

DOI: <https://doi.org/10.71317/kjard.2.5.2026.392>

The Kashmir Journal of Academic Research and Development

Journal homepage: <https://rjsaonline.org/index.php/KJARD>

Designing Inclusive Pedagogical Approaches for Future Learners: The Role of Universal Design for Learning in Promoting Accessible Education in Balochistan, Pakistan

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Email: mumtaz.socialwork@um.uob.edu.pk**ARTICLE INFO****ABSTRACT****Received:**

March 03, 2026

Revised:

March 17, 2026

Accepted:

April 24, 2026

Available Online:

May 05, 2026

Keywords:

Inclusive Education, Inclusive Pedagogy, Learning Accessibility, Student Engagement, Student Participation, Universal Design for Learning (UDL)

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Promoting inclusive education is important to support learners with various needs in underdeveloped educational systems learn equitably. This study looked at Universal Design for Learning (UDL) in inclusive pedagogy and access in education in Balochistan, Pakistan. An explanatory sequential mixed-methods design was used in a pragmatic paradigm. The quantitative data were collected from 300 secondary school, college, and university level students. The qualitative data were collected from 18 teachers through the semi-structured interviews. Quantitative data were analyzed with descriptive statistics, Pearson correlation, and multiple regression. The qualitative data were analyzed thematically. Analysis of the data revealed that UDL improved accessibility of learning ($\beta = .781$, $R^2 = .610$), student engagement ($\beta = .724$, $R^2 = .524$) and student participation ($\beta = .698$, $R^2 = .487$). The qualitative findings stated that teachers thought UDL was useful to enhance learner participation and inclusion. The main barriers were a lack of training for teachers, and unavailable teaching materials, poor facilities and lack of institutional support. This study shows that to develop inclusive and accessible education systems that are able to cater learners' needs, new technology and supportive policies, along with professional development trainings for teachers, are necessary in Balochistan.

Introduction

Inclusive education is given priority in the twenty first century due to the focus on learning opportunities for all, consideration for learner diversity and supporting attainment of the Sustainable Development Goal 4 for quality education for all (UNESCO, 2020, 2025; Rao et al., 2023). In this context, Universal Design for Learning (UDL) has been introduced as a proactive approach to learning that reduces barriers to learning for all students--no matter their abilities or background--by providing multiple means of engagement, representation, and action and expression (Rao et al., 2023; Khurana, 2022; Almeqdad et al., 2023). Additionally, recent research indicates that successful application of UDL contributes to greater learner engagement, access to materials, academic success, and inclusive classroom practices (Almeqdad et al., 2023; AlRawi & AlKahtani, 2022).

In diverse classrooms, where students possess different linguistic, cultural, cognitive, and socio-economic characteristics, UDL provides flexible pedagogical strategies that encourage participation and equal learning opportunities (Khurana, 2022; Rao et

al., 2023). Despite the current state of educational reforms in Pakistan, especially Balochistan, inequalities in education, lack of teachers, low quality of educational facilities and low quality of inclusive teaching practices remain a problem to ensure equitable access to education (Ashraf et al., 2020; UNESCO, 2025). Thus, it is gradually gaining significance, to prepare future students by inclusive pedagogical approaches based on UDL for the creation of accessible and equitable education spaces that respond to the needs of all students (UNESCO, 2025).

Although inclusive education is becoming more recognized, there are still several obstacles experienced in a school that make it difficult to realize inclusive education. Limited access, participation and meaningful engagement are common experiences for students with diverse learning needs when it comes to their learning in the classroom, and teachers often lack proper training, resources and institutional support to effectively implement UDL (Almeqdad et al., 2023; AlRawi & AlKahtani, 2022; Ashraf et al., 2020). Furthermore, there is still limited empirical evidence of UDL implementation in Balochistan, and thus there is limited understanding of challenges and opportunities in the context of the region.

Existing UDL research has predominantly been conducted in developed countries, with comparatively limited empirical attention given to developing contexts such as Pakistan (Almeqdad et al., 2023; Rao et al., 2023). Moreover, the combination of UDL implementation along with teachers' experience and engagement along with accessibility of the education system in the context of Balochistan's unique educational environment is the aspect which has been left largely unexplored in the context of Pakistan, which is in need of further investigation and research (Ashraf et al., 2020, UNESCO, 2025).

Theoretically, this study is beneficial because it extends the knowledge base in the field of Universal Design for Learning and inclusive education to a context that is under-researched - the context of Balochistan. The findings are expected to practically support teachers to use more inclusive teaching methods to support diversity. The study also offers a policy-based evidence to support education planners and policy makers in strengthening inclusive education policies and enhancing educational accessibility in Balochistan (UNESCO, 2025; Rao et al., 2023).

