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Computer Science Program And Academic Performance Among Deaf University Students

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Abstract

The purpose of this study is to scrutinize the possible relationship between academic performance and computer science program among deaf university students. Data were collected through a survey questionnaire. The participants were 60 deaf students, 30 of whom are studying in the computer science program, and 30 are studying in the art education program at Zagazig University. The study's findings confirmed the presence of statistically significant differences in academic specialization among participants. The differences were statistically significant in the use of computer software as thinking tools for solving course-related problems The paper can be an important reference for understanding how deaf students use computer software in improving academic performance. This study contributes departments of education in universities to bridge the digital gap by prioritizing in their planning schedules and tool up curriculums to solve problems by using computer software for deaf students.

Keywords: academic major; academic performance; computer science; deaf students; educational activities.

Introduction

Deaf students are not just as likely as hearing students to get good grades and pass their classes in college. Despite this, only half as many deaf students as hearing students go straight from high school to university, and once there, they face a slew of obstacles that impede their higher education experience (Hendry et al., 2021). Deaf university students have academic and non-academic problems. Some of them struggle with reading and writing, many deaf individuals still struggle with reaching a functioning level of reading comprehension in any language (Sedláčková, 2016). Others struggle with course assignments, and still others struggle with educational activities software (Fitria et al., 2022). In this paper, I present research that demonstrates and explores how deaf students solve course-related problems by computer software.

Computer software, which is becoming more common and can be accessed from anywhere, can be used as an innovative learning resource (Hendikawati et al., 2019). Students require a learning resource that allows them to do individual learning activities on their own (Pratidhina & Sumardi, 2019). Computer software depends on the ability of the deaf student to deal with it on a computer or mobile device. A computer software experience can provide deaf students in university with a unique opportunity to learn; when positive, this

experience often motivates students to study. Conversely, negative experiences can sour a student's opinion of study.

Until recently, most research has focused on how to improve the learning of deaf students in the university. Several studies suggested looking for services and applications that help deaf students succeed academically in higher education (Alsalamah, 2020). Kang, K.Y., and Scott, J.A.'s study highlighted the effect of using technology on deaf students' learning (Kang & Scott, 2021). Belson noted that the use of instructional tools reduces the gap between individuals with a disability and normal students; to make a student an effective learner (Belson, 2002). Here, we present computer software as tools associated with the undergraduate research experience and explore their role in solving problems for deaf students.

Although international studies have looked into the technology used for deaf students, none exist that focus on teaching computer software for Deaf students and accessibility of current computer Applications as thinking tools for solving course-related problems. So conducting research is necessary to improve the situation and help education policymakers in deaf education (Mayer & Trezek, 2021). And develop a quality curriculum to provide skills of computer software for such students. Furthermore, as a result of a shift toward student-centered, constructivist instructional methods, Paul clearers the importance of individualized instruction and curriculum to meet the needs, interests, and abilities of Deaf adolescents (Paul, 2012). Student engagement has gotten a lot of attention in recent decades (Youngs et al., 2022). Helping deaf students to succeed in learning, and improve their access to educational resources is a challenge to any educational institution, these groups of students do face a huge challenge in doing learning activities as compared to abled students; They have difficulty acquiring knowledge (Jimale et al., 2022).

But, progress has opened up new horizons and given them more freedom in their lives, where Deaf students' software is modified or customized to improve their competencies and performance.to assist deaf students to perform these learning activities and expand their access to educational resources (Indrinal, 2022). Some computer software is providing a unique teaching method that is different from the traditional teaching style. This special type of teaching is mainly implemented using assistive technology (Too et al., 2016). However, deaf students who has not studied computer programs need support in using software while the self-learning process. Additionally, the instructors need to apply software technology and co-teaching while teaching deaf students (Alqraini, 2018).

The main question to answer in this paper is to explore and gain in-depth knowledge of how deaf students solve course-related problems by using computer software, and what challenges do they encounter? Through, validate if: (1) There is a significant academic difference between deaf students when it comes to using computer software to improve academic performance. The study's findings should shed light on how deaf students use computer software to improve their academic performance. The results of the study could be useful in choosing, designing, and planning computer software-related training for deaf students.

