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Assessment of the Adaptive Learning System for Students with Learning Disabilities: An English Language Teachers' Viewpoint

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Abstract: This study aim to evaluate the adaptive learning system for students with learning disabilities from the perspective of English language teachers in Abha schools, as well as to identify statistically significant differences in evaluating the adaptive learning system for students with learning disabilities due to English language teachers' varying years of experience and academic qualifications. Data was collected from 75 instructors using online surveys. The findings indicated that English language instructors in Abha schools place a high value on the assessment of the adaptive learning method for students with learning difficulties. Where the cognition of adaptive learning is crucial from the point of view of English teachers in Abha schools. Also, from the perspective of English teachers in Abha schools, the teaching performance for adaptive learning is crucial. In addition, no statistically significant disparities in the assessment of the adaptive learning system for students with learning disabilities in Abha schools were found to be related to teachers' experience or academic qualifications.

Keywords: Adaptive learning system, Students with learning disabilities, English language.

I. BACKGROUND OF THE STUDY

In this digital era and with technological progress on a daily basis, the idea of being satisfied with e-learning has become insufficient (Viner, Singh & Shaughnessy, 2020). Since the first priority of educational technology is to take into account the individual differences among learners, the so-called adaptive learning appeared which seeks to develop digital learning environments and resources by creating an adaptation process for those environments with the characteristics of different learners (Martin et al., 2020). Adaptive learning provides learners with a personalized learning environment that includes different learning resources, in addition to adaptive content that includes multiple media of text, images, audio and videos, as well as achieves active learning, and individual personal learning is the main feature of adaptive learning (Erdem, 2017).

Every learner has personal ways of learning and acquiring knowledge. Learners are divided into visual, auditory and kinesthetic, or verbal, quantitative and qualitative learners. There is also a sequential learner and a reflective learner. Based on these classifications, the learning environments had to take into account those patterns during the design and preparation of electronic content (Khasawneh, 2021). Adaptive learning is a standards-changing innovation that has historically been used in remedial education through the use of highly integrated and advanced technical tools. It is also a means of using technology to help solve the problems faced by the educational institution when providing personalized and remedial forms of education, and treatment is widely important, especially for the diverse numbers of students with different educational needs, and is a convincing solution to the differences related to high educational costs, and the urgent need for producing more compelling and impactful learning experiences for new generations, where adaptive

learning offers means that are asynchronous with education, eliminating the need for scheduled remedial sessions or overnight training sessions (Standen et al., 2020).

Dimensions of Adaptive Learning:

Adaptive learning has three main dimensions, which are as follows:

1. Adaptive learning is an individual right for students with special needs.
2. Adaptive learning is the right of the student as an individual to benefit from positive learning processes.
3. Adaptive learning is an individual right and an opportunity that secures the creation of a rich learning climate in schools that gives equal opportunities to all students (Elmabaredy et al., 2020).

Adaptive Learning Standards:

In order to build an inclusive school based on the principle of adaptive learning, we need to look at three standards:

1. Frameworks: economics, school buildings, teachers' capabilities, behaviors and values, educational materials and the curriculum.
2. Processes: common practices in schools and classes, methods of organizing content, independence, student assignments, student activities, student feelings and their importance.
3. Feelings: What students feel about the educational and social environment within their school, expectations of peers, motivation, safety, self-confidence and self-esteem (Careen, 2016).

Basic Elements of an Adaptive Learning System

Content model: Refers to the way in which a specific topic, or content area, is organized with learning outcomes precisely detailed with definitions of the tasks that need to be learned. It can change based on the student's performance. The system must be able to select the appropriate content based on what the student knows and the level he has reached (Polat etal., 2012).

Learner Model: In order to adapt, many adaptive systems make statistical inferences about students' knowledge based on their performance. The Learner Model quantifies a student's ability level in different topics, or accurately tracks a student's current knowledge base and subtopics they have mastered, and may draw conclusions about The student’s cognitive learning style, or whatever time of day may be best suited to the student’s study, and learner models are still constantly evolving to add emotional state and motivational response to the student (Alghayth, 2019).

Teaching or guiding model: The guiding model defines how the system can choose specific content for a particular student at a specific time. In other words, it models the information from the learner model and the content as a model of an ideal situation that generates feedback for the learning or activity that will most likely drive the student's learning progress (Tony, 2019).

If course developers can make the content-adaptive, they are able to create adaptive whole courses as well. Instead of creating a learning environment to display a unit or lesson from the course content, an entire course can be shown adaptively, and of course this will have a huge impact on achieving the best results (Khasawneh, 2021b). The adaptive course, which includes content within it, is presented in an adaptive way that can achieve important results in the educational process. Instead of becoming a research experiment on one of the lessons, it is generalized to the entire course, rather schools adopt adaptive learning systems that

support the existence of an idea of the content and an adaptive course that suits all different types of learners (Viner et al., 2020).