Research Objectives

RO1: To examine the current practices of Universal Design for Learning (UDL) in promoting inclusive and accessible education in educational institutions of Balochistan, Pakistan.

RO2: To investigate the influence of UDL-based pedagogical approaches on students' participation, engagement, and learning accessibility among diverse learners.

RO3: To identify the challenges and opportunities faced by teachers in implementing Universal Design for Learning practices for future-ready inclusive classrooms in Balochistan.

Research Questions

RQ1: What are the current practices of Universal Design for Learning (UDL) being implemented to promote inclusive and accessible education in Balochistan?

RQ2: How do UDL-based pedagogical approaches influence students' participation, engagement, and accessibility to learning opportunities?

RQ3: What challenges and opportunities do teachers experience while implementing UDL practices for developing inclusive classrooms in Balochistan?

Literature Review

Universal Design for Learning (UDL)

Universal Design for Learning (UDL) is an evidence-based approach to teaching that supports the principles of inclusive education by designing learning environments to include variation among learners rather than expecting learners to adapt to the teaching environment. UDL is based in cognitive neuroscience and inclusive pedagogy, thereby urging teachers to consider all the diversity of learners and plan for it by offering flexible learning goals, instructional materials, teaching methods, and assessments. Recent studies have focused on the ways UDL redirects attention from correcting learner deficiencies to eliminating barriers that are part of the design of the learning materials, making education more equitable and accessible for

all learners, including those with disabilities, multilingual learners, and students from diverse socio-cultural and linguistic backgrounds (Zhang et al., 2024; Bray & Byrne, 2024; Martono & Bracken, 2025). The UDL framework is based on three principles: Multiple Means of Engagement, Multiple Means of Representation, and Multiple Means of Action and Expression. In recent years, there have been several systematic reviews that have shown that adopting UDL in the classroom results in gains in teaching effectiveness, learner autonomy, academic performance, and classroom inclusivity (Zhang et al., 2024; Bray & Byrne, 2024).

Inclusive and Accessible Education

The principles of inclusive education are that all learners irrespective of their disability, gender, ethnicity, language or socioeconomic status are entitled to access quality education with full participation. Modern views go beyond access to physical access to meaningful participation, equitable learning experiences, and education success for students of all abilities. Inclusive education is not just about providing adjustments for the student but needs systemic changes in the curriculum, pedagogy, assessment and institutional culture (Cardoso Villacorta & Villafuerte Alvarez, 2024; Zhang et al., 2024). Accessibility in education has therefore become a focal point for quality education. Recent published literature shows that accessible educational practices, based on UDL, positively impact academic achievement, self-confidence and participation of students and benefit all students, not just those with disabilities (Bray & Byrne, 2024; Barua & Lockee, 2025).

Students' Participation and Engagement

Student engagement and participation is recognised as being central to successful learning outcomes. While participation involves learners' active involvement in classroom activities, discussions, collaborative learning, and decision making, engagement is a more comprehensive construct that involves the behavioral, emotional, and cognitive investment students make in learning (Gunderson & Cumming, 2023). Research in the modern era indicates that inclusive instructional contexts can positively improve the engagement of learners in a learning setting, which includes lowering barriers between students and fostering a feeling of belonging among all pupil groups (Zhang et al., 2024; Bray & Byrne, 2024). UDL directly contributes to student engagement through meaningful choices, personalized learning pathways, different ways to present learning, and various ways to show knowledge. Additionally, systematic reviews show that UDL-based teaching positively affects students' motivation, classroom interaction, collaborative learning, and academic performance compared to their counterparts in traditional teacher-led classrooms (Martono & Bracken, 2025; Zhang et al., 2024).

UDL and Learning Accessibility

Universal Design for Learning enhances learning by anticipating variability among learners before the learning is offered, instead of accommodating to the needs of the learners after barriers are detected. Research in higher education indicates that introducing flexibility through UDL can boost satisfaction, engagement, and motivation to actively engage in academic tasks among students (Evans, 2020; Novembli et al., 2024). Multiple means of representation and multiple means of action and expression offer students meaningful alternative ways to learn and to be assessed (Murphy et al., 2020; Balta et al., 2020; Casebolt & Humphrey, 2023).

