Faculty Members' Knowledge and willingness to Implement the Universal Design for Learning for Students with Disabilities in Saudi Universities

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Abstract

Many students with disabilities and special needs are enrolled in higher education, which substantiated the need for research regarding faculty members' knowledge and willingness to implement supportive strategies in higher education in Saudi Arabia. This study explored Saudi university faculty members' knowledge and willingness to apply UDL (Universal Design for Learning) principles in their teaching practice. Surveys were used for data collection for this descriptive research. The findings indicated faculty members felt that they were knowledgeable regarding UDL and were willing to use UDL principles in teaching their students. Furthermore, there were no statistically significant differences between faculty members' knowledge levels regarding UDL based on their current position and years of experience. The findings indicated there was a significant relationship between gender and knowledge, with males having a significantly higher mean knowledge, although further analyses revealed it was a small effect. Finally, the results suggest more years of experience are related to greater willingness to use UDL principles, and this is particularly true for those in a lecturing position. These findings could be helpful, particularly for the Ministry of Education in Saudi Arabia to shed light on faculty members' UDL knowledge. Further research is needed to substantiate the findings.

Keywords:
Universal design for learning, learners with disabilities, faculty members, higher education.

1. Introduction

Many students with disabilities have the opportunity to receive higher education in the university setting. The prevalence of students with disabilities is estimated to be as high as nine percent of students attending post-graduate education (Horn et al., 2002). The number of learners with disabilities pursuing tertiary education has progressively continued to increase over time. According to Newman (2003), the National Longitudinal Transition Study (NLTS) gathered data for fifteen years, which illustrated that the rate of tertiary level education among youth with disabilities increased dramatically from 15 percent in the year 1987 to 32 percent in 2003. Diversity has continued to increase in the university setting, with research affirming there has been a rise and steady increase in the number of students with disabilities seeking higher education (Lang, 2015; Seale et al., 2015).

The number of enrolled students with disabilities may also be higher than reported, as some students with disabilities prefer not to disclose this information (Grimes et al., 2017; Kent et al., 2018). In turn, however, this lack of disclosure deters these students from receiving available assistance and support. Students with disabilities face additional challenges in the university setting, and such experiences may make it challenging for these students to excel within their surroundings (Lombardi & Murray, 2011). Numerous factors can affect students' journeys, both positively and negatively. For instance, Lombardi and Murray (2011) found that university operations and professors' approaches toward students with disabilities contributed to students' success or failure in these tertiary institutions. Much of the research in the field has established that academic stress factors were the main cause of difficulties for the learners (Gomathi et al., 2012; Lin & Huang, 2012). However, other research studies have documented few academic-related stress factors (Ross et al., 1999). Other non-academic barriers reported included conflicting priorities and individual and financial constraints, which caused learners to disengage from their studies (Xuereb, 2014).

These barriers indicate action must be taken to ensure students with disabilities receive the higher education they are entitled to receiving (Lombardi & Murray, 2011). Creating disability awareness is an effective strategy that can be used. In addition, abiding by principles of Universal Design (UD) is also an effective measure that should be considered. Essentially, these principles provide a meaningful and promising approach for ensuring that the needs

of all students, including students who have disabilities, are met. For instance, these principles advocate for the increased utilization of teaching approaches that are inclusive and tailored to suit the special needs of learners struggling with disabilities (Lombardi & Murray, 2011). Implementing principles of Universal Design for Learning (UDL) can help ensure students with disabilities are able to learn just like their peers without disabilities. UDL prepares professors to assist students with disabilities and helps students learn with their preferred methods of learning (Izzo et al., 2008).

However, research has suggested while many professors implement UDL principles in their teaching, there are few opportunities for practicing UDL to further their skills (Scott et al., 2017).Scott et al. (2017) conducted research to assess the training special and general education teachers had received. A survey regarding UDL training and Universal Design for Transition (UDT) was distributed to program coordinators at universities. The findings suggested 80% of participant incorporated UDL into their teaching, although they reported their institutions did not give them many opportunities to enhance their UDL skills.

Mu'ajini et al. (2009) have expressed the need for research regarding faculty members' knowledge and willingness to implement supportive strategies in higher education. Less than a quarter of universities in Saudi Arabia have policies and strategies in place for students with disabilities, while some newer universities plan to institute policies in the future, others do not have the resources and faculty to abide by the legislation (Mu'ajini et al., 2009). This lack of adherence to policy must be addressed and studied so that this information can lead to change and progress. Current research is limited, and there is a need for additional research on students with disabilities in higher education in Saudi Arabia (Alrashed, 2017; Althuwabi, 2009). Therefore, this study investigated the knowledge of university faculty members in Saudi universities and their willingness to apply UDL principles in their teaching practice. With this purpose in mind, the research questions were as follows.