Perhaps the idea of the adaptive course has existed for ages, not a few, through courses in sign language for the hard of hearing, deaf and dumb groups, and other courses in Braille for the blind and the visually impaired, where we find that each course is adapted to the category it is based on, which means that there are adaptive courses with the patterns of the learners (Khasawneh, 2021b). Preparing people with learning disabilities is a challenge for societies. It is necessary to prepare a society that believes in their abilities and provides full protection for them. This requires the preparation of highly qualified teachers to provide full educational support and take their hand towards development because learning disabilities is not a recent phenomenon, but the upbringing of this category is a relatively recent profession, as it had its beginnings in the nineteenth century in Europe to the present time (Viner et al., 2020). The concept of society for people with learning disabilities has changed due to their special needs that distinguish them from their peers, so that people with learning disabilities will not be an obstacle to the civilizational progress of nations and societies (Careen, 2016). The interest in this category is a religious, political, economic, and social requirement to provide a decent life in which they practice their activities with respect and appreciation, which requires providing good educational means that help them learn appropriately for their special situation (Elmabaredy et al., 2020). In addition, education is one of the components and pillars of life, so it is important to study the methods and techniques of education by forms that organize the elements of the educational environment in the learning situations with which the learner interacts in order to achieve education and the desired goals (Standen et al., 2020)

But with the emergence, spread and integration of the adaptive systems in all fields, scholars specialized in education introduced modern technology to the field of special education (Erdem, 2017). Experts had a high degree of enthusiasm to achieve those expected benefits from these technological methods used with people with special needs (Martin et al., 2020). Because they are devices, tools, or compensatory and assistive techniques for what they lost from their disability. When integrating technology into the educational process, it became clear that it helped learners to be creative and self-learning and save time and effort in their access to information and its delivery to others (Alghayth, 2019). The advanced means made advancement in the educational, medical and psychological level for people with learning disabilities (Elmabaredy et al., 2020).

Polat, Adiguzel, and Akgun (2012) conducted research to evaluate the requirements for developing an adaptive, web-assisted learning system based on criteria related to the severity of learning disabilities. Data was gathered from five subject area experts (psychologists and special education specialists) using semi-structured interview forms with open-ended questions, 15 parents with at least one kid with a specific learning disability, and six classroom instructors using open-ended survey questions. Three primary results emerged from the research: a lack of knowledge/interest about particular learning disabilities, the inadequacy of the specific learning disabilities support education program, and the inadequacy of applications, both inside and outside the classroom. Students with unique learning challenges, according to the findings, require a web-assisted system that is adaptable and can be utilized both at school and at home.

Tony (2019) mentioned that an important resource for children with learning disabilities to flourish in the classroom is accessible to assistive technology. It is critical for teachers to prepare students on how to use assistive technology in the classroom. The emphasis of this systematic research was on teachers' perceptions on assistive technology for students with specific learning disabilities. For this investigation, six scholarly papers were used. Teachers are amenable to assistive technology in their classes, according to the information gleaned from the publications. They saw assistive technology as a valuable tool for enhancing critical abilities like reading and writing comprehension. However, it is evident from their viewpoints that the instructors need more help than they could get in order to feel comfortable introducing and using

assistive technology in the classroom. To improve the development of children with specific learning disabilities, professional development and training, as well as the integration of suitable technological gadgets, are essential.

Elmabaredy, Elkholy, and Tolba (2020) looked at the impact of adaptive presenting strategies (adaptive multimedia/frames) on learning outcomes. Furthermore, the goal of this study was to see how both treatments affected learning. Group A (n = 35) was taught content using a multimedia-based method, while group B (n = 35) was taught content using a frame-based technique. The findings revealed that adaptive presenting approaches help pupils learn more effectively. In addition, when the strategies were compared, the mean scores of the two groups in fa revealed a significant difference. In addition, when the methodologies were compared, the mean scores of the two groups indicated a substantial difference in favor of group A. According to the findings, the adaptive multimedia-based method had a greater impact than the frame-based technique.

This study aimed to assessment of the adaptive learning system for students with learning disabilities from the point of view of English language teachers in Abha schools, as well as identifying the statistically significant differences evaluating the adaptive learning system for students with learning disabilities due to the variable years of experience and academic qualifications for English language teachers.

II. RESEARCH METHOD

The analytical descriptive research method was used, as it is the most suitable for this current study.

2.1 The Study Population and Sample

The study population includes teachers with learning disabilities, whose number is (78) teachers of the English language, according to official statistics from the Saudi Ministry of Education. Due to the small size of the population, questionnaires were distributed to all English language teachers for students with learning disabilities. (73) questionnaires were retrieved and found that all of them are valid for analysis.

2.2 Study Instrument

A questionnaire was developed to collect information on the adaptive learning system for students with learning disabilities from the perspective of English language teachers in the Saudi Ministry of Education, with reference to theoretical literature and previous studies.

