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An Exploratory, Descriptive Study of the Attitudes of Instructors and Students toward the Use of Asynchronous Online Discussion at a Female University in Saudi Arabia

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This exploratory, descriptive study examined instructor and female student attitudes toward asynchronous online discussion (AOD) in Saudi Arabia. Preliminary results, derived from an attitudinal-based survey, indicated that, in aggregate, instructors and students had positive attitudes toward using AOD at a female institution of higher education in Saudi Arabia. Inferentially, the two groups differed in their perceptions of using AOD in some instances. Additional results indicated that instructors were willing to teach using AOD and female students were agreeable to using AOD in their classes.

Overview

Education in Saudi Arabia is segregated by gender for all ages and at all grade levels. Female students receive their education separately from male students starting in first grade and on through the university level. In female-only universities, course-based interactions between male instructors and female students present particular challenges, especially within a traditional face-to-face learning environment such as physical proximity in the same space, a lack of general interactions in the areas of instruction and learning, and a dearth in the engagement of social presence. Thus, the current study will employ aspects of the community of inquiry (CoI) framework, conceptualized by Garrison, Anderson, and Archer (1999). This model draws from literature focused on interaction in an online environment primarily through the functions of instruction (teaching) and learning from the perspectives of student to student and instructor to student domains. According to Shea and Bidjerano (2009), the CoI “focuses on the intentional development of an online learning community with an emphasis on the processes of instructional conversations that are likely to lead to epistemic engagement” (p. 544).

Interaction

Traditionally, the idea of classroom-based “interaction” has been noted as a prominent element of any learning experience (Dewey, 1933). The literature in the field of education has suggested there is frequently a positive relationship between student-instructor and student-student learning and engagement in instruction within the construct of “interaction” (Chou & Liu, 2005; Sher, 2009). According to Yamanda and Akahori (2007), interaction in the context of education allows for robust communication that affords learners the dualistic components of comprehension and input toward subject matter. Further, interaction has been identified as one of the central constructs of online learning among students and between students and instructors (Sher, 2009). Sher found that interaction in a technologically-driven educational setting was not a singular concept, but instead a multi-dimensional construct in the sense that “...both student-student and

student-instructor interactions are significant contributors to the level of student learning and satisfaction in a technology-mediated environment” (p. 114). Online course interaction often comes in the form of asynchronous communication methods, such as e-mail, chats, webcams, and threaded online discussion tools. These asynchronous modes of interaction are often used in online courses to enhance learning (Wu & Hiltz, 2004) and foster discussion related to educational issues and questions (Clouse & Evans, 2003). As Zhu (2006) noted about the intersection of online learning activities and interaction, “interaction and student cognitive engagement during the online discussion are critical for constructing new understanding and knowledge” (p. 451).

Asynchronous Online Discussion

The current exploratory study focuses on asynchronous online discussion (AOD) to assist in the interactive aspects of teaching, learning, communication, and social presence. Research indicates that students using AOD, in comparison to a traditional in-class model, typically have more time to read, review, reflect, analyze, write, and respond to instructors’ and other students’ inquiries (Clouse & Evans, 2003; Gilbert & Dabbagh, 2005; Wang & Woo, 2007). AOD also has the potential to assist in facilitating communication between students and instructors in culturally-sensitive contexts, and AOD does not require, for instance, male instructors and female students to be online at the same time (Chen & Looi, 2007) where social presence or interaction may be moderated traditionally. AOD is regarded as a valuable educational tool because it relates positively to the outcomes of efforts to meet a variety of student-based educational needs such as interaction (Topçu, 2008) and peer-to-peer learning reciprocity by focusing on companion AOD students’ mutual learning obligation to one another in a nuanced, social virtual space (Hew, Cheung, & Ng, 2010). Furthermore, Hew and Cheung (2011) indicated that specific elements of AOD may support knowledge construction in a learning environment. Finally, flexibility, an important factor for students choosing to take classes online, is an advantage of AOD. In a study of the perceptions of pre-service teachers, Cheung and Hew (2005) found that the convenience associated with the flexibility of time was the primary benefit of participating in an AOD.

Although there are benefits to using AOD, some challenges also exist such as the potential for student isolation, technical difficulties, small group discussion problems, a decreased sense of community, and less social interaction (Hrastinski, 2008; Johnson, 2006; Wighting, Liu, & Rovai, 2008). As Hew et al. (2010) noted, “Many instructors and facilitators desire their students to contribute in online discussions. However...limited student contribution appears to be a persistent and widespread problem” (p. 595). Additionally, Nussbaum, Hartley, Sinatra, Reynolds, and Bendixen (2002) observed that students tend to repeat or agree with other students’ ideas and perceptions rather than share their own thoughts through “disagreeing, framing counter arguments, or providing examples” (p. 3). To help mitigate this problem, Nussbaum et al. suggested case or scenario building in online discussions in order to encourage and promote critical and higher-order thinking among students and as a way to improve the quality of the learning process.