Research Method

The goal of the study was to explore and gain in-depth knowledge of how deaf students solve course-related problems by using computer software, and what challenges do they encounter? The paper is based on a quantitative research design method and uses computer software, for solving course-related problems among 60 deaf students at Zagazig University. 30 of whom are studying in the computer science program,

and 30 don't study computer software in the art education program.

The research instrument, a survey questionnaire, was prepared to answer the above research question. The design of the instrument was based on previous related studies about the use of computer software among deaf students.(Kaba & Ellala, 2020) There were eight items on the questionnaire. The study's sample consisted of all 60 deaf students majoring in computer science and art education. The print questionnaire was distributed in the classrooms to the participants. The collected data were analyzed using Statistical Package for the Social Science (SPSS). Averages and statistical tests were performed to answer a research question and achieve the research objective. Responses to the statements were rated “Low” if the mean score is between 0.00-1.00, “Moderate” if the mean score is between 1.01-2.00, and “High” if the mean score is above 2.00. Table 1 shows the distribution of participants in the study.

Table1. The participants count

Academic Major		Total
Computer Science	Art Education	
30	30	60

Findings

As stated earlier, in this study the use of computer software by deaf students. The following section explains the use of computer software by deaf students for educational activities.

Table2 .Computer software used by deaf students

	Statements	Academic Major	N	Average	F	Sig
1.	I use computer software for improving my language and correct writing mistakes.	Computer Science	30	2.76	16.17	0.00*
		Art Education	30	1.06		
2.	I use computer software to improve my thinking and focus.	Computer Science	30	2.93	53.00	0.00*
		Art Education	30	1.36		
3.	I can use computer software without attending formal training.	Computer Science	30	3.00	232.0	0.00*
		Art Education	30	1.33		
4.	I use my free times to improve my computer software skills.	Computer Science	30	2.93	1.39	.242
		Art Education	30	1.03		
5.	I help my colleagues in solving problems.	Computer Science	30	3.00	4.29	0.043*

	Statements	Academic Major	N	Average	F	Sig
		Art Education	30	1.03		
6.	I use computer software to prepare assignments and innovative presentations.	Computer Science	30	2.96	4.29	0.043*
		Art Education	30	1.00		
7.	I am keen to use the computer software whenever possible.	Computer Science	30	2.96	.000	1.00
		Art Education	30	1.03		
8.	I can use all computer software related to my courses.	Computer Science	30	2.93	9.60	0.003*
		Art Education	30	1.00		

*T-value is significant at 0.05

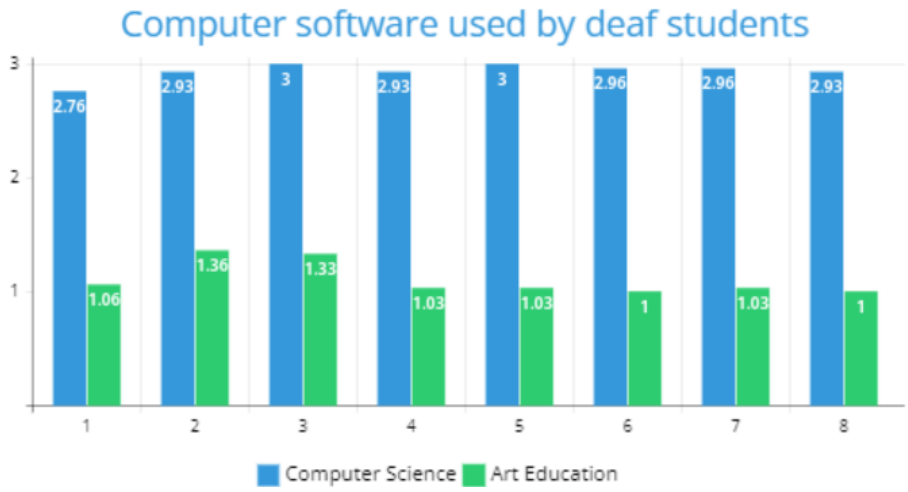

Figure 1. The use of computer software by deaf students for educational activities

As presented in Table 2 and Figure 1, respondents were asked to express their use of the computer software through eight statements. In the first statement, deaf students majoring in computer science seem to have better use of computer software for language improvement and correcting writing mistakes (Average = 3.00) than deaf students majoring in art education (Average = 1.33). The analyses of the independent t-test indicate a significant difference between students (Sig = 0.00) these findings indicate that an academic major has effect on the use of computer software improving language and correcting writing mistakes.

