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# Using Universal Design for Learning for Students with Intellectual Disabilities: Practices in Saudi Arabia

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## Abstract:

Students with intellectual disabilities (IDs) differ from other students in mental capabilities. They face trouble in learning, remembering things, problem-solving and logical thinking. Universal Design for Learning (UDL) is developed for modifying educational program's design for students with IDs. Teachers hired for special education students adapt UDL guidelines to involve the students with disability with other students, regardless of their abilities it helps the students with disability with different methods such as videos, audio, and pictures. This study was conducted in Saudi Arabia to assess teaching practices based on the UDL framework for students with IDs. A total of 121 teachers from different regions of Saudi Arabia were recruited. SPSS-22 was used for analyzing data collected from the self-administered questionnaire. The outcome of the study showed some interesting results favoring the teachers' strategies to be useful and effective. The teachers designing class activities matching student interests was the most suitable and frequently used strategy to enhance the engagement of the students with their peers (p-value=0.021). Moreover, the strategy of encouraging students to use technology like tablets and laptops to learn class material was frequently used compared to other deliverance strategies (p-value=0.05). However, none of the approaches used by the teachers for better learning of the students

with IDs were found significant. In conclusion , the teacher is encouraged to actively participate in the improvement of the UDL framework which is beneficial for special education students and will help provide a balanced educational environment.

Keywords: : intellectual disabilities , learning , teaching practices , universal designn.

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# استخدام التصميم الشامل للتعلم مع الطلاب من ذوي الإعاقات الفكرية: الممارسات في المملكة العربية السعودية

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**المستخلص:**

يختلف الطلاب من ذوي الإعاقات الفكرية عن الطلاب الآخرين من ناحية القدرات العقلية. يواجهون مشاكل في التعلم وتذكر الأشياء وحل المشكلات والتفكير المنطقي. تم تطوير وتعديل (UDL) Universal Design for Learning للطلاب من ذوي الإعاقات الفكرية. يقوم المعلمون بتكييف إرشادات UDL للتأكد من اشتراك الطلاب المعاقين فكريا مع الطلاب الآخرين ، بغض النظر عن قدراتهم ، فهي تساعد الطلاب المعاقين على التعليم بطرق مختلفة مثل استخدام مقاطع الفيديو والصوت والصور. أجريت هذه الدراسة في المملكة العربية السعودية لتقوم بتقييم ممارسات التدريس بناءً على إطار UDL للطلاب ذوي الإعاقات الفكرية. تمت مشاركة ما مجموعه ١٢١ معلمًا من مناطق مختلفة من المملكة العربية السعودية. تم إجراء التحليل من خلال الحزمة الإحصائية للعلوم الاجتماعية (SPSS-22). أظهرت نتائج الدراسة بعض النتائج الايجابية التي تفضل استراتيجيات المعلمين لتكون مفيدة وفعالة. كان المعلمون الذين صمموا أنشطة الفصل التي تتوافق مع اهتمامات الطلاب هي الاستراتيجية الأنسب والأكثر استخدامًا لتعزيز مشاركة الطلاب مع أقرانهم (القيمة الاحتمالية = ٠,٠٢١). علاوة على ذلك ، تم استخدام استراتيجية تشجيع الطلاب على استخدام التكنولوجيا مثل الأجهزة اللوحية وأجهزة الكمبيوتر المحمولة لتعلم مواد الفصل بشكل متكرر مقارنة باستراتيجيات التسليم الأخرى (القيمة الاحتمالية = ٠,٠٥). ومع ذلك ، لم يتم العثور على أي من الأساليب المستخدمة من قبل المعلمين لتقوم بتحسين التعلم للطلاب من ذوي الإعاقات الفكرية ذات الاهمية. ختام ، يتم تشجيع المعلم من خلال التوصيات على المشاركة بنشاط في تحسين إطار UDL الذي يستفيد منه طلاب التربية الخاصة وسيساعد في توفير بيئة تعليمية متوازنة.

**الكلمات المفتاحية:** الإعاقات الفكرية ، التعلم ، الممارسات التدريسية ، التصميم الشامل.

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# 1. Introduction

Over the years, significant advancements have been observed in the education of students with disability. The Education of All Handicapped Children Act (EHA) of 1975 was the first legislation to provide appropriate education to students with disability based on individual needs. Later on, the Individuals with Disabilities Education Act (IDEA) was passed to allow the students with disability access to general curriculum. However, it was updated in 2004 to align with academic standards. The most recent legislation, Every Student Succeeds Act (ESSA) of 2015, took the education of students with disability a step further by requiring Universal Design for Learning (UDL) in education. UDL has become an important program for the inclusion of students with disabilities, especially those with intellectual disabilities (IDs). IDs often have significant limitations in adaptive behavior skills and intellectual functioning, which makes it crucial to have a program that caters to their specific needs. According to the American Association on Intellectual and Developmental Disabilities (2021), UDL can help in developing a more inclusive environment for students with disabilities. By providing multiple ways of engagement, representation, and expression, UDL can enable the students with disability to access and succeed in the general curriculum alongside their non-disabled peers. Additionally, UDL can help teachers to identify and address the unique needs of their students with disability, leading to more effective instruction and better academic outcomes for all students.