Adoption of Technology

Rogers' (2003) diffusion of innovation (DoI) theory is employed frequently in the field to examine the adoption of technology in higher education settings and other educational contexts (Medlin, 2001). Typically, DoI uses survey-based, attitudinal responses to measure participants' openness toward adopting an innovative technological approach, such as AOD, in a teaching and learning environment. Rogers defined 'innovation' as "an idea, practice, or object that is perceived as new by an individual or another unit of adoption" (p.12). A number of studies (Al-Augab 2007; Al-Birini, 2006; Al-Shehri, 2005; Gupta, White, & Walmsley, 2004) pertaining to the "effect" of attitudes on the adoption of new technology in education draw upon Rogers' innovation-decision process theory, which is the "process through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision" (p. 20).

Student and Instructor Attitudes

Hogg and Vaughan (2005) defined an "attitude" as an organization of beliefs, feelings, and behavioral tendencies toward socially vital objects, groups, events, or symbols. In an educational environment, instructors' and students' attitudes play a crucial role in the achievement of educational goals. Thus, understanding faculty and student attitudes toward AOD is essential and may provide insights into the feasibility of implementation of AOD as well as the elimination of barriers. According to Rogers (2003), users' attitudes toward a new technology are an important component in its diffusion. People will adopt an innovation if they believe that it will enhance their productivity. Dorman (2005) also argues that studying attitudes is key in determining the level of students' and instructors' understanding, acceptance, and readiness for online learning.

Student Attitudes

Historically, education researchers have realized that an important factor in the implementation of new technology is its acceptance by users, which, in turn, is influenced by their attitudes toward using such technology (Koohang, 1989). Students' attitudes may range from great enjoyment to extreme dread, depending on their past experiences (Geisman, 2001). Drouin and Vartanian (2010) noted that attitudinally, "... online students report lower levels of connectedness to classmates than do their FTF [face-to-face] counterparts" (p. 155). Research carried-out by Kersaint, Horton, Stohl, and Garofalo (2003) argued that participants who have positive attitudes toward using technology feel more comfortable utilizing and integrating it into their educational context.

Instructor Attitudes

Instructors' attitudes are considered a primary predictor of the adoption and success of technology in the educational process (Al-Birini, 2006; Bullock, 2004). To be sure, instructors' attitudes have an enormous effect on the quality of online learning (Deubel, 2003). In the recent past, though, instructor attitudes have not always been supportive of the integration of technology in education (Hermans, Tondeur, van Braak, & Valcke, 2008). Al-Birini found that

“sometimes changes in attitudes are more important than changes in skills for teachers’ advance in technology integration” (p.375). Thus, the literature in the field has emphasized that the degree to which instructors choose to engage in a more technology-based teaching and learning environment may be heavily influenced by their attitudes toward technology and its use (Baylor & Ritchie, 2002; Keengwe, Onchwari, & Wachira, 2008).

Research Questions

Given that little research has been conducted to investigate instructors’ and Saudi female students’ attitudes regarding AOD in their higher education learning environments, there is a pertinent need to examine this issue. Thus, this study is a preliminary, descriptive examination concerning the use of AOD as part of an interactive teaching and learning environment. The study is guided by the following exploratory research questions: 1). What are the attitudes of instructors and students toward the use of AOD at a female institution of higher education in Saudi Arabia?; and 2). What, if any, mean differences are there in students’ and instructors’ perceptions of using AOD at a female institution of higher education in Saudi Arabia?

Methodology

A descriptive, survey research design was employed to explore Saudi instructors’ and female students’ attitudes regarding AOD in their higher education learning environments. The present study’s attitudinal-based survey, structured around previous work by Al-Augab (2007) and Al-Shehri (2005), consisted of 18 items related to instructors’ and students’ attitudes toward adopting AOD within the *milieu* of both the DoI and CoI frameworks. The items were anchored on a 1 to 5 scale of agreement, where 1 = *Strongly Disagree* and 5 = *Strongly Agree*. The descriptive analyses utilized means (M) and standard deviations (SD) to explore and describe instructors’ and students’ attitudes toward using AOD as well as inferential independent samples *t*-tests to determine if there were any statistically significant differences between students’ and instructors’ perceptions of AOD.

