On the other hand, Hong and Koh (2002) carried out their study to explore the relationship between computer anxiety and the attitudes of 200 teachers regarding computers. The results showed that the differences between female and male teachers’ attitude toward computer use was not notable. Also, Shapka and Ferrari (2003) found that there were no considerable gender differences in teachers’ attitudes toward computer usage. Besides, Czaja and Sharit (1998) found that the impact of teachers’ gender on their attitudes toward computer usage was extremely trivial. They also revealed that older teachers were likely to be less comfortable and successful with the use of computers than younger ones.

Female teachers show more liking for computer technologies and more computer usefulness (Parish & Necessary, 1996). They are likely to make more successful use of ICT than males when they receive systematic and effective computer training. In educational institutions where female teachers have been provided with adequate computer training, it is often observed that they tend to be more competent and less reluctant to integrate computers in their teaching (Arch & Commins ,1989) . In their study, Ray, Sormunen, and Harris (1999) showed that female teachers had more favourable attitudes regarding the role that computer technology plays in helping teachers to be more productive. Also, the researchers found that women were reported to be more comfortable with computer technology than men.

On the other hand, Geissler and Horridge (1993) stated that male teachers are more dominant in the utilization of computer technologies than female ones. According to Kagijevich (2000), men make use of ICT more regularly than women. Also, Young (2000) noted that males have

stronger willingness to take part in different tasks requiring the use of computers than females. Furthermore, Kirkpatrick and Cuban (1998) found that males enjoy more exposure to technological instruments inside educational institutions and outside than females. Indeed, when new technologies are available, young males are likely to be the initial users (Norris, 2001). In addition, Van Braak, Tondeur, & Valcke (2004) emphasized that male teachers are usually more eager to include computer technologies in their teaching practices than female ones. Also, Khine (2001) reported that male teachers possess less computer anxiety and more willingness to integrate ICT than females.

Also, Shashaani (1994) noted that males are more motivated to use computer technology than females. The researcher, also, reported that males possess stronger willingness to try other technological devices than females. Jackson, Ervin, Gardner, and Schmitt (2001) concluded that females are more anxious regarding the use of computers, possess less effectiveness and insufficient computer training than males. Mitra et al. (2001) stated that males possess more favourable attitudes toward ICT and they are more likely to integrate computer technologies in their classroom practices. Straker (1989) have reported that male teachers are more inclined to make use of computer technologies in classroom practices than female teachers. Orr, Allen, & Poindexter (2001) found that computer technologies are more tempting to men than to women. As a result, male teachers are more likely to possess more computer experience than females who tend to develop more negative attitudes toward technology integration in the classroom (Schumacher, Morahn-Martin, 2001)

Chou (2003) conducted a study in which 136 teachers participated. To gather the required data, he used Internet Anxiety Scale (IAS). According to Chou, female professors experience more computer anxiety than male ones. Accordingly, Liao (1999) carried out a study to investigate the effect of gender on attitudes regarding the inclusion of computer technologies in teaching practices. Liao employed a meta-analysis method to collect the necessary data. The researcher concluded that men possess moderately more favourable attitudes toward educational technology than women. Moreover, Broos (2005) conducted a quantitative study including 1058 participants to examine their attitudes toward computer technology. The findings showed that gender, computer experience and computer utilization impacted attitudes toward computers. It was also reported that women were more anxious than men. Moreover, participants who had more computer experience were less anxious. Similarly, Smith (2005) conducted a study to investigate the correlation between gender, racial differences and the use of computer technologies. His study included 8 research questions and 310 participants. The instrument that was used to gather the data was Computer Self-Efficacy Scales. The study showed several different findings. The study found that men had higher levels of computer self-efficacy than women. Also, it revealed that females received limited support and possessed more computer anxiety than males.