The concept of UDL was introduced by the Center for Applied Special Technology (CAST) in the United States during the 1990s. The primary objective of UDL is to increase participation and academic success for all students, with particular attention paid to students with disabilities. The framework aims at reducing barriers to learning and increase accessibility for students with a range of abilities (CAST, 2011). UDL is built on the principles of flexibility, simplicity, and fairness, which allow for the fulfillment of the diverse needs of students. It enables educators to make

individualized adjustments to the curriculum and instruction that best support each student's learning process. Additionally, UDL allows for the use of assistive technologies for enhancing student learning and participation. The framework of UDL comprises three primary principles: representation, expression, engagement, and actions. These principles support student learning through multiple means of representation, expression, and engagement. By using these principles, educators can create a more inclusive learning environment where students can learn and engage with the curriculum in ways that are most effective for them (Israel et al., 2014).

## 1.1 Importance of Research

The concept of UDL recognizes the uniqueness of each individual's mind, which is shaped by various factors, including anatomy, physiology, and chemistry. The primary objective of UDL is to increase accessibility and reduce barriers to learning for all students, including those with special needs (Schreffler et al., 2019). Considering the major brain networks (recognition, affective, strategic), UDL seeks to meet needs of diverse learners and provide individualized support where necessary through education and technology adjustments. This aligns with the theories of education pioneers such as Vygotsky and Bloom, who stressed the importance of emotional, skills-based, and cognitive learning (Meyer et al., 2014; AlRawi & AlKahtani, 2022).

UDL offers a customizable framework for education that accommodates diverse learner needs. It is based on three principles that aim to engage the students, offer multiple ways to represent information, and provide alternatives for expressing knowledge (CAST, 2011). To increase engagement, UDL emphasizes student motivation through meaningful choices, self-regulation, and feedback. To offer multiple ways of representing information, it employs a variety of devices, control schemes, and media (CAST, 2011). Moreover, to provide alternatives for expression for the students with intellectual disability in Saudi Arabia, it allows learners to

practice knowledge and skills using different approaches. These principles guide instruction and course design to develop flexible and inclusive approaches that meet the unique needs of each student.

The UDL framework has attained worldwide recognition and its principles and guidelines can be accessed in several languages, including Arabic and Chinese, on the CAST Institute's website. The researcher and policymakers suggest implementing UDL as a flexible framework that can be adapted to meet the individual needs of students with IDs. By rendering multiple means of representation, action and expression, and engagement, UDL can help students with IDs to access the general curriculum and participate fully in the learning process. These students are often isolated or excluded from educational experiences and activities, but UDL offers a different approach, emphasizing changes at the foundational level instead of requiring individualized modifications from teachers (Rao et al., 2017; Al Hazmi & Ahmad, 2018).

## 1.2 Problem of the Study

Several studies have been conducted to evaluate the implementation of educational practices for children with disabilities. However, few of these studies have specifically focused on the adoption of UDL for students with IDs. Despite the potential benefits of UDL for students with IDs, only few studies have researched about implementation of UDL practices in the classroom. More studies are needed to evaluate the effectiveness of UDL for students with IDs, and to identify best practices for implementing UDL in the classroom. This research gap is significant because the students with IDs face unique challenges when it comes to learning, and they often require more support and specialized teaching practices to help them succeed. UDL principles for the students with IDs do not receive sufficient attention in research, while there have been some studies investigating the effectiveness of UDL principles for students with other types of disabilities. Hence, this study aims to focus on the use of UDL principles by teachers for the students

with IDs. It is unique compared to previous research as it specifically examines the teaching practices of teachers and examines their usage of UDL in teaching and assessing the students with IDs. Finally, only some studies that have studied the UDL for students with intellectual disability in Saudi Arabia.

## 1.3 Significance of the study

The present study is significant as it assesses teaching practices of the teachers of students with IDs using UDL. The practices of teachers would be assessed based on how they build up engagement, their pedagogical approach, and their code of deliverance with the students with IDs. The present study is significant for various reasons.

Firstly, the students with IDs require specific teaching approaches and practices that address their unique learning needs. UDL principles provide an approach that can be used for creating a learning environment including all the students, regardless of their abilities.

Secondly, the study also provides valuable insights into the effectiveness of UDL principles in the context of teaching the students with IDs.

Thirdly, this study contributes to the existing literature on inclusive education.

In inclusionary education, students from all backgrounds are provided with education regardless of their abilities, and UDL principles can play an essential role in achieving this goal. The study provides insights into how UDL principles can be used considering inclusive education for the students with IDs. Moreover, it also provides practical implications for teachers working with students with IDs and develop training programs and resources for teachers for improving their teaching practices and better support the learning of the students with IDs.

## 1.4 Study Objectives

1- To identify the teaching practices adopted by teachers when instructing the students with IDs.