Sample

The entire female, undergraduate student population ($N = 2,700$), and associated instructors ($N = 297$), at a large university in Saudi Arabia were invited to participate in the online survey. To determine the minimum sample size required for this study, an *a priori* statistical power analysis using G*Power was conducted. For the overall independent samples *t*-test model predicated on an alpha level established at .05, minimum power set at .80, a moderate effect size (Cohen’s $d = .50$) anticipated, and the group allocation ratio $n_2/n_1 = 6$, the suggested minimum number of participants was $N = 260$. A total of 310 subjects participated in the study with instructors ($n_1 = 61$) and female, undergraduate students ($n_2 = 249$).

Reliability

To look at the scale’s score reliability, an internal consistency estimate check, via Cronbach’s alpha (α – ranging from .000 to 1.00), indicated that the 18 items on the scale had $\alpha = 0.93$ with 95% confidence intervals (0.91, 0.94), where the recommended cut-off value for score reliability

in basic (or applied) research is $\alpha \geq .80$ (Nunnally, 1978). Thus, $\alpha = 0.93$, for example, indicated high internal consistency and the items on the survey were greatly inter-correlated, or the 18 items shared 86% of the variance (i.e., $.93^2$).

Results

Through data screening, it was determined that there were only three missing data points and all were within the student sub-sample. Little's (1988) missing completely at random (MCAR) test was conducted and indicated that the missing data were MCAR ($p > .05$). Predicated on the fact that the missing data were established as MCAR and there was an extremely small amount of missing data at $< 5\%$ (Schafer, 1999), mean imputation was used to derive the sample's size of 310. The sample data were found to be normally distributed, where there were no discernible outliers present in the distributions for either group and neither group manifested skewness nor kurtosis problems with all values within ± 1.96 (Hair, Black, Babin, Anderson, & Tatham, 2006).

Instructors' Descriptive Attitudes toward AOD

Overall, the results indicated that both instructors and students were quite similar in their attitudes toward the use of AOD and, in aggregate, had positive attitudes. Instructors' attitudes were, comprehensively, positive toward the use of AOD ($M = 3.75$, $SD = 0.96$). Individually, the instructors' highest scored item was in response to Item 4: "Instructors and students need training before the implementation of AOD" ($M = 4.61$, $SD = 0.69$). Approximately 67.20% of the instructors strongly agreed with this statement (i.e., selected a response of "5"). The second highest scored item was in response to Item 13: "The institution should be concerned about the needs of instructors and students when adopting AOD." ($M = 4.58$, $SD = 0.59$). Approximately 62.30% of the instructors strongly agreed with this statement. The item that received the lowest score by instructors was Item 7: "AOD is as effective as the face-to-face classroom teaching" ($M = 2.69$, $SD = 1.25$).

Students' Descriptive Attitudes toward AOD

The overall attitude of students toward AOD was positive ($M = 3.86$, $SD = 0.99$). Students' highest scored item was in response to Item 4: "Instructors and students need training before the implementation of online instruction." ($M = 4.62$, $SD = 0.64$). Approximately 70.30% of the students strongly agreed with this statement. The second highest scored item was in response to Item 15: "The use of multimedia for online instruction will improve students' learning." ($M = 4.53$, $SD = 0.78$). Approximately 66.30% of the students strongly agreed with this statement. The item that received the lowest score by students was Item 8: "My institution has a good infrastructure for implementing online instruction." ($M = 2.33$, $SD = 1.22$). Table 1 displays the full range of descriptive means and standard deviations for all 18 questions for both instructors and students.

Table 1
Means and Standard Deviations for Instructor and Student Attitudes

Attitude Statements	Mean	Standard Deviation
1. I am interested in using AOD	3.85 3.95	0.90 1.08
2. AOD will affect the quality of education	3.60 3.38	1.08 1.22
3. The content of online instruction is high quality	3.79 3.93	0.99 1.01
4. Instructors and students need training before the implementation of AOD	4.61 4.62	0.85 0.46
5. AOD needs team effort before implementation	4.48 4.46	0.85 0.73
6. AOD requires a high level of experience with technology	4.33 4.33	0.87 0.88
7. Online instruction is as effective as face-to-face classroom teaching	2.69 3.06	1.25 1.23
8. My institution has a good infrastructure for implementing online instruction	2.80 2.33	1.18 1.22
9. The institution should support teaching online courses	3.92 4.27	0.88 0.99
10. AOD can be utilized in any university major	3.23 3.87	1.29 1.19
11. AOD will change the approach of teaching from teacher-centered to student-centered	3.65 3.85	0.84 1.00
12. I have a good knowledge about using AOD	3.00 2.80	1.17 1.11
13. The institution should be concerned about the needs of instructors and students when adopting AOD	4.58 4.46	0.59 0.79
14. My institution encourages instructors to provide online courses using AOD	2.77 2.43	1.07 1.12
15. The use of multimedia for online instruction will improve students' learning	4.21 4.53	0.90 0.78
16. At this time, most female students in Saudi Arabia are able to take online courses	3.64 4.33	1.08 0.97
17. AOD does not conflict with the female culture in Saudi Arabia	4.21 4.51	0.84 0.93
18. Online instruction is a suitable solution for admission problems in the university	4.18 4.35	0.87 0.98

Note. Instructors' means and standard deviations are the top values per each item.