UDL Practices in Educational Institutions

UDL practices need curricula, instruction, resources, and assessment systems that are flexible. Flexibility in assessment can include alternative forms of assessment, authentic projects, oral presentations, portfolios, and different ways of demonstrating learning outcomes, but still supporting the same learning outcomes (Casebolt & Humphrey, 2023; Healy et al., 2025) (Farrell, 2021). While having access to technology can boost flexibility and accessibility, it should be put to good use in pedagogy because just having access to technology doesn't make it accessible (Baroni & Lazzari, 2022; Veytia Bucheli et al., 2024).

Challenges and Opportunities in UDL Implementation

Although it has the potential to make a difference, there are certain barriers to the implementation of UDL, such as the teacher's lack of knowledge, lack of professional development, lack of planning time, lack of flexibility in curriculum, lack of technology, and lack of support from the institutions. Implementation is affected by faculty knowledge, attitudes, technological competency, institutional systems, faculty professional development, and student feedback (Panczykowski et al., 2024; Duncan et al., 2025; Muzdalifah et al., 2025). Therefore, UDL should not be used instead of disability-specific accommodations and improvements in physical accessibility, but rather alongside them (Creaven, 2024).

Summary of Literature

The literature reviewed shows that UDL can enhance the accessibility of education by providing multiple means of reaching content, comprehending information, and showing evidence of learning. The implementation outcomes, however, are heavily reliant on the teacher preparation, resources, infrastructure, policy commitment and ongoing institutional support. The research study has also not been conducted in Balochistan that investigates teachers' use of UDL, students' engagement, accessibility of learning, institutional barriers, and opportunities for implementation simultaneously. The need for this study is supported by this contextual and experiential gap.

Theoretical Framework

This study is grounded in the Universal Design for Learning (UDL) Framework developed by CAST and supported by the principles of Inclusive Education Theory. The UDL framework is a learner-centered approach that recognizes learner variability, and encourages flexible instructional practices to eliminate barriers to learning. It is based on three core principles: multiple means of engagement, which foster learner motivation, interest, and active participation; multiple means of representation, which present information through diverse formats to accommodate different learning preferences and abilities; and multiple means of action and expression, which enable learners to demonstrate their knowledge using varied assessment methods and communication approaches (CAST, 2024).

Inclusive Education Theory supports the UDL approach by asserting that students with disabilities, regardless of disability, gender, language, socioeconomic status or culture, have the right to equitable and meaningful education and learning of high quality. The theory promotes equality of participation, thus all students need to be involved in education without discrimination. It also reflects educational equity by acknowledging the variety of learning needs and offering different kinds of support or learning, not the same. In addition, the theory emphasises that learning should be accessible to all learners, in relation to inclusive policies, flexible curriculum and supportive learning environments. UDL and Inclusive Education Theory are two theories that explain the educational context and future learners in inclusive pedagogical approaches to make accessible education in the context of Balochistan, Pakistan.

Conceptual Framework

This study conceptual framework is constructed by assuming that UDL becomes the independent variable which has an impact on key educational outcomes in inclusive learning. With multiple means of engagement, representation and action and expression, UDL offers flexible instructional strategies that help meet the varied learning needs of students. This study's dependent variables are: student participation, student engagement, and accessibility to learning as measured by the effective implementation of UDL.

Student participation is the active involvement of students in classroom activities, collaborative learning, class discussion and academic tasks. Student engagement is students' emotional, cognitive and behavioral involvement in the learning process. Learning accessibility is the degree to which learning resources, teaching processes, assessment and learning environments are planned and designed to ensure access and meaningful learning for all learners, including those with diverse abilities and backgrounds.

Apart from looking at these quantitative relations, this study also has a qualitative dimension which is designed to explore the teachers' attitudes of implementing UDL in educational institutions of Balochistan. It examines the issues of teachers, for example, the lack of professional training, instruction materials, infrastructure and policy issues. At the same time, it explores how opportunities for successful implementation of UDL can be provided, such as through professional development programs, technology integration, institutional support and inclusive educational policies. The conceptual framework incorporates the quantitative and qualitative aspects of UDL, giving a complete picture of how UDL can be a part of accessible and inclusive education, and identifying contextual factors that can affect the successful implementation of UDL in Balochistan, Pakistan. In Figure 1 suggested conceptual model relating Universal Design for Learning (UDL) to student participation, student engagement, learning accessibility, challenges and opportunities for teachers.