2- To assess how teachers build engagement with the students with IDs through UDL practices.

3- To examine the pedagogical approaches used by teachers to implement UDL for the students with IDs.

4- To explore the impact of the code of deliverance on the UDL practices of teachers teaching the students with IDs.

## 1.5 Research Questions

1- What teaching practices are adopted by teachers when instructing the students with IDs?

2- How do teachers build engagement with the students with IDs through UDL practices?

3- What pedagogical approaches do teachers use to implement UDL for students with IDs?

4- How does the code of deliverance impact the UDL practices of teachers teaching the students with IDs?

## 1.6 Summary of previous research in introduction

Nieminen and Pesonen (2019) reviewed the perception of three children with a disability regarding the universal design in the learning of mathematics. The results of the study show that despite implementing universal designs, students face hurdles and separate themselves from the student cohort. This study suggested linking the universal design with the roots, social model of disability and understanding regarding the hurdles the children with disability face during education and designing inclusive models of learning with the participation of all. A study conducted by Khochen-Bagshaw (2020) showed

that the pace of inclusion for children with disabilities is not fast-tracked. This requires governmental and non-governmental interventions to reduce the challenges and facilitate this inclusion to promote the idea of educating differently-abled children. Mohamed et al. (2022) figured out the level of adoption of UDL by teachers to educate students with disabilities. The study investigated the moderating role of gender, qualification, and experience. The findings of the study found no statistical difference based on the qualification and experience of teachers.

## 2. Literature Review and Theoretical Framework

### 2.1 Theoretical Background

The theory that could be used to state the theoretical background for this study is the Social Model of Disability (SMD). This theory views disability as a social construct that is created by barriers and attitudes within society, rather than as an inherent characteristic of an individual. In this model, the focus is on removing barriers and creating inclusive environments that enable individuals with disabilities to fully participate in society.

SMD is a theory that views disability as a social construct created by barriers and attitudes within society rather than as an inherent characteristic of an individual (Masoga & Maoto, 2021). According to this model, disability is not a personal tragedy, but a result of social, political, and economic barriers that limit the participation of individuals with disabilities. The concept of disability has undergone a paradigm shift, moving away from a purely medical or individualistic understanding to one that recognizes it as a social construct. This perspective posits that disability is a result of the interaction between individuals with impairments and the barriers present in their environment, rather than a problem solely inherent to the individual (Masoga & Maoto, 2021).

SMD is particularly relevant to the study of UDL practices for the students with IDs. An inclusive learning environment can be attained by using UDL,

in which barriers to learning are removed and multiple means of engagement, expression, and representation are provided. UDL is based on the idea that the students have diverse learning needs, and that educators should provide a range of options and supports to meet these needs.

Studying this topic in the present context, the SMD provides a theoretical framework for understanding the challenges faced by students with IDs in Saudi Arabia and the importance of adopting UDL practices to accommodate their needs. Historically, Saudi Arabia is a country where the students with IDs have experienced significant barriers to access education. Students with IDs can overcome these barriers by adopting UDL practices that create inclusive learning environments. Through the use of multiple representational, expressive, and engaging methods, UDL can help ensure that the students with IDs have equal opportunities to learn and succeed.

SMD aligns with the principles of UDL, as both aim for removing barriers to learn and promote inclusivity. In the context of the students with IDs, UDL practices can help to provide the necessary supports and accommodations that allow for the full participation in the learning process. In addition, the SMD emphasizes the importance of recognizing and addressing the systemic barriers that contribute to the exclusion of individuals with any disability. By examining the teaching practices of educators in Saudi Arabia, this study can help identify and address systemic barriers to adopt UDL practices and promote inclusive learning environments for the students with IDs.

Research has shown that UDL practices can support the learning of the students with IDs. A study by Anderson (2022) found that UDL practices can improve academic outcomes for the students with IDs by providing manifold means of expression, representation, and engagement. Another study by Syre-Hager (2022) found that UDL practices can increase student engagement and participation in the learning process.

There is a growing recognition of significance of inclusive education and the need to deliver equal opportunities for the students with disabilities in Saudi Arabia. The Ministry of Education has taken steps to promote inclusive education by developing policies and guidelines for the inclusion of the students with disabilities in the schools (Ministry of Education, 2018). However, there is still a need for research on implementing UDL practices in Saudi Arabia for the students with IDs.

Therefore, the present study focuses on the use of UDL practices by teachers in Saudi Arabia who instruct the students with IDs. The study will explore how teachers build engagement, their pedagogical approach, and their code of deliverance while teaching the students with IDs using UDL principles. The present study would help develop inclusive education practices in Saudi Arabia, by identifying best practices and strategies for supporting the learning of students with IDs.

## 2.2 Previous Studies

In another study by Black et al. (2015), it was found that students with disabilities face barriers to learning. However, both disabled and non-disabled students acknowledged having various learning preferences and supported the usefulness of Universal Design for Learning/Instruction (UDL/UDI) principles in improving their learning. The study also highlighted the perspectives of the students with disabilities in higher education regarding UDL/UDI principles, indicating that they are effective in enhancing their learning experience.

