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# Developing Inclusivity among Secondary School Students through Universal Design for Learning

**Hassan Raza**
razahassan5553@gmail.com
M.Phil Scholar, Center for Education and Staff Training, University of Swat

**Sajjad Hussain**
sajjadhussain@uswat.edu.pk
Assistant Professor, Center for Education and Staff Training, University of Swat
**Corresponding Author: * Sajjad Hussain** sajjadhussain@uswat.edu.pk

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## ABSTRACT

*The fourth Sustainable Development Goal (SDG-04) emphasizes educational inclusivity, positioning Universal Design for Learning (UDL) as a viable approach. Following the emergence of inclusive education concepts, numerous pedagogical methodologies have been proposed to facilitate effective inclusive educational implementation. This research examined the association between Universal Design for Learning methodologies and Sustainable Learning Skills developed by secondary-level students in government institutions within District Swat, Pakistan. The primary research aims included exploring educator and learner perspectives regarding UDL strategies employed in secondary institutions, documenting teacher and student observations concerning SLS at the secondary educational level, and determining the relationship between UDL implementation and SLS among secondary school students in Swat District. A quantitative correlational investigation was undertaken utilizing a sample comprising 296 educators and 377 learners from the target population. Two distinct survey instruments were employed to assess perceptions regarding UDL implementation and SLS, encompassing relearning, autonomous learning, cooperative learning, participatory learning, and knowledge transfer capabilities. Data analysis incorporated descriptive statistical measures, independent sample t-tests, Pearson correlation analysis, and multiple linear regression techniques. Results revealed robust positive correlations between SLS and core UDL components—engagement, representation, and expression—with the latter serving as the predominant predictor in regression analyses. Additionally, educators and students demonstrated perceptual disparities in this regard, highlighting the need for enhanced engagement-oriented instructional approaches. The study will demonstrate why it is important to implement UDL models in the educational process at the secondary school level, considering both the theoretical and practical uses of inclusive learning settings as a way of fostering the ability to engage in lifelong learning. UDL principles are to be integrated into the process of promoting sustainable learning by educational practitioners. Educational authorities should support the implementation of UDL with the help of professional development programs.*

***Keywords:*** *Universal Design for Learning; Sustainable Learning Skills; Secondary Education; Inclusive Education; Engagement; Educational Equity; Lifelong Learning; Educational Policy*

## INTRODUCTION

Institutional education is being pushed more and more towards providing inclusive learning environments that are adequate enough to meet the needs of the students. Among such outstanding instances of how to do it, the Universal Design of Learning: UDL offers access to the learning opportunities through various means of engagement, representation, and expression (CAST, 2018). UDL targets the elimination of barriers to learning in an attempt to achieve multiple elastic delivery of instructions that serve the

variability in students particularly at the most developmentally critical level, the secondary level (Meyer et al., 2014).

The urgent academic and social requirements experienced by children in secondary schools are likely to serve as indicators of motivation, self-identification and learning capacity (Eccles and Roeser, 2011). The primary cause of why conventional approaches to pedagogy are prone to fail is that they are very homogenous, very rigid and therefore fail to address this diversity. UDL in contrast presents inclusive approaches which boost the learner motivation, interaction and academic performances (Rose & Meyer, 2002; Hall et al., 2012). With the implementation of the UDL, teachers will have an opportunity to provide the students with the tools they need to engage and empower disabled students and create inclusive, equitable learning environments (Katz, 2013; King-Sears, 2008).

Although it is undoubtedly advantageous, the actual use of UDL in secondary education is not high. Its integration is obscured by barriers like the absence of professional training and the weak institutional support (Smith, 2012). However, the need to integrate UDL into pedagogy is increased because of the recognition that it may help promote sustainable and lifelong learning skills in any given setting (Scott et al., 2003).

The present investigation is concerned with the effects of UDL on Sustainable Learning Skills within the population of secondary school kids. Relearning, independent learning, collaborative learning, active learning, and transferability are the skills included in the SLS and are of fundamental importance to those who must be ready to adapt to the fast-changing world (Ben-Eliyahu, 2021; Hays & Reinders, 2020; Graham et al., 2015; Karjanto & Acelajado, 2022). The competencies do not only make the students successful academically, but equip them to be successful in life.