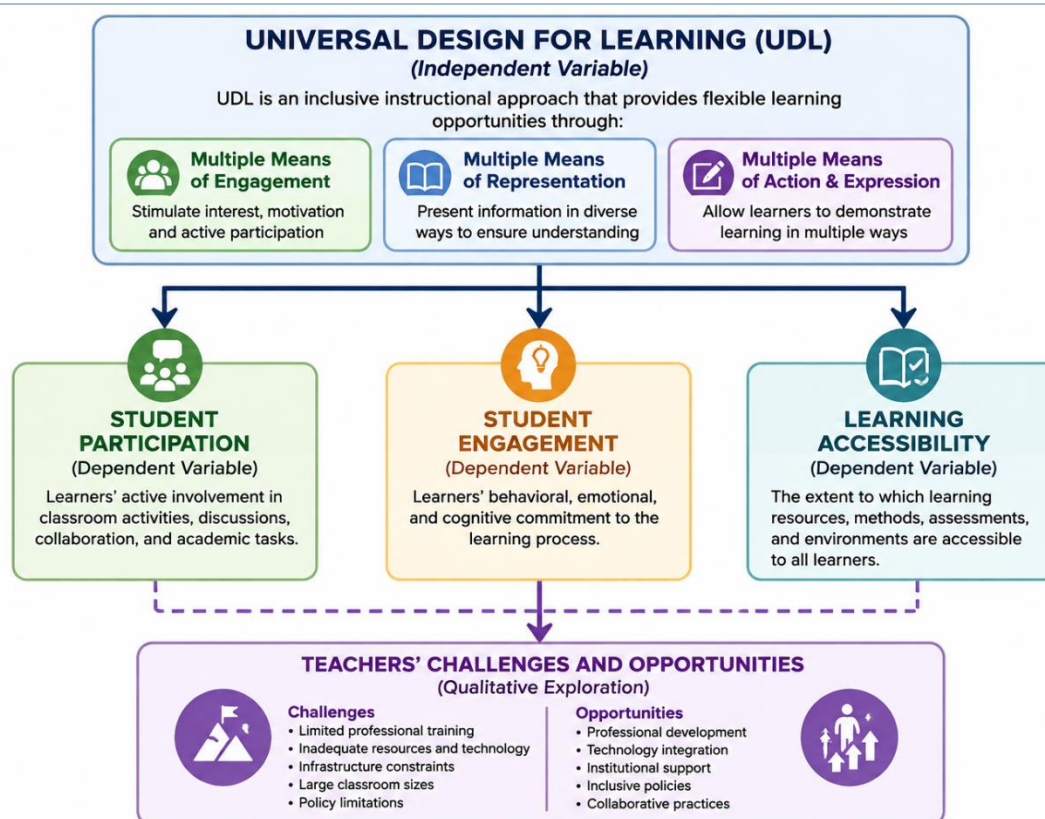


Figure 1. Proposed conceptual framework of the study

Research Methodology

Research Design

The study was designed in the mixed-methods research with explanatory sequential design, in order to make a comprehensive study of role of Universal Design for Learning (UDL) in the promotion of accessible education in Balochistan, Pakistan. The first phase involved quantitative data collection and examining the relationships of UDL practices, student participation, student engagement, and learning accessibility. As the results of the quantitative data indicated challenges and opportunities for UDL implementation, teacher interviews were used to explain and elaborate on the quantitative findings to gain a deeper understanding of the challenges and opportunities (Creswell & Plano Clark, 2007; Guetterman et al., 2023).

Research Approach

The study used the pragmatic research approach that is based on the selection of the research methods appropriate to the research problem. This method allowed the merger of quantitative and qualitative data, which provides a comprehensive picture of inclusive pedagogical practices and their role in inclusive education. Within the pragmatic paradigm, in order to achieve meaningful and context-specific results, numerical data and participants' experiences were used in complementary ways (Morgan, 2014; Creswell & Plano Clark, 2007).

Population

For the quantitative phase the target population was students of secondary schools, colleges and universities of Balochistan, Pakistan. These students were appropriate for this study to look at the perceptions of UDL practices and learning accessibility because they were from different educational levels and learning backgrounds. In the qualitative phase, the population comprised teachers working in both the public and private educational fields who had experience in teaching in classes and inclusive teaching.

Sample

There were 300 students that completed the quantitative surveys and 18 teachers that completed the qualitative interviews. The sample was determined to be sufficient to yield reliable quantitative information and rich qualitative information about the application of the concept of Universal Design for Learning in educational institutions of Balochistan.