Michie & Nelson (2006) examined the effect of gender on technology infusion in the classroom. Their study incorporated 140 participants. They used a survey instrument to measure self-efficacy and the desire to use computers. The results revealed that men had higher self-efficacy for computer technology, bigger desire to utilize computer technologies and less favourable attitudes. Also, Ventakesh & Morris (2000) revealed that “active involvement in computer activities may ultimately translate into higher achievement for males in computer-based technology, both in academic and career settings” (p.118)

Whitley (1997) carried out a meta-analysis of 82 studies on gender distinctions in relation to attitudes toward computers. The researcher reported two important findings with regard to this issue. First, men possess greater computer self-efficacy and own more favourable attitudes than women. Second, men tend to own more computer experience than women. Corresponding to this finding, Gill & Grint (1995) found that males tend to be more confident users of computer technology than females. This can be explained based on two models: the deficiency model

and the subjective choice model (Temple & Lipp, 1989). The former, i.e. the deficiency model, states that females use computers less due to inadequate training and education. The latter, i.e. the subjective choice model, indicates that females possess some personal characteristics that make them less tempted to the use of computers (Temple & Lipp, 1989). Another clarification that accounts for this difference has been proposed by Dambrot, Watkins-Malek, Silling, March & Garber (1985). They indicated that the difference between females and males with regard to the use of computers might have developed due to the fact that computers, at their early beginning, were used to deal with mathematics and science and women were reported to possess less mathematical abilities than men.

Wajcman (1991) found that “ Women’s profound alienation from technology is accounted for in terms of the historical and cultural construction of technology as masculine” (p.22). A study conducted by Levin & Gordon (1989) found that “ computer ownership was the predominant explanation of differences in attitudes between sexes” (p.80). Moreover, the study concluded that “investigating sex differences in attitudes toward computers without taking prior exposure into account distorts the picture” (p.85). Actually, many reasons have been suggested to explain why women do not possess the same favourable attitudes regarding the use of computer as men do. These various reasons include

1. The classical prejudice that computer technology is dominated by men (Lage, 1991).
2. Lack of female teachers as exemplar models (Stalker, 1987).
3. Computer technology is highly connected with mathematics, a sphere that is thought to be dominated by men as well (Thurston, 1990).
4. Male students are more likely to be more aggressive than females in the school (Elliott, 1990).
5. Women believe that computer technology concerns males rather than females (Forsyth & Lancy, 1989).
6. Women tend to take less advantages of using computer technology than men (Nelson & Cooper, 1989).

Generally, the literature highlighted previously indicates that there is a clear difference between male and female teachers and their decisions to adopt computer technology in educational institutions. It has been found that males use computer technology more frequently than females. In other words, the majority of studies that have examined the influence of gender on computer attitudes concluded that male teachers possess more positive attitudes regarding the use of ICT than do females (Anderson, 1987; Nickell & Pinto, 1986).

Methodology

This research paper investigated English professors’ use of computer technologies within Moroccan higher educational institutions. Specifically, it examined the impact of professors’ gender on their implementation of ICTs in classroom practice. In other words, it intends to answer the following research question: are there statistically significant differences in teachers’ use of computer technology based on gender? To provide a satisfactory answer to the previously mentioned question, two different types of research instruments were designed. The first instrument consisted of a survey questionnaire and the second one comprised several interview questions. Both descriptive and inferential statistical (t-test) analyses were used to answer the second research question.

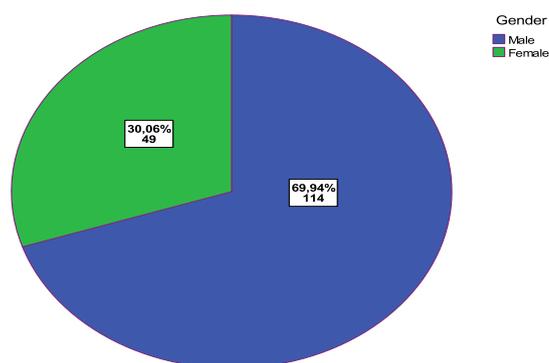
More than 300 teachers were invited to take part in this study. However, only 195 (65 %) full-time and part-time English teachers agreed to respond to the survey. The researcher discarded 32 questionnaires which were incomplete since they had significant parts of the survey instrument missing. Hence, 163 (54.33%) answered the questionnaire appropriately. Finally, the resulting sample size employed in this study was a total of 163 teachers working in various Moroccan higher institutions. Thirty-five professors work in Moulay Ismail University, twenty-three in Sidi Mohammed BenAbdellah University, sixteen in Ibnou Toufail, nineteen in Mohammed V, fifteen in Hassan II, eight in Hassan I, eleven in Chouaib Doukali, ten in Caddy Ayyad, seven in Ibnou Zohr, three in Abdelmaled Essaadi, Seven in Mohammed I, seven in Sultane Solimane, and two in Al-Akhawayne university.