Although classical implementations tend to underline memorizing and corrective tests, recent pedagogies such as Project-Based Learning (PBL), inquiry-based learning, and UDL are fast becoming viable approaches to facilitate sustainable learning (Bell, 2010; Hmelo-Silver, 2004). The proposed study will help generate relevant empirical contributions to the under-explored scenario of secondary schools in Pakistan in understanding the relationship between UDL strategies and SLS in secondary schools in Pakistan.

This study is focused on the area of District Swat of Pakistan; the study tries to establish how both teachers and students perceive about UDL and SLS and their interrelation through a government secondary school. The research aims at informing inclusive schooling policy, pedagogy, and research in future studies, particularly, in those of resource poor states and cultural specific areas.

**Problem Statement**

As much as UDL provides potential reading to meet the needs of various learners it is lack of empirical studies which discuss its effectiveness on sustainable learning in secondary schools - especially in Pakistan. The most conspicuous one is that the role of UDL on the non-cognitive skills like solving, critical thinking, self-regulation, and adaptability is not well researched.

This research aims to fill this gap by analyzing how UDL strategies influence students' development of sustainable learning skills, examining the perceptions of both students and teachers, and identifying effective instructional practices.

**Objectives**

1. To examine the perspectives of both pupils and educators regarding UDL methodologies in high schools.
2. To assess the viewpoints of both pupils and educators concerning student learning approaches at the high school stage.
3. To evaluate the relationship between UDL and student learning approaches among high school pupils.

**Research Questions**

1. How do educators and pupils in high schools perceive Universal Designs for Learning methodologies?
2. What are the views of high school educators and pupils concerning student learning approaches?
3. s there a connection between UDL and high school student learning approaches?

**Significance of the Study**

The present research has been pivotal in terms of both theoretical and practical contributions to the sphere of inclusive education. It gives empirical information about the correlation between UDL principles and SLS, which could be applicable to teachers, curriculum developers, and policymakers. The study of UDL in government schools in Swat also alludes to the concept of equity and inclusion in a resource-strained, culturally particular setting that can offer patterns that can be implemented in other educational institutions with the same success.

The study can inform the national education policy that there is a need to incorporate UDL in learning to improve learning in the 21 st century skills. It presupposes further studies of UDL in different learning settings and helps with innovations of inclusion pedagogies.

**Delimitations**

The present study has a geographical restriction of District Swat, Khyber Pakhtunkhwa, Pakistan and also only male students and teachers of government secondary and higher secondary schools have been included. It focuses specifically on grades 9 and 10 and excludes other modern instructional models like differentiated instruction or blended learning. The research uses quantitative correlational paradigm with structured questionnaires that does not include longitudinal elements, experimental part, and classroom observation.

**Operational Definitions**

- Universal Design for Learning: A versatile pedagogical model that advocates engagement, representation, and expression to meet every student. UDL is evaluated in this study by the responses of the teachers and students to well-structured questionnaires.
- Sustainable Learning Skills: Skills that assist life-long and flexible learning, such a thinking critically, solving problems, collaborating, being autonomous, and transferring knowledge. These are measured in terms of behaviors and competencies as reported through questionnaire.

## LITERATURE REVIEW

Universal Design of Learning is the universal approach to learning that emerged to take into account the specific requirements of learners by providing alternative ways of engagement, representation, and expression (CAST, 2018). Based on neuroscience and cognitive science, the UDL is geared toward leveling any entry points into learning by coming up with instructional strategies that are flexible to suit all kinds of students and even students with disabilities. According to Meyer et al. (2014), secondary

school education is the significant transition phase when cognitive, emotional, and social changes play the primary role and academic advancement and personal benefit require an incredible level of importance of such approaches to pedagogy as UDL.