UDL is known as a teaching methodology that is often recommended for inclusive teaching in diverse contemporary classrooms. It is based on proactive planning for providing appropriate support and anticipating the potential needs of the students. Capp (2017) showed that UDL is an effective teaching method to improve the learning process of students with disabilities.

Evmenova (2018) explored the implementation of UDL by 70 educators that included teachers from general and special education. The study's thematic analysis identified different strategies to provide UDL, blended learning, and from no technology to high technology tools. The study revealed increased eagerness among the teachers to recognize the value of UDL and implement it. Further, it suggested that modeling UDL practices can encourage its implementation in the classroom setting.

Schreffler et al. (2019) conducted a study to evaluate the impact of UDL on postsecondary Science, Technology, Engineering, and Mathematics (STEM) instruction for the students with disability. The results of the study indicated that UDL has the potential to support the students with disability in postsecondary STEM education. The findings emphasize the need for further exploration and implementation of UDL principles in this context to ensure equal access to educational opportunities for all students.

Kennette and Wilsons (2019) aimed to explore student and faculty perceptions of the presence of UDL principles in the classroom. The authors found that there was much agreement on the presence of UDL principles, but there were also differences in perspectives between the students and faculty. The study suggests that these differences in perspectives may be due to the frame of reference each group brings to the classroom or the lack of explicit transparency by faculty in labeling UDL practices. For example, faculty may include reflection as part of an assignment but not explicitly label it as a UDL practice. The study highlights the importance of explicitly communicating UDL practices to both students and faculty to ensure a shared understanding of how these practices can support learning for all the students. The findings can inform the development and implementation of UDL practices in higher education settings, including in Saudi Arabia, for the students with IDs.

Westine et al. (2019) focused on the promotion of executive functions in the students through UDL principles and guidelines. It revealed that UDL

can improve the students' learning and participation by eliminating barriers and promoting classroom practices that enhance executive abilities. It was concluded that UDL has the potential for improving inclusive education practices for the students with disabilities.

According to Van Munster et al. (2019), Three main approaches to teaching were identified: normalized, universally designed, and differentiated instruction based on the UDL principles through thematic analysis. Differentiated instruction was found to be the most common approach used. Both approaches were considered significant resources for accommodating the students with disability in physical education.

García-Campos et al. (2020) examined the impact of UDL guidelines on the promotion of executive functions in the students with IDs. The study found that cognitive control, one of the three brain networks represented in UDL, had a significant presence in the affective and strategic networks. This finding indicates that teachers should promote the students' ability to anticipate and decide their learning actions and encourage the students to reflect, revise, and improve their learning experience. The study concludes that UDL guides classroom practices that can improve the students' executive abilities, along with enhancing barrier elimination toward the students' participation and learning. To achieve this, teachers must encourage the development of internal management within the learning context.

Carrington et al. (2020) examined how UDL guidelines were evident in the practices of 20 teachers and specialist personnel in Australia who were supporting the autistic students. The study found that the majority of participants were able to apply all nine guidelines and most of the checkpoints outlined by UDL, indicating a strong adherence to the principles of UDL. The study suggests that UDL is a comprehensive framework to support teachers in addressing the diverse learning requirements of the students with disability (especially students with autism disorders). The findings highlight the potential of UDL to guide educators in their practices and promote inclusive education for all learners.

Hromalik et al. (2020) showed that UDL training can be an effective way to guide faculty in implementing the UDL framework, and the UDL Academy could be a valuable resource for community college faculty for applying UDL principles to their courses.

Basham et al. (2020) discussed the implications of this shift and argues that it presents an opportunity for systemic educational reform. UDL framework was proposed to promote a proactive approach to designing learning environments that are flexible and accommodating to the needs of all students. The study demonstrated the potential benefits of incorporating UDL principles into online education to support students with disabilities. Incorporating UDL principles into online course design can help to address these challenges and ensure that all students have equal access to educational opportunities.

Craig et al. (2022) investigated the impact of the professional development program UDL framework implementation by teachers. The study utilized the Teacher Success Rubric observation tool to measure the effectiveness of the intervention. The results of the study indicated that teachers attending Summer Institute were more involved UDL implementation in the classroom compared to those who did not attend the Institute. This suggests that the Summer Institute had a positive impact on teachers' understanding and implementation of UDL guidelines.

Another study by Cumming and Rose (2022) explored the theoretical and empirical evidence supporting the UDL use and effective implementation strategies in tertiary education. Results suggest that UDL is adequately supported by theory and that both students and instructors report high satisfaction rates with UDL implementation.

## 2.3 Previous studies Gap

Previous studies have not emphasized on assessing the implementation of UDL principles for the students with IDs. None have specifically examined the usage of UDL by teachers for the students with IDs, although some of the

studies have focused on the effectiveness of UDL principles for the students with other types of disabilities. This research gap is crucial as the students with IDs have unique challenges when it comes to learning and often require more support and specialized teaching practices to succeed. By examining the teaching practices of teachers and their usage of UDL in teaching and assessing the students with IDs, this study can contribute towards the development of effective learning models for the students with disability.