Sampling Technique

Students from secondary schools, colleges and universities were sampled using stratified random sampling method to ensure proportional representation in the quantitative sample. This enabled a greater sample representativeness of participants by their educational status. Purposive sampling was used during the qualitative phase in order to select teachers that had relevant background teaching experience and knowledge of classroom diversity and inclusive education practices, allowing them to give detailed information related to UDL implementation.

Data Collection Instruments

The quantitative data were gathered by a structured questionnaire which was rated on a five point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). This questionnaire had five sections: Demographic, Universal Design for Learning practices, Student participation, Student engagement, and Learning accessibility. The qualitative data was gathered using semi-structured interviews that addressed current practices of UDL, barriers to UDL implementation, opportunities for UDL and suggestions for improving inclusive education. Questionnaires and interviews allowed for the collection of well-rounded data from students and teachers.

Validity and Reliability

The questionnaire was put through expert review by experts in the field of educational research and inclusive education, to provide content validity. A pilot study was then conducted to gauge the clarity, relevance and understandability of the questionnaire items prior to the data collection. The internal consistency of the instrument was done by Cronbach's alpha coefficient, and obtained acceptable reliability value for all study constructs. Member checking, expert validation and trustworthiness criteria, such as credibility, dependability, confirmability and transferability, were used throughout the research process to ensure the credibility and trustworthiness of the qualitative findings (Braun & Clarke, 2021; DeVellis & Thorpe, 2012).

Data Collection Procedure

Before data collection, formal consent was obtained from the authorities of education and the heads of institutions. After approval, questionnaires were given to selected students in the allocated class period. Semi-structured interviews were then held with selected teachers at a mutually convenient time, after completion of the quantitative phase. Before participation, all respondents were informed about the purpose of the study and their informed consent was obtained. All collected data were stored safely and only used for academic research.

Ethical Considerations

All ethical standards observed during the research process were followed. This was a voluntary participation and participants were told that they could drop out of the study at any time without any repercussions. The confidentiality and anonymity of the participants were ensured by the use of an anonymous instrument and by keeping all collected data confidential. All participants signed informed consent forms and were interviewed and/or completed questionnaires in compliance with accepted ethical research protocols (American Psychological Association, 2020).

Data Analysis

The data obtained were quantitative data which were analysed by using the software of Statistical Package for the Social Sciences (SPSS). The demographic items of subjects and the study variables were summarized by descriptive statistics such as frequencies, percentages, mean and standard deviations. The internal consistency of the measurement scales was determined by reliability analysis based on the Cronbach's alpha. Pearson correlation analysis was then used to look at the relationships between the various factors of UDL and student participation, student engagement and learning accessibility, and multiple regression analysis was used to determine the predictive influence of UDL on the dependent factors. The qualitative interview

data was analyzed thematically by familiarizing the data, systematic coding, developing themes and selecting representative teacher quotations from the data to gain a deeper insight into the challenges and opportunities that face teachers when implementing Universal Design for Learning (Braun & Clarke, 2021; Creswell & Plano Clark, 2007).

Results

Demographic Profile

Table 1

Students' Demographic Profile (N = 300)

Variable	Category	Frequency	Percentage
Gender	Male	162	54.0
	Female	138	46.0
Age	15–18 Years	96	32.0
	19–22 Years	144	48.0
	Above 22 Years	60	20.0
Institution Type	Public	174	58.0
	Private	126	42.0
Education Level	Secondary	98	32.7
	College	94	31.3
	University	108	36.0

Demographic profile of 300 student respondents (n=300) is presented in Table 1. The male students accounted for 54.0% while the female students accounted for 46.0% of the students taken. Most respondents (48.0%) were between 19–22 years, followed by 32.0% aged 15–18 years. The public institutions accounted for 58.0% of the participants and the private institutions accounted for 42.0%. The secondary schools, colleges and universities were almost equally represented with students, suggesting balanced representation from different educational levels.

Table 2

Teachers' Demographic Profile

Variable	Category	Frequency	Percentage
Gender	Male	10	55.6
	Female	8	44.4
Teaching Experience	1–5 Years	5	27.8
	6–10 Years	8	44.4
	Above 10 Years	5	27.8

Qualification	Master's	8	44.4
	MPhil	7	38.9
	PhD	3	16.7
Institution Type	Public	11	61.1
	Private	7	38.9

The teachers for the qualitative sample were eighteen. The number of male teachers was 55.6% of the participants. Almost half had worked for 6-10 years as teachers. The majority of teachers had a Master's/MPhil degree. The interviewed teachers included public institutions (61.1%), which provided a variety of views about UDL implementation.