The conventional teaching skills can only accommodate the wide range of student skills and ways of learning very little. UDL bridges this gap by the multiplicity of modes of accessing the learning that facilitate student motivation, learning, engagement and performance (Rose and Meyer, 2002). According to King-Sears (2008), UDL enhances both accessibility and effectiveness of instructional resources to a wide range of learners when compared to Katz (2013), who points out that UDL benefits not only students with disabilities, but all learners through the limitation of structural barriers to participation and the maximization of participation. UDL therefore emerges as an active paradigm of fair education.

The application of UDL to the secondary school level carrying its own strengths as a theory suffers some challenges. Educators might also need constant institutional assistance to effectively use UDL concepts as they are usually lacking professional development (Smith, 2012). Further, implementation of UDL requires a change of pedagogical thinking and curriculum design, which is resource-consuming. Nonetheless, according to Scott et al. (2003), it is under such systemic adoption that there is likely to develop a sense of inclusive and responsive learning environments thereby matching the demands of the 21 st century learners.

Sustainable Learning Skills is a package of cognitive and non-cognitive abilities to allow a learner to survive and excel in a fluctuating environment. These are relearning, independent learning, collaborative learning, active learning and Knowledge transferability (Ben-Eliyahu, 2021; Hays & Reinders, 2020). SLS ultimately equips students with the skills to become self-termed, motivated reflective thinkers with the ability to use knowledge in diverse situations, in areas that are progressively becoming important in personal societal life and in the job market.

It has emerged that conventional, test-based learning that tries to encourage the establishment of lifetime abilities is deficient in fostering sustainable learning capabilities. According to Sawyer (2006), when learning facts by memorizing and then testing them on those facts are used to judge the learning process, more meaningful learning and active involvement are often discouraged. However, compare this with the new instruction methods such as Project-Based Learning (PBL), inquiry-based learning and UDL providing active and meaningful learning experiences. These approaches promote collaboration and independence among the students in addressing problems that underlie the creation of SLS (Bell, 2010; Hmelo-Silver, 2004).

Although the UDL has received a significant focus on the role it plays in the inclusive education, the newly-evolving literature suggests that the UDL also contributes substantially to ensuring a sustainable learning. UDL foster an environment that promotes life-long learning and therefore enhances the engagement, provides differentiated pathways, and promotes self-regulation can enable students to gain the lifelong learning. Such an interconnection makes UDL not only the means to achieve equity, but also the driver in the delivery of skills that can ensure the perfection of the matching of needs and demands of the modern world (Rao et al., 2014; Lucas and Claxton, 2010).

## METHODOLOGY

### Background

The research design adopted in the analysis of the relationship that exists between Universal Design of Learning and Sustainable Learning Skills of secondary school students. The methodology involved

research design, the population, sampling, the method of data collection, method of data analysis and ethics. The rigor, replicability, and reliable results are guaranteed with a well-conceived methodology (Creswell & Poth, 2018). The outcome of the study answered how the UDL strategies influence the development of lifelong learning skills at a critical stage of the learning process (Zimmerman, 2019).

**Design of the research**

The design entailed the quantitative correlational research study, including the investigation of the relationships between UDL (independent variable) and SLS (dependent variable) without controlling the variables and which was suitable to explore the association rather than causation (Cohen et al., 2020). The direction of association and correlation were calculated with the help of Pearson correlation index and independent t-tests to estimate the strength to which relationships took place (Field, 2018).

The research design was also descriptive survey design to bring in necessary details of the perception and experiences of the teachers and the students on the implementation of UDL and its effects on sustainable learning competencies (Babbie, 2020). The descriptive and correlational designs also assisted in achieving a brief understanding of the research problem (Fraenkel, Wallen, and Hyun, 2019).

**Sample and Population**

The study population was comprised of teachers (1,272) and students (18,756) in second-level schools (grades 9 and 10) who belonged to government boys' schools across District Swat Khyber Pakhtunkhwa Pakistan. Due to cultural and logistical factors, the study included only male participants (Patton, 2021).

Sample sizes of 296 teachers and 377 students were calculated using Cochran's formula for large populations, ensuring 95% confidence and 5% margin of error (Cochran, 2017). Simple random sampling was applied to minimize selection bias and allow for generalizable findings (Kumar, 2021). Participant lists were obtained from the district education office, and selection was computerized.