Therefore, this study aims to fill the research gap by investigating the use of UDL principles by teachers for the students with IDs. Additionally, the study could potentially explore the moderating role of different factors such as gender, qualification, and experience, which were not found to be statistically significant in previous studies by Mohamed et al. (2022).

## 3. Material and Methods

### 3.1 Study Design

The study was conducted using cross-sectional survey questionnaire design to assess the practices of teachers teaching the students with IDs based on the adoption of UDL. The research designs involving the cross-sectional sampling involve collecting data from an individual sample at a single point in time. This design allows researcher to measure a particular phenomenon, behavior, or outcome of interest. In this study, the researcher observed the practices of teachers in Saudi Arabia who teach the students with IDs.

### 3.2 Study Population and Sampling

The population of the study included teachers working with the students having IDs, in the schools in Saudi Arabia – Northern Region. Study participants were selected through the method of purposive sampling. This approach involves choosing participants based on their potential to offer valuable information due to their close association with the subject under investigation (Shaheen & Pradhan, 2019). The participants were selected

from various school environments and possessed a minimum of five years of teaching experience. They were also engaged in instructing the students with IDs in inclusive classrooms. The online survey link has sent to the Department of Educations- Special Education sections in the northern region. They sent the link to the schools that have Intellectual Disability programs.

According to the Raosoft sample calculator, 152 responses were expected in the distribution of 250 questionnaires, but due to the lack of attention by the audience, more than the expected number of questionnaires were discarded. 121 responses were found suitable for conducting further analysis.

## 3.3 Ethical Consideration

The teachers were informed that the self-assessment questionnaire survey was a routine aspect of their professional evaluation and growth. Teachers were given the option to participate in the study on a voluntary basis, and they were informed that they could withdraw at any time. They were also assured that their participation or lack thereof would not affect their professional evaluation or status in any way. One ethical consideration was the need to obtain informed consent from the study participants. The researcher provided consent forms to the teachers, which clearly stated that they granted permission for the researcher to utilize the survey data in this study and any future publications. Another ethical consideration was the need to maintain confidentiality and privacy protection of the study participants. It was ensured that the survey data collected was anonymous and that the participants' identities were kept confidential. The data collected was coded, and the codes were used in place of the participants' names or identifying information. This helped to ensure that the participant's personal information was not disclosed, and their privacy was protected. Furthermore, the researcher also ensured that the data collected from the participants was securely stored to prevent unauthorized access or disclosure. The data was stored on password-protected devices and secured servers, and only authorized personnel had access to it.

## 3.4 Study Tool

The survey questionnaire for this study was adopted from a previous study by Alsalem (2015). The first section gathered the demographic details of the teacher. The other three sections which is Engagement, Pedagogical Approach, and Code of Deliverance comprised seven 5-point Likert scale questions (Never, Not very often, Often, Very often, Daily) in each section. The survey comprised 21 questions that supplied the quantitative data for the study.

## 3.5 Validity and Reliability

To ensure the validity of the questionnaire, it was reviewed by experts who have extensive knowledge and experience in the field of educational evaluation and teaching methods. The reliability of study questionnaire was calculated using Cronbach's alpha method, which resulted in a stability coefficient of 0.871. This value is considered favorable and within the acceptable range.

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | No of Items |
|---|---|---|
| 0.871 | 0.796 | 21 |

## 3.6 Study Procedure

The study was conducted over 10 months starting in April 2022 till January 2023. The first step in the study procedure involved identifying Institutes and Schools that have students with IDs situated in different regions of Saudi Arabia. The researcher identified these Institutes and Schools through various sources, including Department of Education records and online directories. Once the Institutes and Schools were identified, the researcher contacted their administrations to seek permission. After obtaining permission from the Institutes and Schools, the researcher distributed the self-assessment questionnaire survey to the administration. The administration then distributed

the survey to the teachers who teach the students with IDs in their respective Institutes and Schools. They were given clear instructions on how to complete it. The survey instrument was designed to assess the teaching practices of teachers in Saudi Arabia who teach the students with IDs based on the adoption of the UDL. The completed surveys were collected by the administration and then forwarded to the researcher for analysis.

## 3.7 Data Analysis

To begin the data analysis process, the data gathered through the online survey was transcribed into a Microsoft Excel document. This allowed the researcher to organize and manage the data in a way that was easy to work with. The data was then imported into the statistical software program SPSS-22 for further analysis. The survey data was summarized using descriptive statistics, which included calculating the means and standard deviations for each of the survey questions, providing insights into the teachers' practices concerning the adoption of a UDL. Inferential statistics were also used in the data analysis process. In order to investigate potential differences in the practices of teachers based on variables such as their years of experience or level of education, the researcher employed analysis of variance (ANOVA) tests. ANOVA tests allowed the researcher to compare means across different groups, providing insights into the relationships between different variables and the teachers' practices.