Research questions

1. What are university faculty members' knowledge levels regarding UDL principles for classroom teaching?
2. What are university faculty members' levels of willingness to use UDL principles in teaching their students?
3. What are the differences in university faculty members' knowledge levels regarding UDL principles based on their gender, current position and years of experience in educating students?
4. What are the differences in faculty members' levels of willingness to use UDL principles based on their gender, current position and years of experience in educating students.

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2. Methodology

Research Design

The research design is descriptive, with surveys utilized for data collection. Descriptive methodology techniques were employed, as they enabled the researcher to most adequately explain attitudes within special education. Furthermore, descriptive methods are preferred when assessing attitudes regarding a specific technique or trend. Correlational methods were employed to answer questions about trends relating to demographics. Since experimental research is not possible with demographic variables and attitudes were assessed only at one point in time without an intervention, cause and effect conclusions cannot be made. Surveys were best suited for this research, because the researcher was able to assess the variables and the conditions of the variables (Rumrill et al., 2011). The survey method additionally allowed the respondents to have anonymity, so their responses could be reported without concern about personal information being revealed (Cohen et al., 2004).

The present study's quantitative research employed a two-part instrument to assess the knowledge of university faculty members in a Saudi university and their willingness to apply UDL principles in their teaching practice. The survey was developed based upon the research questions. Each item in the survey was generated purposefully to ensure thorough and meaningful data were obtained,

in accordance with the study parameters. The survey had twenty-six items, including three demographic questions, ten questions to measure knowledge, and thirteen questions to measure willingness. The researcher conducted measures of reliability. The survey used a Likert scale and asked faculty members about their knowledge and level of willingness of implementing UDL principles in their teaching practice for students with disabilities or students with needs in general in their classrooms.

Sample

Sample size must be carefully considered, as it can impact a study's findings (Nayak, 2010). This study's questionnaire was randomly distributed to participants at Umm Al Qura University, Saudi Arabia. The sample for this study included faculty members holding PhDs and working full time at the university. Using G* Power, the ideal sample size for the ANOVA portion of the study was calculated. Given the 4x2x5 design, an a priori analysis looking for a medium effect size and power of 0.80, an ideal sample size was determined to be at least 290 participants with complete data.

Instrument

This survey collected information about the participants. The demographic section included four items. Questions about their gender (male, female), current position (lecturer, assistant professor, associate professor, professor), and years of experience (less than 5 years, 6–10 years, and more than ten years) were included.

This survey was used to assess the knowledge of university faculty members in a Saudi university and their willingness to apply UDL principles in their teaching practice. The survey was used to determine whether there were statistically significant differences among faculty based on their, gender, current position, years of experience, and the students' disability types in their classroom. This instrument included twenty-three items with five points for knowledge and willingness. The participants answered a ten-item questionnaire about their knowledge of UDL principles using a Likert scale from one to five, with one indicating no knowledge, two indicating inadequate knowledge, three indicating adequate knowledge, four indicating

excellent knowledge, and five indicating superior knowledge. The second part of the instrument included a thirteen-item questionnaire where faculty responded regarding their willingness to implement UDL principles in their teaching practice. Their answers ranged from one to five on a Likert scale, with one meaning not willing, two meaning somewhat willing, three meaning willing, four meaning very willing, and five meaning very much willing.

A pilot study was done to assess the validity of the survey. The panel included specialists in UDL, higher education, and special needs. Furthermore, the reliability was established by distributing the survey to three Arabic professors, who ensured the Arabic version of the survey stated what was intended from the original language of the survey, which is English Language. Finally, the survey was given to a sample of fifteen educators with similar characteristics to the target educators.

The survey was translated into Arabic by the researcher. To measure validity, the researcher had an expert in both Arabic and English compare versions in both languages to ensure there was appropriate content, construct, and cultural validity. Back translating was then confirmed by three experts in English and Arabic.

The internal consistency estimates of reliability were then measured. The survey scales had good internal consistency with a Cronbach alpha coefficient for knowledge (ten items) of $.\alpha = 833$ and for willingness (thirteen items) of $\alpha = 0.743$. The researcher concluded the Arabic version was suitable and ready to be administered.

Data Collection

Following university approval, the survey was sent via email and or WhatsApp application to the faculty members at Umm Al Qura university in Saudi Arabia. The survey included the purpose, anonymity of participants, potential risks, and time allocations, so the participants were well informed and could give their voluntary consent if they chose. The participants also received three weekly reminders. After receiving results, Qualtrics was used to collect the data.