**Data Collection Instruments**

Questionnaires for students and teachers were developed based on contemporary frameworks of UDL and SLS (CAST, 2020; Ben-Eliyahu, 2021). Each included demographic questions and items related to UDL principles (engagement, representation, action/expression) and SLS sub-constructs (active learning, relearning, collaborative learning, independent learning, transferability), measured on a 5-point Likert scale (Likert, 1932).

The instruments were validated by educational experts and pilot-tested with 30 students and 20 teachers (excluded from final data) to assess clarity and reliability (DeVellis, 2017). Cronbach's alpha indicated strong reliability (0.85 for students, 0.87 for teachers) (Nunnally & Bernstein, 2019). Questionnaires were translated and back-translated into Urdu to maintain linguistic accuracy (Brislin, 2021). An administration manual standardized data collection and ethical compliance (Creswell & Poth, 2018).

**Data Collection Procedure**

After receiving approvals from the University of Swat and District Education Office, trained data collectors oriented participants, obtained informed consent, and administered questionnaires during school hours (Bryman, 2016). Teachers completed surveys in staff meetings; students during lessons, supervised by teachers and collectors.

Multiple visits ensured high response rates, and questionnaires were checked for completeness before secure data entry in SPSS (Dillman et al., 2014). Data confidentiality was strictly maintained with limited access.

Ethical practices included voluntary participation, confidentiality, parental consent for minors, and respect for local cultural norms (Israel & Hay, 2020).

### Data Analysis Techniques

Data cleaning removed incomplete or inconsistent responses (Tabachnick & Fidell, 2019). Analysis in SPSS 25.0 involved:
**Descriptive statistics** (frequencies, means, standard deviations) for participant profiles and item responses (Pallant, 2020).
**Inferential statistics** such as independent t-tests and ANOVA to compare group differences (Field, 2018).
**Pearson correlation** to assess relationships between UDL and SLS variables (Dancey & Reidy, 2017).

Assumptions of normality, linearity, and homoscedasticity were checked using Q-Q plots and scatterplots (Osborne & Waters, 2021). Significance was set at $p < 0.05$, with effect sizes interpreted via Cohen's d and $r^2$ (Cohen, 2018).

### Ethical Considerations

The research was conducted in accordance with moral principles of safeguarding the rights of participants. Informed consent was collected in writing by the participants and parents of the minors (APA, 2020). These metrics to avoid secrecy were anonymization and secure storage of the collected information (Sieber, 2020). Procedural and linguistic approaches to the conservative research area were found to be culturally sensitive (Hammersley and Traianou, 2019). Participation was voluntary and people shrugged off any withdrawal without any penalty. There were also a few risks that were identified and addressed with support resources in place to provide support in case of necessity (Orb et al., 2021).

## RESULTS

### Perception of UDL Strategies by the Students

The analysis of the data showed that the students displayed an overwhelming attitude towards Universal Design for Learning strategies that was undertaken in their classes. One of the UDL components that was rated the highest (Mean = 4.42, SD = 0.65) was multi-modal instructional materials, i.e., the use of various information sources like videos, infographics, and written material in different formats, which showed that students appreciated different ways of receiving information. Such investigation had a pivotal connection with the decreased boredom when learning ($t = 3.25$, $p = 0.002$).

Higher levels of satisfaction were indicated by students regarding the degree of autonomy provided with the help of UDL strategies (Mean = 4.48, SD = 0.60). The possibility to select one among a number of opportunities to show knowledge-presentations, project or written assignment- was also taken rather positively (Mean = 4.40, SD = 0.68). These were the reasons behind the increased engagement, in which the statistical testing showed that the conclusions are consistent with the significant positive relationships (all $p < 0.01$).