## 4. Results

### 1- What teaching practices are adopted by teachers when instructing the students with IDs?

Out of 121 participants, 43.8 ٪ were male and 56.2 ٪ were female. 40.5 ٪ of participants were between the age group 36-45. The ratio of participants with years of experience between 20-15 years was found to be 36.4 ٪ (Table 1) below.

**Table(1)**

Descriptive statistics of the demographics.

| Participant's characteristics | Categories | Frequency | Percentage % |
|---|---|---|---|
| Gender | Male | 53 | 43.8 |
| | Female | 68 | 56.2 |
| Age | 30-26 | 49 | 29.8 |
| | 35-31 | 36 | 29.8 |
| | 45-36 | 36 | 40.5 |
| Level of Class Teaching | Elementary School | 63 | 52.1 |
| | Middle School | 58 | 47.9 |
| Years of Experience | 10-5 years | 36 | 29.8 |
| | 15-10 years | 41 | 33.9 |
| | 20-15 years | 44 | 36.4 |
| Education level | Bachelors | 59 | 48.8 |
| | Masters | 62 | 51.2 |

## 2- How do teachers build engagement with the students with IDs through UDL practices?

Designing class activities that align with the interests of students is the most suitable and frequently used strategy found with p-value ($0.021<0.05\alpha$), to enhance the engagement of the students with their peers. While choosing class activities that match students' interests was not significant with a p-value (0.974) (Table 2) below.

**Table(2)**

ANOVA Table for Engagements.

| Engagement | Components of scale | Frequency | Frequency percentage % | Significance |
|---|---|---|---|---|
| Work in small groups in the class | Never | 19 | 15.7 | 0.570 |
| | Not very often | 19 | 15.7 | |
| | Often | 21 | 17.4 | |
| | Very often | 37 | 30.6 | |
| | Daily | 25 | 20.7 | |

| Engagement | Components of scale | Frequency | Frequency percentage % | Significance |
|---|---|---|---|---|
| Study as groups outside the class | Never | 32 | 26.4 | 0.154 |
| | Not very often | 16 | 13.2 | |
| | Often | 34 | 28.1 | |
| | Very often | 17 | 14.0 | |
| | Daily | 21 | 18.2 | |
| Communicate face with face peers | Never | 25 | 20.7 | 0.262 |
| | Not very often | 24 | 19.8 | |
| | Often | 23 | 19.0 | |
| | Very often | 33 | 27.3 | |
| | Daily | 16 | 13.2 | |
| Design class activities that align with the interests of students | Never | 23 | 19.0 | 0.021 |
| | Not very often | 15 | 12.4 | |
| | Often | 26 | 21.5 | |
| | Very often | 34 | 28.1 | |
| | Daily | 23 | 19.0 | |
| Choose activities that correspond to the preferences of the students | Never | 25 | 20.7 | 0.974 |
| | Not very often | 24 | 19.8 | |
| | Often | 23 | 19.0 | |
| | Very often | 23 | 19.0 | |
| | Daily | 26 | 21.5 | |
| Opportunities to enhance the student's self-monitoring abilities | Never | 32 | 26.4 | 0.335 |
| | Not very often | 18 | 14.9 | |
| | Often | 14 | 11.6 | |
| | Very often | 35 | 28.9 | |
| | Daily | 22 | 18.2 | |
| Provide choices for completing classroom assignments | Never | 26 | 21.5 | 0.171 |
| | Not very often | 18 | 14.9 | |
| | Often | 27 | 22.3 | |
| | Very often | 22 | 18.2 | |
| | Daily | 28 | 23.1 | |

## 1_ What pedagogical approaches do teachers use to implement UDL for students with IDs?

None of the approaches used by the teachers for better learning of the students with IDs were found significant (Table 3) below.

**Table(2)**

ANOVA Table for Engagements.

| Pedagogical Approach | Components of scale | Frequency | Frequency percentage % | Significance |
|---|---|---|---|---|
| Present information visually, tactile, verbal, and auditory | Never | 24 | 19.8 | 0.287 |
| | Not very often | 23 | 19.0 | |
| | Often | 27 | 22.3 | |
| | Very often | 18 | 14.9 | |
| | Daily | 29 | 24.0 | |
| identify the essential concepts in multiple ways | Never | 22 | 18.2 | 0.995 |
| | Not very often | 25 | 20.7 | |
| | Often | 28 | 23.1 | |
| | Very often | 24 | 19.8 | |
| | Daily | 22 | 18.2 | |
| Present information in alternative formats like charts, visual concept maps, diagrams, and graphs | Never | 22 | 18.2 | 0.312 |
| | Not very often | 22 | 18.2 | |
| | Often | 30 | 24.8 | |
| | Very often | 24 | 19.8 | |
| | Daily | 23 | 19.0 | |
| The materials provided are captioned | Never | 22 | 18.2 | 0.324 |
| | Not very often | 28 | 23.1 | |
| | Often | 23 | 19.0 | |
| | Very often | 24 | 19.8 | |
| | Daily | 24 | 19.8 | |
| Students' access to multimedia resources | Never | 21 | 17.4 | 0.127 |
| | Not very often | 23 | 19.0 | |
| | Often | 24 | 19.8 | |
| | Very often | 22 | 18.2 | |
| | Daily | 31 | 25.6 | |