Inferential Results

Independent samples *t*-tests were conducted to determine if there were statistically significant mean differences between the instructors' and students' perceptions of using AOD at a female institution of higher education in Saudi Arabia. Certainly, the two groups' sample sizes appeared to be quite uneven. O'Brien's (1981) threshold for "unbalanced" samples is factored as the " $\max(n_{ij})/\min(n_{ij}) \geq 4$ and the data are heavy tailed" (p. 572). The O'Brien ratio (4.08) for the two samples was approximately at the threshold. Thus, the more robust Levene's homogeneity of variance (HOV) test (Ramsey, 1994) was utilized due to the aforementioned normality of the

data in both groups (i.e., non-heavy tailed) and passable O'Brien's ratio value. The HOV assumption was met ($p > .05$) in every instance tested. Therefore, the sample data conformed to the assumption of HOV where population variances were assumed equal. Note that to control for an inflated Type I error rate due to conducting the same t -test 18 times, concurrently, the alpha level (i.e., initially established at $p < .05$) was re-set at $p < .003$ (i.e., $.05/18$). Figures 1 and 2 indicate that there were statistically significant differences ($p < .003$) between the two groups, with the student mean being much higher (i.e., more agreement) than instructors' means for both Item 10: "AOD can be utilized in any university major" ($t = 3.70, p = .001$) and Item 16: "At this time, most female students in Saudi Arabia are able to take online courses" ($t = 4.87, p = .001$).



Figure 1. Mean differences for item 10: AOD can be utilized in any university major.

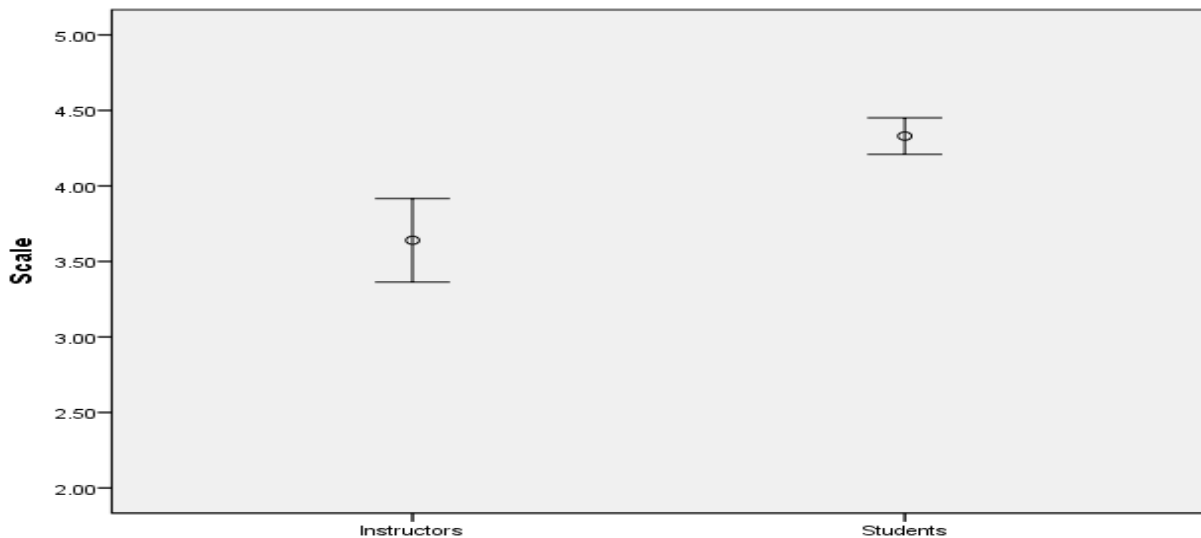


Figure 2. Mean differences for item 16: At this time, most female students in Saudi Arabia are able to take online courses.