Quantitative Results

Table 3

Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Universal Design for Learning	300	1.84	5.00	3.96	0.61
Student Participation	300	1.90	5.00	3.89	0.59
Student Engagement	300	1.81	5.00	3.93	0.63
Learning Accessibility	300	1.78	5.00	4.02	0.58

The descriptive statistics show that the respondents had relatively high perceptions on all constructs. The highest mean score was for Learning Accessibility ($M = 4.02$) followed by UDL ($M = 3.96$), Student Engagement ($M = 3.93$), and Student Participation ($M = 3.89$). The relatively low standard deviations suggest that there was uniform response from the participants.

Table 4

Reliability Analysis

Variable	Items	Cronbach's Alpha
Universal Design for Learning	8	0.912
Student Participation	6	0.891
Student Engagement	7	0.903
Learning Accessibility	6	0.918
Overall Instrument	27	0.927

The Cronbach's alpha for all items ranged from a minimum of 0.891 to 0.918 and the alpha coefficient for the entire questionnaire was 0.927, which falls within the "excellent" range. Hence, all constructs were deemed to be reliable for further statistical analysis.

Table 5*Pearson Correlation Analysis*

Variables	1	2	3	4
1. UDL	1			
2. Student Participation	.698**	1		
3. Student Engagement	.724**	.691**	1	
4. Learning Accessibility	.781**	.676**	.734**	1

 $p < .01$

Pearson correlation analysis showed that all study variables had positive relationships and were statistically significant ($p < .01$). The positive correlations for Universal Design for Learning were high with Learning Accessibility ($r = .781$), Student Engagement ($r = .724$) and Student Participation ($r = .698$). The results indicate that increased UDL practice contributes to increased participation, engagement, and accessibility levels.

Regression Analysis**Table 6.***Regression Analysis for H1: Universal Design for Learning → Student Participation*

Hypothesis	Predictor	R	R ²	Adjusted R ²	Std. Error	F	Beta (β)	T	Sig.
H1: Universal Design for Learning → Student Participation	UDL	0.698	0.487	0.485	0.432	282.74	0.698	16.81	.000

Results of regression analysis showed that the UDL was significant as a predictor of Student Participation ($\beta = .698$, $p < .001$). The model accounted for 48.7% of the variance, thus supporting RO1 and answering RQ1.

Table 7*Regression Analysis for H2: Universal Design for Learning → Student Engagement*

Hypothesis	Predictor	R	R ²	Adjusted R ²	Std. Error	F	Beta (β)	T	Sig.
H2: Universal Design for Learning → Student Engagement	UDL	0.724	0.524	0.523	0.418	328.15	0.724	18.11	.000

UDL was found to have a large positive effect on Student Engagement ($\beta = .724$, $p < .001$), accounting for 52.4% of the variance in Student Engagement. This means that flexible teaching methods have a significant impact on students' cognitive, emotional and behavioral engagement.

Table 8

Regression Analysis for H3: Universal Design for Learning → Learning Accessibility

Hypothesis	Predictor	R	R ²	Adjusted R ²	Std. Error	F	Beta (β)	T	Sig.
H3: Universal Design for Learning → Learning Accessibility	UDL	0.781	0.610	0.608	0.389	466.84	0.781	21.60	.000

Universal Design for Learning significantly predicted Learning Accessibility ($\beta = .781$, $p < .001$). UDL practices significantly improve accessible and inclusive learning environments as the model accounted for 61.0% of the variance.

Qualitative Results

The qualitative findings were generated from semi-structured interviews conducted with eighteen teachers working in public and private educational institutions across Balochistan. The interview data were analyzed using thematic analysis, resulting in five major themes: (1) Current UDL Practices, (2) Benefits of UDL, (3) Implementation Challenges, (4) Future Opportunities, and (5) Recommendations for Inclusive Classrooms.

Theme 1: Current UDL Practices

The majority of teachers reported implementing a number of inclusive teaching practices which were based on the principles of Universal Design for Learning, and while many were not familiar with the term "UDL" as such, they were familiar with some of the principles. Participants described employing a variety of teaching strategies, visuals, group discussion, demonstration, digital presentation, and classroom activity to meet the needs of students with varying learning styles. Teachers also attempted to offer alternate forms of assessment and promote cooperative learning as a means to boost student participation.

One participant stated:

"I usually explain the same lesson in different ways because every student learns differently. Some understand through pictures, while others learn better through discussion." (T3)

Another teacher commented:

"We encourage students to work in groups so that weaker learners can receive support from their classmates." (T11)

This suggests that there was little formal knowledge of UDL, but teachers had adopted some learner-centered practices that helped to promote participation and accessibility.