Results and discussion

1. Findings related to the participants

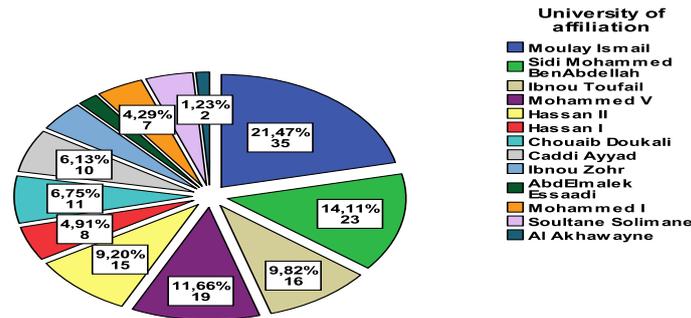
As shown in figure 1., the total number of participants was 163. The majority of respondents who completed the survey indicated that their gender was male (n = 114), 69.9 %. Of the remaining respondents, 49 (30.1 %) reported that their gender was female.

Figure 1. Distribution of Participants by Gender.



The professors participating in this study were from thirteen different Moroccan universities (Figure 2). The highest percentage of the respondents 21.5 % (n =35) taught English language at Moulay Ismail University followed by Sidi Mohammed BenAbdellah university, 14.1 % (n = 23). Of the 163 participants, 11.7 % (n = 19) taught at Mohammed V. The data showed that the representation of Mohammed I was somewhat less, 4.3 % (n = 7), equal with both Ibnou Zohr and Sultane Solimane universities.

Figure 2. Distribution of Participants by University of Affiliation.



2. Findings & discussion

In order to determine if there were significant differences between professors of English with regards to the integration of computer technologies based on gender, an independent-samples t-test was conducted. The significance level is set at $p < 0.05$. The results are shown in Table1. and Table2.

Table 1. shows the descriptive statistics for males and females with regards to the integration of computer technologies in teaching. The findings revealed that the mean of the female respondents was significantly higher ($M = 2.20$, $SD = 0.96$) than the mean of the male respondents ($M = 1.54$, $SD = 0.99$). This result suggested that female professors of English integrated ICT in their teaching more than their male counterparts.

Table1 Means and SDs of professors' use of ICT with respect to gender

Gender		N	Mean	Std. Deviation	Std. Error Mean
Professors' Use of ICT in Teaching	Male	114	1,54	,99	,09
	Female	49	2,20	,96	,13

Table 2 Independent-samples t-test of professors' use of ICT with respect to gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Professors' Use of ICT in Teaching	Equal variances assumed	,741	,391	-3,921	161	,000	-,66021	,16839	-,992	-,327
	Equal variances not assumed			-3,965	93,375	,000	-,66021	,16650	-,990	-,329

From the results shown above, the first line of equal variances assumed should be selected to interpret the t-value because the significance of the Levene’s Test for Equality of Variance ($p=0.391$) is larger than the significance level set at 0.05. This simply means that the assumption of equal variance has not been violated. Indeed, the findings revealed that there were statistically significant differences in the means of males and females when using ICT in their classroom practices, $t(161) = -3.921, p < 0.05$. To determine the effect size which provides an indication of the magnitude of the differences between the groups, Eta squared was calculated. To interpret the strength of Eta squared values, the following guidelines were used: 0.01= small effect, 0.06=moderate effect, 0.14=large effect (Cohen, 1988). The magnitude of the differences in the means was moderate (eta squared =0.08). This means that 8% of the variance in professors’ use of ICT in the classroom is explained by gender.

Based on the findings, the null hypothesis of no significance difference between professors’ use of ICT in teaching based on gender was rejected. The alternative hypothesis that there is a significant difference between professors’ use of ICT in instruction with respect to professors’ gender was accepted.

In light of the review of the data analysis of research question 6, the null hypothesis stating that there was no difference between professors’ integration of ICT based on gender was rejected because a significance difference was found between male and female professors’ use of ICT in teaching, $t(161) = -3.921, p < 0.05$. Female professors of English ($M = 2.20, SD = 0.96$) working in Moroccan higher institutions integrate computer technology in the classrooms more than their male counterparts ($M = 1.54, SD = 0.99$). Based on these results, the variable of gender seems to influence professors’ use of ICT in teaching.