Effect Size and Power

Effect sizes show the extent, or magnitude, of the mean difference between the item scores for the two independent groups: instructors and students. A common effect size metric of standardized magnitude used with *t*-tests is Cohen's *d* (1988). Thus, an examination of effect sizes allows for an evaluation of the importance of the results and not just the probability of the results (i.e., statistical significance). Effect sizes (*d*) of .20, .50, and .80 have been suggested to represent small, medium, and large effects, respectively, measured in standard deviation units. Power ranges from .000 to 1.00 with an acceptable level of power often considered to be at $\geq .80$, which means that there is an 80% probability of achieving statistically significant results.

The statistically significant items (#10 and #16) also had moderate to nearly large effect sizes (0.53 and 0.70, respectively) as well as optimal power (0.96 and 0.99, correspondingly). For example, Item 16 had a large effect of differentiating between the two groups by nearly three-quarters of a standard deviation ($d = 0.70$). That is, nearly 1.0 standard deviation separated the two means, which on a scale ranging from 1 to 5, is quite a large distance. Additionally, Item 16 had *post-hoc* power = 0.99, which meant that if there really were a statistically significant mean difference on this item between instructors and students, the chance of detecting this difference was 99%.

Discussion

Overall, the preliminary findings of this exploratory, descriptive study revealed that instructors and students had positive attitudes toward the implementation of AOD. The results indicated that AOD appears to be appropriate for female students in this Saudi Arabian university and suggested that both instructors and students were ready to employ AOD in their educational

environments. An explanation for this global finding may be related to internet literacy. That is, most of the participating instructors and students indicated average to high levels of technological experience.

Instructors perceived AOD communication as very useful. Further, AOD does not cause cultural conflict between Saudi female students and their male instructors in this educational setting and is perceived to positively contribute to the quality of education. Instructors believed that using technology for educational purposes could improve students' understanding and learning performance in an educational context. Findings also suggested that there should be some training and technical support in order to implement successfully AOD in a Saudi female institution. These findings support previous studies such as Al-Ghonaim (2005) who found that the attitudes of instructors and administrators toward the use of online instruction were positive. Al-Shehri (2005) noted that instructional staff tended to have positive attitudes toward online learning as an alternative to traditional educational methods. Also, the results of this study were similar to the work of Al-Augab (2007), who found that both female faculty and students had positive attitudes toward online instruction. Lastly, Seok, DaCosta, Kinsell, and Tung (2010) noted that instructors and students both had positive perceptions of online teaching and learning, in general.

Similarly, the present study's results indicated that female students' attitudes were positive toward AOD. Female students noted that AOD did not conflict culturally in terms of their interaction with male instructors. In addition, this study found that undergraduate students had positive feelings about the use of technology, which was also cited in Al-Arfaj (2001) and Al-Salem (2005) who noted that students had positive attitudes toward the use of online courses in their educational environments. Lastly, results suggested that to implement AOD in a Saudi female institution successfully, some training and technical support should be offered. This latter, particular finding was also noted by Al-Mogbel (2002) who investigated instructional staff, administrator, and student attitudes toward developing and implementing online distance education at Abha Technical College in Saudi Arabia.

Limitations

This study did have some potential limitations. One potential limitation was that the study involved translating surveys from the Arabic language into English, which may have resulted in a loss of meaning during the translation process. A second potential limitation was that, in Saudi Arabia, the Internet is a relatively new phenomenon. This may have limited the study results because some participants may have lacked sufficient experience in using the Internet. However, this potential limitation was addressed *a priori* in part by asking participants to report their actual level of internet experience in terms of months of usage.

Conclusions

Because this was an exploratory, contextually-bound, descriptive study, developing broad implications from it for the entirety of the field would be tenuous at best. However, based on preliminary findings, some conclusions derived from this research are certainly pertinent to the context of Saudi Arabia. Furthermore, these conclusions may relate reasonably as potential

guidelines to other educational contexts similar to those in Saudi Arabia (Al-Harhi, 2010; Azaiza, 2010).

Since both instructors and female students indicated they had positive attitudes toward AOD, and were interested in integrating AOD in courses, informed decisions about implementing AOD should be considered and strategized by all entities involved. Further, institutions might consider providing instructors with detailed information about AOD in order to familiarize students and instructors with this mode of instruction. For instance, AOD seminars and collaborative workshops could be initiated to support and empower instructors as well as promote AOD-related professional development. Because the lack of technical support and infrastructure was identified as a foremost barrier to implementing and/or using AOD, technical assistance and continuing education might be offered to students and faculty. Finally, as Du and Xu (2010) emphasized about the use of an emerging online teaching and learning system, "... be sensitive and cognizant of needs (not only expectations) of the students as they [online learning designers] create future distance education experiences" (p. 22).

Author Notes

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