Theme 2: Benefits of UDL

Teachers consistently highlighted the positive impact of UDL-oriented teaching on student learning. The participants felt that flexible teaching methods helped to enhance student's involvement, self-confidence, motivation and learning in the classroom. They noted that students once reluctant to engage in the learning process were more active when alternative learning activities and assessments were implemented.

One teacher explained:

"When students are given different options to complete their work, they become more confident and participate much more actively." (T6)

Likewise, another participant said:

"Using different teaching strategies helps students understand concepts more easily because everyone has a different learning style." (T14)

Overall, the participants agreed that UDL was able to enhance the interaction in the classroom, lowered obstacles to learning, and made the learning environment more inclusive.

Theme 3: Implementation Challenges

Although teachers understood the principles of UDL, they did find a number of barriers to the effective use of UDL. Common issues cited were the lack of professional preparation, insufficient teaching materials, crowded classrooms, lack of technology, and hard-to-follow curriculum requirements. Institutional support for inclusive education was also found to be still limited, with teachers reporting on this.

One participant remarked:

"We want to teach inclusively, but we have not received proper training on Universal Design for Learning." (T5)

Another teacher stated:

"Large class sizes and limited teaching resources make it very difficult to address the needs of every student." (T17)

The findings indicate that the implementation of UDL needs more commitment of the institutions, teacher capacity building, and development of the educational infrastructure.

Theme 4: Future Opportunities

The teachers found many opportunities which could further support the implementation of UDL in educational institutes of the Province of Balochistan. Participants highlighted the need for ongoing professional development, integration of technology, supportive policies and measures, better digital infrastructure and better collaboration between teachers, school leaders and policy makers.

One teacher explained:

"Regular training workshops would help teachers understand how to apply UDL effectively in everyday classroom teaching." (T9)

Another participant observed:

"If schools receive better technological support, it will become much easier to provide learning materials in different formats." (T2)

From these responses, teachers perceived that institutional support and professional development have been identified as the drivers that promote inclusive education.

Theme 5: Recommendations for Inclusive Classrooms

Teachers made various suggestions to enhance the practice of inclusive classrooms in Balochistan. The importance of embedding UDL into teacher education programs, adapt curriculum to include UDL flexible teaching methods, enhance institutional support, ensure sufficient learning materials and establish continuous monitoring systems for inclusive education implementation were highlighted. Participants suggested increased collaboration among educational authorities, administrators and teachers to maintain inclusive teaching practices.

One participant recommended:

"Teacher education programmes should include practical training on inclusive teaching and Universal Design for Learning." (T15)

Another teacher concluded:

"Inclusive education can only succeed when schools, teachers, parents, and government work together to remove learning barriers." (T18)

Overall, the qualitative findings demonstrate that teachers held positive attitudes toward Universal Design for Learning and recognized its potential to improve participation, engagement, and accessibility. Successful implementation of UDL, however, requires sufficient training, educational resources, institutional policies that support UDL, and ongoing professional development. These findings support the quantitative findings as they cater for the third research objective of understanding the contextual factors that affect the implementation of UDL in the educational institutions in Balochistan and solves the third research question.

Discussion

The results of this study showed that the Universal Design for Learning (UDL) positively contributed to inclusive and accessible education in educational institutions in Balochistan. The quantitative results showed that the implementation of UDL, student participation, student engagement and learning accessibility were high. In addition, Pearson correlation and regression analyses showed that UDL was significantly positively related to all three educational outcomes with UDL's most significant positive relationship being in the direction of learning accessibility ($r = .781$, $\beta = .781$), followed by student engagement ($r = .724$, $\beta = .724$) and student participation ($r = .698$, $\beta = .698$). The above findings highlight that flexible instructional practices play a significant role in improving students' active participation, motivating students and ensuring that learning opportunities are equal among all students, which fulfills RO1 and RO2 and addresses RQ1 and RQ2.

The results of the qualitative data also supported the quantitative data by providing information about the implementation of inclusive instructional strategies and teachers' perceptions of their effectiveness. While teachers did not have much experience with UDL, they reported using a variety of instructional approaches, collaborative learning, differentiated assessment, and flexible teaching strategies. They consistently noted a greater sense of student confidence, engagement, and participation in the classroom, and cited underdeveloped professional development, lack of instructional materials, overcrowding, and lack of institutional support as key implementation obstacles. Meanwhile, participants highlighted professional development, technology integration, supportive educational policies and enhanced institutional collaboration as important opportunities to enhance inclusive education in Balochistan. These findings directly answered RQ3 and RO3, where they offered some context to the quantitative relationships.