| Pedagogical Approach | Components of scale | Frequency | Frequency percentage % | Significance |
|---|---|---|---|---|
| Encourage the students to use online websites and resources | Never | 21 | 17.4 | 0.833 |
| | Not very often | 31 | 25.6 | |
| | Often | 23 | 19.0 | |
| | Very often | 23 | 19.0 | |
| | Daily | 23 | 19.0 | |
| Offer software applications to the students | Never | 32 | 26.4 | 0.527 |
| | Not very often | 20 | 16.5 | |
| | Often | 31 | 25.6 | |
| | Very often | 19 | 15.7 | |
| | Daily | 19 | 15.7 | |

## 2- How does the code of deliverance impact the UDL practices of teachers teaching the students with IDs?

Encouraging the students to use technology like tablets and laptops to learn class material is a frequently used strategy found with a p-value (0.05), as compared to other deliverance strategies. While providing the outline of the necessary stages to fulfill the assignments is not significant with a p-value (0.951) (Table 4) below.

**Table(2)**

ANOVA Table for Engagements.

| Code of Deliverance | Components of scale | Frequency | Frequency percentage % | Significance |
|---|---|---|---|---|
| The students self-monitor behavioral and learning outcomes | Never | 27 | 22.3 | 0.458 |
| | Not very often | 24 | 19.8 | |
| | Often | 29 | 24.0 | |
| | Very often | 14 | 11.6 | |
| | Daily | 27 | 22.3 | |
| Foster the utilization of technology, such as tablets and laptops, by the students | Never | 25 | 20.7 | 0.055 |
| | Not very often | 22 | 18.2 | |
| | Often | 21 | 17.4 | |
| | Very often | 16 | 13.2 | |
| | Daily | 37 | 30.6 | |

| Code of Deliverance | Components of scale | Frequency | Frequency percentage % | Significance |
|---|---|---|---|---|
| Provide activities like drawing, writing, and presentations for demonstrating student knowledge. | Never | 19 | 15.7 | 0.662 |
| | Not very often | 19 | 15.7 | |
| | Often | 32 | 26.4 | |
| | Very often | 32 | 26.4 | |
| | Daily | 19 | 15.7 | |
| Provide the outline of the necessary stages to fulfill the assignments. | Never | 23 | 19.0 | 0.951 |
| | Not very often | 24 | 19.8 | |
| | Often | 33 | 27.3 | |
| | Very often | 18 | 14.9 | |
| | Daily | 23 | 19.0 | |
| Empower the students to exercise their autonomy in selecting how to fulfill their tasks. | Never | 31 | 25.6 | 0.504 |
| | Not very often | 29 | 24.0 | |
| | Often | 25 | 20.7 | |
| | Very often | 16 | 13.2 | |
| | Daily | 20 | 16.5 | |
| Present clear instructions for carrying out the significant course assignments. | Never | 15 | 12.4 | 0.487 |
| | Not very often | 32 | 26.4 | |
| | Often | 23 | 19.0 | |
| | Very often | 25 | 20.7 | |
| | Daily | 26 | 21.7 | |
| Define the evaluation criteria for the major course assignments in advance of assigning the tasks. | Never | 30 | 24.8 | 0.063 |
| | Not very often | 21 | 17.4 | |
| | Often | 14 | 11.6 | |
| | Very often | 19 | 15.7 | |
| | Daily | 37 | 30.6 | |

## 5. Discussion

The present study aimed to observe the practices of teachers for the students with IDs through UDL in Saudi Arabia. The student with ID face problems in learning functional and behavioral adaptation, which have a negative impact on their learning activities such as remembering objects or

events and generalizing new activities. Moreover, the students with IDs face hurdles in adapting variations in social, practical, and conceptual abilities, which decrease and place a barrier to their learning skills. A similar study by Alnahdi (2014) delved into the different strategies for enhancing the educational experience of the students with disability. The outcome highlighted the fact that technological advancements have had, and continue to have, a significant effect on the way individuals carry out their daily tasks, both in personal and professional settings. Thus, it is only logical to investigate the influence and integration of technology in the education sector for the students with disability, mirroring its widespread usage in other aspects of life.

Implementing a UDL framework in a personal preparation program is important for the teachers of Saudi Arabia, especially for the teachers of the students with ID. The positive effect of the UDL on the students with intellectual disability over basic activities was recognized by Wehmeyer (2006). Another study by Scott et al. (2017) revealed that there is positive impact of UDL on retrieving student's general activities, especially the students with ID. The teachers of special education receive a UDL outline which is necessary for the students with IDs to confirm access to basic activities and in meeting post-school objectives. This framework is adopted by the Saudi government to ensure equal rights to education for all. The present study has examined the teaching methods adopted by the teachers and showed that designing the class activities that match the student interests is the most suitable and frequently used strategy. The results suggested that the most significant and most frequently used method is to introduce the students' desired activities in the class to attract the students towards the task. While Wehmeyer (2006) emphasized individual representation as an effective way to learn.