**Table 1.** Students' Perceptions of UDL Strategy Effectiveness and Impact on Engagement

| UDL Strategy Component | Mean | SD | t-value | p-value |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **Multi-modal Instructional Materials** | 4.42 | 0.65 | 3.25 | 0.002 |
| **Learning Autonomy** | 4.48 | 0.60 | 3.50 | 0.001 |
| **Options for Demonstrating Knowledge** | 4.40 | 0.68 | 3.20 | 0.002 |

**Self-Directed Learning Skills Among Students**

The students also portrayed high self-reported skills in the main self-directed learning skills. Time management was rated with a mean score of 4.20 (SD = 0.70), while reflective learning practices scored even higher (Mean = 4.42, SD = 0.62). Notably, students showed a clear perception of being able to transfer learned knowledge to real-world contexts, which scored the highest mean (4.50, SD = 0.58), suggesting effective application beyond the classroom.

Correlation analyses indicated that these self-directed learning skills were positively correlated with students' perceptions of UDL strategies ($r > 0.50$, $p < 0.001$), supporting the theoretical framework linking UDL approaches to the development of autonomous learners.

**Relationship Between UDL Strategies and Sustainable Learning**

The findings strongly suggest that UDL implementation fosters sustainable learning by promoting self-regulation, motivation, and engagement. Students reported feeling more motivated and independent when exposed to UDL strategies (Mean motivation = 4.60, SD = 0.57; Mean independence = 4.32, SD = 0.65). Regression analysis confirmed that motivation and confidence derived from UDL significantly predicted self-directed learning outcomes, accounting for 42% of the variance ($R^2 = 0.42$, $p < 0.001$).

**Table 2.** Regression Model Predicting Self-Directed Learning Outcomes from UDL-Related Motivation and Confidence

| **Predictor Variable** | **β** | **SE** | **t-value** | **p-value** |
|---|---|---|---|---|
| **Motivation (UDL-based)** | 0.38 | 0.06 | 6.33 | <0.001 |
| **Confidence (UDL-based)** | 0.34 | 0.07 | 5.14 | <0.001 |
| **Model $R^2 = 0.42$** | | | | |

**Comparative Analysis: Teachers' vs. Students' Perceptions**

When comparing teacher and student perceptions of UDL's impact on engagement, students reported higher levels of engagement (Mean = 4.05, SD = 0.75) compared to teachers' self-reported implementation efficacy (Mean = 3.75, SD = 0.80). An independent samples t-test confirmed this difference as statistically significant ($t671) = 3.46$, $p = 0.001$), suggesting students perceive stronger benefits from UDL strategies than teachers believe they deliver.

**Table 3.** Comparison of UDL Engagement Perceptions: Teachers vs Students

| **Group** | **N** | **Mean** | **SD** | **t-value** | **p-value** |
|---|---|---|---|---|---|
| **Teachers** | 296 | 3.75 | 0.80 | 3.46 | 0.001 |
| **Students** | 377 | 4.05 | 0.75 | | |

**Statistical Analyses**

Pearson correlation coefficients demonstrated significant positive associations between the extent of UDL application and all measured self-directed learning skills across both groups (r values ranged from 0.50 to 0.68, all $p < 0.001$). Regression models further confirmed that UDL-related confidence and learner motivation serve as significant predictors of self-directed learning outcomes, emphasizing the efficacy of UDL as a framework for fostering autonomous, sustainable learners.

**Summary**

This paper has explored the connection between the Universal Design of Learning (UDL) strategies and self directed learning skills (SLS) in secondary students in District Swat. Findings indicated that there was a significant positive relationship: UDL improved student engagement, motivation, autonomy, and cognitive flexibility. UDL-based collaborative activities contributed to more social interaction, whereas the freedom of choice enhanced the responsibility of the learner. It was demonstrated that the learners were able to transfer the knowledge to real life setting which shows that UDL does not only facilitate academic achievement but also learning throughout life.

## FINDINGS

In order to meet the needs of learners, educators have been employing the strategies of UDL such as different media and diverse assessments quite often. Students who reported that they experienced more engagement and self-controls valued multimodal teaching and alternate learning routes. Provided that UDL facilitates critical thinking, reasoning and solving problems and encourages metacognitive learning attitudes, a large part of that would also be true of UDL. The peer interaction and learning collaboration proved to work because the social constructivist theory concurs. Students also showed subject transfer and real world application. The results justify UDL as a less-restrictive framework that will be advantageous to all the students.