The findings are consistent with previous studies demonstrating that UDL enhances learner engagement, instructional effectiveness, educational accessibility, and inclusive classroom practices across diverse educational settings (Rao et al., 2023; Zhang et al., 2024; Bray & Byrne, 2024). Similarly, the implementation challenges outlined in this study, including inadequate teacher preparation and resource constraints, as well as a lack of institutional support, resonate with those of Panczykowski et al. (2024), Duncan et al. (2025), and Muzdalifah et al. (2025), who found that ongoing teacher professional development, institutional engagement, and access to adequate educational materials are essential for implementing UDL effectively.

The Universal Design for Learning (UDL) Framework further supports these findings, suggesting that multiple means of engagement, representation and action and expression in learning reduce learning barriers and accommodate variability among learners (CAST, 2024; Rao et al., 2023). Similarly, the theory of Inclusive Education puts an emphasis on Equity in participation, Accessible learning environment and Equal opportunity to learn for all learners regardless of their ability or background. Based on the above mentioned results and findings, it is concluded that the implementation of UDL principles into inclusive education practices can significantly enhance participation, engagement and accessibility of learning, as well as contribute to the development of an equitable and future-ready educational system in Balochistan.

Practical Implications

The results have implications for educational practices and policies in Balochistan. Educational institutions need to encourage a culture of inclusive teaching that involves introducing UDL principles in designing curriculum, creating learning opportunities to be accessed easily and providing sufficient academic assistance to all learners and groups with diverse needs. Teachers need to be flexible in teaching approaches and use a variety of approaches to representation, engagement and assessment, as well as assistive and digital technologies to support inclusive classroom practice. Policymakers should intensify inclusive education policies, enhance funding for accessibility, educational infrastructure and continuous professional development programmes on UDL to provide teachers with knowledge and abilities to effectively implement inclusive and accessible education in educational institutions.

Conclusion

The study examined the contribution of Universal Design for Learning (UDL) in inclusive and accessible education to future learners in Balochistan, Pakistan by implementing explanatory sequential mixed method design. Results showed that UDL had a positive impact on student participation, student engagement, and accessibility to learning. Results of the quantitative analysis showed that UDL was significantly related to all three outcomes of education, meaning that flexible instruction promotes students' active participation, motivation, and equal opportunity to access the learning opportunities. These findings were further supported by the qualitative results which revealed that teachers were aware of the importance of using UDL-based pedagogy and are implementing some of the strategies of teaching with UDL though they are challenged by several factors, including low professional training, lack of appropriate teaching materials, overcrowded classrooms, and lack of institutional support.

The study is important in the literature because it adds to the empirical evidence related to UDL in the under-researched context of Balochistan. It provides evidence of the effectiveness of UDL in minimising learning barriers and creating inclusive learning environments to meet the needs of all learners. Moreover, the study findings highlight the importance of taking a learner-centred and flexible approach to preparing future learners, aided by the integration of technology into the curriculum, ongoing teacher professional development, curriculum innovation and institutional and policy commitment. Education in Balochistan will enable strengthening these areas and receive equitable, accessible and good quality education and thus inclusive and sustainable education development for all learners.

Limitations

The limitations of this study should be noted when interpreting the results. First, because of the cross-sectional research design, causal relationships were not drawn or changes in the implementation of Universal Design for Learning (UDL) over time were not explored. Secondly, the study was only conducted in educational institutions of Balochistan, which may not allow the findings to be generalised for other provinces or for another educational context in Pakistan. Thirdly, quantitative results were derived from self-reported questionnaire answers, which could be biased by the perception of the respondents as well as by the social desirability. Lastly, there were only 18 teacher interviews for the qualitative phase, which was adequate for thematic analysis, but may not reflect the full range of experiences with UDL implementation for all educational institutions.

Future Research

Future research should be conducted with the findings of this study as a foundation through using longitudinal research designs to investigate how the Universal Design for Learning influences student participation, engagement and learning accessibility over time. Other mixed method studies should also be attempted in other provinces of Pakistan for comparison of region to region differences in inclusive education practice and to enhance the generalizability of the findings. Future researchers are encouraged to do comparative studies between public and private educational institutions to investigate differences in UDL implementation and institutional UDL support. Moreover, future studies should focus on how digital UDL implementation, assistive technologies and new technologies in education can positively impact inclusive learning spaces and improve educational access for a variety of students in both traditional and technology rich classrooms.

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