The findings of the current study are consistent with previous research studies that have found that there were significant differences between male and female teachers in terms of ICT use for instructional purposes. For instance, Sadik (2005) found that Egyptian male teachers showed

more inclination to integrate ICT in teaching than females. Also, North & Noyes (2002) found that females possess fewer positive attitudes towards technology than males. It is worth-noting that many other studies have found that there were not any differences in professors' use of the new innovative technology based on gender (Kendel, 1995; Woodrow, 1992; Velasquez-Bryant, 2002;Wang, 2006). These studies tested for the impact of gender, age, academic rank, and teaching experience on teachers' implementation of ICT in the classroom. The findings of their studies revealed no significant effects of those variables.

Implications and recommendations

Based on the findings of the current research study, several recommendations for both higher education institutions and future research are presented in order to enhance professors' integration of computer technology in teaching and learning practices. The recommendations provided in the following subsections are concerned with various strategies that policymakers can employ to increase the effective implementation of ICT in higher education institutions. Actually, these different recommendations are provided for teachers, administrators, curriculum developers and researchers who are interested in conducting similar studies about technology integration in classrooms.

The findings revealed that there were low levels of ICT integration in higher education institutions. Therefore, it is recommended that universities need to increase professors' awareness of the significant value of integrating computer technologies for instructional purposes through various educational channels, mainly workshops and conferences.

The results also revealed that most professors complained about the lack of computer training. Therefore, universities should provide professors with specific technological training in the form of extensive workshops that focus on how to make effective use of modern technological tools in their teaching. This simply means that training programs which only offer basic computer skills are inadequate to help professors make successful use of ICT in the classrooms. Training programs should go beyond the mastery of the basics. Indeed, specialized training courses should aim at the acquisition of other significant educational techniques associated with planning instruction, designing teaching activities, and evaluating technology implementations. Thus, it is recommended that policymakers should shift from counting the numbers of computers in educational institutions to establishing a clear vision of how to make effective use of ICT through the provision of appropriate computer training. This training should be provided by educational technology experts who can keep professors abreast with the best techniques to integrate technology into lessons.

It was found that lack of institutional support had high impacts on professors' willingness to integrate ICT in universities. Therefore, support for computer technology implementation should be widely available. Actually, administrators are recommended to offer support to instructors through helping them overcome the challenges they face while utilizing information technology in the classrooms. Support may take the form of materials, technological equipment, professional development courses, and training to learn how to integrate ICT effectively into the curriculum. Accordingly, administrators of institutions of higher learning could provide

different incentives such as workload reduction and compensation for those offering technological support to others.

Conclusion

The value of modern technological gadgets in higher education institutions relies on how effectively professors integrate them into the curriculum. So as to grasp the use of ICT in Moroccan universities, the present study investigated the attitudes of teachers of English, the levels of their use of instructional technologies in the classrooms, the levels of institutional support, as well as the barriers that hinder successful technology implementation.

According to the results of the study, professors of English language possess positive attitudes towards the use of information and communication technologies in teaching practices. This suggests that the majority of professors understand the importance of computers inside and outside the university. In fact, attitudes of teachers are the foundation for success of any educational programs. However, the findings also revealed that the levels of computer technology integration are low. Teachers of English do not integrate ICT tools on a regular basis due to the existence of several barriers related to teachers as well as the institutions. The barriers that limited professors' use of computer technology for pedagogical objectives were lack of basis infrastructure, lack of equipment and materials, lack of teachers' computer skills, and lack of appropriate computer training, lack of time, and lack of administrative support. Understanding the barriers professors' face when they integrate technology in the classroom would help to find efficient methods to eradicate such obstacles which would result in producing a learning context which boosts the best strategies to enable students encounter future challenges . Actually, in order to enhance effective ICT integration in higher education institutions, the previously mentioned obstacles should be removed.

Though there is still much to know about the successful implementation of ICT in teaching and learning processes, the results of the present research have highlighted most of the significant factors that influence computer technology integration. To guarantee effective use of information technology for educational purposes, the factors tackled in the current study should be carefully considered and addressed by policy makers. Equally important, by considering the various factors that hamper professors' decisions to bring the new technologies into classroom activities, policy makers would aid the expansion of technologically integrated instruction and thus prepare students to face the challenges of the twenty-first century. In fact, universities must go beyond the policy of providing more sophisticated technological equipment in the classrooms. Instead, the designers of professional development plans are required to provide programs that would help professors acquire suitable technological skills and thus enhance students' achievements. When employed appropriately by skilled professors, these technological instruments can increase learning opportunities for all students and become powerful tools in supporting their achievements.

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