Data Analysis

The data was exported from Excel to a statistical software program, SPSS. To answer research questions one and two, descriptive statistics were used. These included mean, median, standard deviation, and range for each item of each scale, and the same statistics for a summative total on each of the two scales: knowledge and willingness. For research questions three and four, to compare gender, current position, and years of experience in terms of knowledge and willingness, three-way factorial ANOVAs were used, as the study was looking at differences among grouping variables on an interval-level dependent variable. For each ANOVA, the independent variables were gender, current position, and years of experience. The two dependent variables for the three ANOVAs were the sum total on the knowledge scale and the sum total on the willingness scale.

Findings

Prior to conducting analyses, data were screened to ensure all items were valid to be used. A factor analysis was done to ensure the knowledge and willingness questions grouped onto two separate factors in advance to answering the research questions. The factor analysis utilized maximum likelihood with varimax rotation. A two-factor solution emerged, with all knowledge questions loading onto one factor, and all willingness questions loading onto another factor. Further, all loadings for both factors were higher than .77, suggesting that all items were valid to be used in the full analysis. Also, a Request Response at Qualtrics Survey Software was used by the researcher to remind participants to complete the survey if a question was missed. This ensured there was no intentional skipping of questions and no missing data.

Sample Demographics

Participants were asked to identify their gender, current position, and years of experience. The sample (n = 290) was made up of 159 males (54.8%), and 131 females (45.2%). Of the 290 participants, 59 (20.3%) identified themselves as Lecturers, 130 (44.8%) as Assistant Professors, 70 (24.1%) Associate Professors, and 31 (10.7%) Full Professors. Participants had a normal distribution of experience, with 72 (24.8%) having less than 5 years of experience, 135 (46.6%) having 5-10 years of experience, and 83 (28.6%) having more than 10 years of experience.

What are university faculty members' knowledge levels regarding UDL principles for classroom teaching?

To assess the level of knowledge regarding UDL principles for classroom teaching, the researcher calculated descriptive statistics for each survey item. The results are displayed below in Table 1. The coding for questions 1-10 represented in Table 1 was: Strongly disagree = 1, Disagree = 2, Undecided or neutral = 3, Agree = 4, and Strongly agree = 5. As can be seen in Table 1, the means for all knowledge items were between undecided and agree, and for all items, both the minimum of 1 and maximum of 5 were represented. The knowledge items with the highest means were items 2 and 4, both with a mean of 3.43. Item 2 asks about the knowledge to apply different means of representations. Item 4 asks about the knowledge to apply different means of engagement. The knowledge items with the lowest mean was item 9, with a mean of 3.30. Item 9 asked about the knowledge to identify students' resources. The item with the highest standard deviation was item 10, which asked about the knowledge of the use of assistive technology. However, in general, faculty members had slight agreement with all of the knowledge items. This indicates that, on average, faculty members feel they have these types of knowledge, but with a lot of variation from person to person and only a slight agreement overall.

Table 1 The Level of Knowledge Regarding UDL Principles for Classroom Teaching

What are university faculty members' levels of willingness to use UDL principles in teaching their students?

The descriptive statistics for the willingness items from the survey are provided in Table 2. As can be seen in Table 2, means for all of the willingness questions also feel between undecided and agree, but means for willingness items are closer to Agree (4) than means for knowledge questions. The minimum (1) and maximum (5) scores were not represented on all items, but only on most. The

willingness item with the highest mean was item 8 (M = 3.97, SD = .636), which asks about willingness to provide changes to learn how to work most effectively with others. On item 8, only responses of 3, 4, and 5 were given. The willingness item with the lowest mean was item 7 (M = 3.69, SD = .667), which asks about willingness to provide options that reduce threats for everyone to create a safe space in which learning can occur. Standard deviations for the willingness items were all similar, in the .6-.8 range. Overall, participants demonstrated a general willingness to do each of the items asked about on the survey.

Table 2 The Level of Knowledge Regarding UDL Principles for Classroom Teaching

What are the differences in university faculty members' knowledge levels regarding UDL principles based on their gender, current position and years of experience in educating students?

For question three, a three-way factorial ANOVA with gender, current position, and years of experience as independent variables and knowledge total as dependent variable was used. The factorial ANOVA revealed a significant relationship between Gender and Knowledge, where males had a significantly higher mean knowledge (M = 34.60, SD = 9.39, n = 159) than females (M = 32.21, SD = 10.018, n = 131). However, partial eta squared for gender was .026, which is a small effect. All other factors and interactions were not significant (see Table 3).

Table 3 Tests of Between-Subjects Effects

What are the differences in faculty members' levels of willingness to use UDL principles based on their gender, current position and years of experience in educating students?