In the second statement, deaf students majoring in computer science are found to have better use of computer software for thinking and focus (Average = 2.93) than deaf students majoring in art education (Average = 1.36). Where the Independence t-test results show that the difference between students is significant (Sig =0.00). The findings indicate that an academic major may have an impact on the use of computer software for thinking and focus among deaf students.

In the third statement, deaf students majoring in computer science seem to have more ability to use computer programs without attending formal training (Average = 3.00) than students majoring in art education (Average = 1.33). The Independent t-test indicates that these differences are significant (Sig less than 0.05). The findings confirm that an academic major has an impact on the students' ability to use the computer software without attending formal training.

In the fourth statement, deaf students majoring in computer science spent more free time improving computer software skills (Average = 2.93) than the students majoring in art education (Average = 1.03). The Independent t-test indicates that these differences are not significant (Sig more than 0.05).

In the fifth statement, deaf students majoring in computer science help their colleagues in solving problems (Average=3.00) more than the students majoring in art education (Average = 1.03). Where the Independent t-test indicates that the differences are significant between the two groups (Sig less than 0.05).

In the sixth statement, deaf students majoring in computer science reported using computer software for assignments and presentations (Average= 2.96) than the students of art education (Average= 1.00). The Independent t-test indicates that the differences are significant (Sig less than 0.05).

In the seventh statement, deaf students majoring in computer science are found keener to use computer software anytime (Average=2.96) as compared to students majoring in art education (Average=1.03). However, the Independent t-test indicates that the differences are not significant (Sig more than 0.05).

In the eighth statement, deaf students majoring in computer science seem to be more confident about this statement (Average=2.93) than the students majoring in art education (Average = 1.00). The Independent t-test indicates that the differences are significant between the two groups (Sig less than 0.05) in favor of the higher average.

Discussion

This study has investigated the use of computer software among deaf students. The paper has explored the use of computer software for academic purposes among 60 deaf students.

The results of the study confirm a significant difference between deaf students majoring in the computer science program and students majoring in art education. The differences are significant among these students in using the computer software such as correcting writing mistakes, thinking tools, problem-solving, preparing assignments and innovative presentations, and the ability to use software related to the courses.

The findings highlight the importance of computer science curricula in promoting deeper engagement with content learning. In line with the study (Ghoniem & Ghoniem, 2022; HAWA et al., 2022; Ryoo et al., 2020).

It seems that computer science deaf students are more likely to use computer software than art education deaf students for solving course-related problems, which could be related to the issue of ability. This is because a high level of computer literacy may result in the extensive use of computers as educational tools. Similarly, poor performance may result in low use of computer software for solving course-related problems.

As the use of computer software is no longer optional, but rather a necessity and an essential resource for students to succeed in academic activities and enhance learning in higher education (Coymak, 2019). We found no significant difference between deaf

students majoring in computer science program and students majoring in art education in each of the fourth and seventh phrases, Where indicated art education students a wish to use computer software. To be more specific, respondents expressed their wiliness to use computer software whenever possible as an educational tool. In accordance with previous research (Maiorana-Basas & Pagliaro, 2014). Where Ellis and Bliuc explained that the quality of learning outcomes is increasingly shaped by experience with these tools (Ellis & Bliuc, 2019).

The results support the stated suggest the impact of an academic major on deaf students' use of computer software. In line with prior studies (Kaba & Ellala, 2020; Ryoo et al., 2020).

The differences among these students might be linked to the level of computer skills they have. Another possibility is the role of instructors in promoting the use of computer software among deaf students, instructors of deaf learners majoring in art education lack good practice that could be used to support students choice of efficient teaching techniques and software in improving academic performance.

Future research may look into teacher development to assist deaf students in improving their academic performance through the use of computer software.

Conclusion

Computer software has become a necessity and not a luxury for deaf students. Deaf students use computer software for improving language skills, for enhancing writing skills, and for improving thinking skills to solve course-related problems. Therefore, academic universities and colleges should Interest in teaching computer software to deaf students in various disciplines. Moreover, these institutions should also organize training and workshops for deaf students on how to use software applications for solving course-related problems. Future studies could be conducted among deaf students to determine the most widely used computer software as an educational tool among deaf students. Decision-makers may use the findings of such studies in providing computer software training for deaf students.

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