2.3 The Validity of the Study Instrument

The apparent validity of the questionnaire was confirmed by presenting it in its initial form to 8 arbitrators of faculty members in the specialization of special education and educational technology in the faculties of educational sciences from different universities. In their observations, the extent to which the paragraphs belong to the topic, the extent to which the paragraphs belong to the fields and the linguistic formulation were taken into account. One of the most important observations of the arbitrators on the questionnaire was the deletion of four items from the questions of the cognitive dimension of adaptive education, and the deletion of eight items from the questionnaire from the dimension of teaching performance for adaptive learning, due to the presence of repetition in some paragraphs, and the modification of the wording of some paragraphs, so that the questionnaire assessing the adaptive learning system for students with learning disabilities in its final form is composed from (24). A five-point Likert scale was developed, which is (very high, high, medium, low, and very low).

2.4 Reliability of Study Instrument

The researcher performed Cronbach's alpha analysis, and the following table shows that:

Table 1. Cronbach Alpha Test

Dimensions of instrument	Value of Cronbach Alpha
The Cognitive of Adaptive Learning	0.783
Teaching Performance for Adaptive Learning	0.818
Overall	**0.827**

From the above table, we note that all Cronbach's alpha coefficients are valid for study purposes. Based on the recommendation of Saunders et al. (2016), the acceptable reliability value is 60% or more.

2.5 Data Analysis

The data in this study was analyzed using SPSS software. Statistical techniques such as means score and One-Way ANOVA were employed to fulfill the study's objectives.

III. RESULTS AND DISCUSSION

The table below shows that (23.2%) of the study sample have years of experience in the field of teaching ranging from (five years or less), while it was found that (65.8%) of the study sample have experience in the field of teaching (5-10 years). Finally, it was found that (11.0%) of the total study sample have experience in the field of teaching (more than 10 years). This result indicates that the vast majority of study members have experience ranging 5-10 years. As the table shows, that (2.7%) of the total study sample members of the research have a Diploma degree, while it was found that (79.5%) of the total study sample have a bachelor degree. Finally, it was found that (17.8%) of the total study sample have a postgraduate degree. This result indicates that the vast majority of the study members have a degree (bachelor).

Table 2 The Profile of The Teacher (N=73)

Variables	**Category**	**N**	**%**
Years of experience	Less than 5 years	17	23.3
	5-10 years	48	65.8
	More than 10 years	8	11.0
Level of qualification	Diploma	2	2.7
	Bachelor	58	79.5
	Postgraduate	13	17.8

To evaluate the adaptive learning approach for kids with learning difficulties in Abha schools from the perspective of English language instructors. The researcher used means and standard deviations for each of the questionnaire dimensions in this study.

Table 3 The means and standard deviations of all questionnaire dimensions

N	**Dimension**	**Mean**	**St. dev**
1	The Adaptive Education	4.01	0.65
2	Teaching Performance for Adaptive Learning	3.73	0.66
	Total	**3.87**	**0.52**

According to Table 3, the mean value of the adaptive learning system evaluation for students with learning impairments from the perspective of English language instructors in Abha schools is (3.87) and the standard deviation is (0.52). In other words, from the perspective of English language instructors in Abha schools, the assessment of the adaptive learning system for children with learning difficulties is critical. Furthermore, the mean score for the cognitive and adaptive learning dimensions from the perspective of English instructors in

Abha schools was (4.01) with a standard deviation of (0.65). In other words, from the perspective of English instructors in Abha schools, the cognition of adaptive learning is extremely important. Finally, the mean teaching performance score for the adaptive learning component from the perspective of English instructors in Abha schools was (3.73) with a standard deviation of (0.66). In other words, from the perspective of English teachers in Abha schools, the teaching performance for adaptive learning is extremely important. This finding is similar to that of Polat et al. (2012), Tony (2019), and Elmabaredy et al (2020).

Teachers' experience and academic qualifications were adopted to detect statistically significant variations in the assessment of the adaptive learning system for children with learning difficulties in Abha schools using the One Way ANOVA.

Table 4 Anova Test

V.	Groups	Sum of Squares	df	Mean Square	F	Sig
Y. EXP	Between groups	0.005	2	0.002	0.008	0.992
	Within groups	19.531	70	0.279		
	Total	19.536	72			
L. QUAL	Between groups	0.251	2	0.026	0.193	0.284
	Within groups	19.285	70	0.233		
	Total	19.536	72			

Table 4 shows that the P-values for years of experience and level of qualification between groups are (0.992) and (0.248), respectively, indicating that the year of experience and level of qualification had no statistically significant impact on the assessment of the adaptive learning system for students with learning disabilities in Abha schools.

VI. CONCLUSION

From the perspective of English language instructors in Abha schools, this study attempted to examine the adaptive learning method for students with learning difficulties. It may be concluded that English teachers are capable of dealing with the adaptive learning system in educating students with learning difficulties and achieving the intended goals. Teachers could pick the best possible approaches for teaching English by offering feedback and coaching if they understood adaptive learning systems for students with learning difficulties. Furthermore, the school administration should take the appropriate steps to address the challenges that instructors confront in order to make teaching easier. Furthermore, the school administration should take the appropriate steps to address the challenges that teachers confront in order to help them have a more effective teaching environment.

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