For question four, a three-way factorial ANOVA was also run, with gender, current position, and years of experience as independent variables and the total for all willingness items as the dependent variable. The results of the ANOVA can be seen in Table 4 and Figure 1. From the ANOVA results, it appears that there is a significant interaction between years of experience and current position, $F(5, 270) = 2.392$, $p = .038$. Figure 1 suggests that more years of experience are related to greater willingness, and that

this is particularly true for those in position 1 (Lecturers). For those in position 2 (Assistant Professor), there is a dip in willingness for those with an experience level of 2 (5-10 years). However, Levene's Test for homogeneity of variances for this ANOVA was significant, indicating that the assumption of homogeneity of variances was not met. Thus, nonparametric analyses were used to verify the results. A Kruskal-Wallis H test showed that, for Lecturers, there was a significant difference in willingness based on years of experience, with more years relating to more willingness (H = 8.276, 2 df, p = .016). The same Kruskal-Wallis H test was done with the other three groups (Assistant Professor, Associate Professor, and Full Professor), and none of those had the same significant relationship between years of experience and willingness (p > .05 for all three). This combination of results indicates that, for Lecturers, there is a positive relationship between years of experience and overall willingness, but this relationship does not exist for those in other positions.

Table 4. Tests of Between-Subjects Effects

Figure 1: Relationship between years of experience and willingness by position

Discussion

This study investigated the knowledge of university faculty members in Saudi universities and their willingness to apply UDL principles in their teaching practice. Findings indicated faculty members felt they had various forms of knowledge regarding UDL, although there was variation among their responses with only a slight overall agreement. Faculty members felt they were most knowledgeable about applying different means of representation and engagement. This aligned with previous research on UDL knowledge in Kuwait, which suggested a wide variance in participants' responses regarding their UDL knowledge. Additionally, observations made in the Almumem (2020) research indicated teachers seemed to be most knowledgeable about multiple means of engagement, similar to this research. Still, most research suggests more knowledge and training regarding UDL principles are needed (Almumem, 2020; Izzo et al., 2008).

The findings in this study also indicated there was only a significant relationship between gender and knowledge, where males had a significantly higher mean knowledge, although there was only a small effect. There was not a statistically significant relationship between faculty members' knowledge and their current position and years of experience. Alalyani (2021) similarly found no differences between gender, experience, departmental affiliation and participants' attitudes toward UDL and willingness to implement reasonable accommodations. While Alalyani's (2021) research measured faculty's attitudes and willingness to use accommodations such as applying UDL, it is pertinent to this research, because the findings of Alalyani's (2021) research indicated participants' attitudes evolved due to their knowledge or lack of knowledge of UDL principles.

The university faculty members' levels of willingness to use UDL principles in teaching their students suggested participants demonstrated a general willingness to implement the UDL practices on the survey. Faculty members indicated they were most willing to provide changes for students in the classroom to learn how to work most effectively with others. These results aligned with findings by Alalyani (2021), which suggested faculty members displayed willingness to ensure students with learning disabilities had adequate accommodations. However, the findings conflicted with findings by Binbakhit (2020), which indicated faculty do not have the ability and willingness to provide students with necessary accommodations for their disabilities. However, this was attributed to their knowledge level (Binbakhit, 2020). The discrepancy could be due to the faculty members in this research indicating they were knowledgeable regarding UDL principles.

Finally, this research also suggested there is a significant relationship between faculty members' willingness to implement UDL and years of experience and current position, as years of experience were related to a greater willingness, especially for those in the role of lecturer. Furthermore, for those in the lecturing position, more years of experience also led to higher levels of willingness. The findings also indicated there was less willingness for those in the role of assistant professor with five to ten years of experience. This

did not align with previous findings suggesting there was no difference between years of experience and departmental affiliation (Alalyani, 2021). However, Alalyani (2021) found their participants willingness was related to their knowledge levels for providing adequate accommodations. It is possible that more experience led to higher knowledge levels, so the same could be true for the current research that experience led to knowledge, which affected faculty members' willingness. More research is needed on this topic to better understand the discrepancy.

Conclusion

This study using descriptive statistics investigated the knowledge of university faculty members in Saudi universities and their willingness to apply UDL principles in their teaching practice. Some of the findings suggested faculty in Saudi universities are somewhat knowledgeable about UDL principles and generally willing to implement these practices. Additionally, there was not a statistically significant relationship between faculty knowledge and their years of experience. Finally, the findings suggested there was a relationship between willingness to implement UDL and years of experience and current position. These findings substantiate the need for future research on UDL and the relationship variables, such as gender, years of experience, and current position have with faculty members' willingness to implement UDL practices. This research is needed worldwide, but especially in Saudi Arabia, as limited research currently exists.

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