The present study also assessed the teaching approaches and revealed that there were no teaching approaches used significantly the students with intellectual disability to achieve the motive of learning. The various teaching devices majorly include hierarchical graphic organizers, tables to present

information, and using flowcharts and concept maps to clarify any misconception. These are productive ways to present essential concepts, which are complicated. Complexities should be presented in such a way that they can be understood by diverse mindsets and removes misperception. These approaches are adopted and advised by many successful professionals in this field. This was seconded by one a recent study by Al Hazmi and Ahmad (2018) stating that the objective of the UDL for learning approach is to offer assistance to the students with IDs to attain conventional education by improving their ability to adjust and intellectual capacity.

The present study also assessed the strategies adopted by teachers to deliver the students with IDs in the best way. The teachers were found to be encouraging the students to use laptops and tablets. In this regard, teachers are responsible to inform and lead the students on the pros and cons of using these devices, as they are addictive. Managing screen timings is the best way to elaborate the idea. Similarly, Rose et al. (2005) emphasized technology's role in the adoption of UDL framework. Another recent study by Mohamed et al. (2022) revealed that teachers are dedicated to incorporating the UDL principles in their teaching strategies for disables students. One of the most commonly utilized techniques is to offer a variety of tools to present information to the teacher. This approach not only accommodates the diverse learning styles of these students but also helps to eliminate barriers to learning and promote their success in the classroom. By implementing UDL principles, these teachers aim to create an effective learning environment the students with disability.

There are still concerns raised about the implementation of the UDL framework. Several special schools for the students with ID are insufficient and UDL framework's implementation is not fully applicable to the students in the mainstream schools of Saudi Arabia. Teachers do not properly follow the guidelines of UDL. Teachers, family, and society play an important role in improving the level of acceptance for students with IDs. The creation of novel policies aims to incorporate better practices that can be helpful to

encounter changes according to the student's needs and groom them to face the world, especially the students with different learning needs and preferences (Higgins & Maxwell, 2021).

In conclusion, the study conducted in Saudi Arabia aimed to assess teaching practices considering UDL framework for the students with IDs. The results showed that the teachers' strategies for enhancing student engagement and learning were found to be effective. The most frequently used and effective strategy was designing class activities that matched the students' interests. Another strategy that was frequently used was encouraging the students to use technology, such as tablets and laptops, to learn class material. However, none of the approaches used by the teachers were found to be significantly effective in improving the learning of the students with IDs.

## 6. Implications

### 6.1 Theoretical Implications

The findings of the study indicate that teachers in inclusive classrooms for students with IDs utilize various components of the UDL framework. They personalize learning by taking into account the students' prior knowledge, diverse intelligences, and manipulatives. These practices are consistent with the Constructivist Alignment Theory, which stresses the importance of connecting new information with existing knowledge (Croy, 2018). For instance, incorporating technology like PowerPoint projects into assessments can improve student learning. The study demonstrates how teachers can develop assignments based on student interests and prior knowledge to enhance skills.

### 6.2 Practical Implications

In this study, teachers shared their strategies regarding the implementation of UDL framework. Understanding UDL is crucial in today's education as the students with IDs are increasingly taught in classrooms (Cook & Rao,

2018). The UDL approach has been shown to enhance the learning experiences of these students compared to traditional self-contained classroom settings (Phuong et al., 2017). Teachers reported improved progress among their students with IDs when using different types of materials and strategies. Student engagement using their dominant intelligence, such as hands-on assignments, visual aids, and deferent voices, was also emphasized. However, the increased workload from developing differentiated lesson plans and larger class sizes is a challenge for educators.

## 7. Recommendations and Future Research

The study results provide insight into the challenges faced by teachers in educating the students with IDs and highlight the need for continued improvement of UDL framework. The teachers are encouraged to actively participate in the improvement of the UDL framework, which can help provide a more balanced educational environment for the students, regardless of their abilities.

Several recommendations can be made to improve the education of the students with IDs. The teachers should continue to use strategies that enhance student engagement and learning. The study found that designing class activities that match the students' interests and encouraging the use of technology were effective strategies. Therefore, teachers should consider incorporating these methods into their instructional practices. There is a need for continued improvement of the UDL framework. While the study showed that the framework was being used, none of the approaches were found to be significantly effective in improving the learning of the students with IDs. Therefore, teachers are encouraged to actively participate in the improvement of the UDL framework to offer a more balanced and inclusive educational environment for the students with disability.

The future studies could further investigate the UDL framework's implementation in different educational settings to gain a better understanding

of its effectiveness in promoting student learning. Additionally, the research could also explore alternative methods and strategies for teachers to support the students with IDs in their learning and educational journey.

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