## DISCUSSION

The evidence is in favor of recommendations that UDL is a practical approach towards ensuring that learners learn sustainably through flexible and student centred teaching. Both teachers and students valued various representations and learning options, and they all improved motivation and understanding. UDL encourages self-directed learning and introspection, which are vital to academic success in the long term, through UDL. Positive relationships between UDL use and learner autonomy correspond with the current body of knowledge. The lack of differences based on population implies that UDL is highly applicable in different teaching or learning environments.

## CONCLUSION

The DL strategies highly encourage independent learning abilities, higher-order thinking, teamwork, and knowledge sharing at the secondary level. The inclusive nature of this is in tandem with major theories of learning and appeals to cognitive, social and emotional needs of a learner. Although the limitations are presented, it has been found that UDL has the potential to revolutionize education because it can develop lifelong learners, ready to take up complex tasks in the future.

## RECOMMENDATIONS

- Embed UDL principles in the classroom to guarantee fair access and participation to all students.
- Provide continuous teacher training on UDL strategies to support diverse learners and develop critical skills.
- Conduct further research in varied contexts to broaden understanding of UDL's impact.

## SUGGESTIONS FOR FUTURE RESEARCH

- Expand studies to multiple regions for greater generalizability.
- Use qualitative methods to explore UDL implementation in classrooms.
- Carry out longitudinal study on the life-long impact of UDL on learning capabilities.
- Explore the role of the administrative support and policy in UDL adoption.

## REFERENCES

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). APA.

Babbie, E. (2020). *The practice of social research* (15th ed.). Cengage Learning.

Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House, 83*(2), 39–43.

Ben-Eliyahu, A. (2021). *Developing lifelong learners: A sustainable learning framework*. Educational Psychology Review.

Brislin, R. W. (2021). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*(3), 185–216.

Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.

CAST. (2018). *Universal Design for Learning guidelines version 2.2*.

Cochran, W. G. (2017). *Sampling techniques* (3rd ed.). Wiley.

Cohen, J. (2018). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge.

Cohen, L., Manion, L., & Morrison, K. (2020). *Research methods in education* (8th ed.). Routledge.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Dancey, C. P., & Reidy, J. (2017). *Statistics without maths for psychology* (7th ed.). Pearson.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). SAGE Publications.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Wiley.

Eccles, J. S., & Roeser, R. W. (2011). Schools as developmental contexts during adolescence. *Journal of Research on Adolescence, 21*(1), 225–241.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2019). *How to design and evaluate research in education* (10th ed.). McGraw-Hill Education.

Hall, T., Meyer, A., & Rose, D. (2012). *Universal Design for Learning in the classroom: Practical applications*. Guilford Press.

Hammersley, M., & Traianou, A. (2019). *Ethics and educational research*. British Educational Research Association.

Hays, D., & Reinders, H. (2020). Sustainable learning skills in higher education: A systematic review. *Journal of Education for Sustainable Development, 14*(1), 32–45.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review, 16*(3), 235–266.

Israel, M., & Hay, I. (2020). *Research ethics for social scientists* (3rd ed.). SAGE Publications.

Karjanto, N., & Acelajado, M. C. (2022). Transferable skills for sustainable learning: A meta-analysis. *International Journal of Educational Research, 111*, 101847.

Katz, J. (2013). *Universal Design for Learning: Meeting the needs of all learners*. Pearson.

King-Sears, M. E. (2008). Universal Design for Learning: Technology and pedagogy for inclusive classrooms. *Remedial and Special Education, 29*(3), 108–116.

Kumar, R. (2021). *Research methodology: A step-by-step guide for beginners* (5th ed.). SAGE Publications.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology, 22*(140), 1–55.

Lucas, B., & Claxton, G. (2010). *New kinds of smart: How the science of learning can change education*. Open University Press.

Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal Design for Learning: Theory and practice*. CAST Professional Publishing.

Nunnally, J. C., & Bernstein, I. H. (2019). *Psychometric theory* (3rd ed.). McGraw-Hill.

Orb, A., Eisenhauer, L., & Wynaden, D. (2021). Ethics in qualitative research. *Journal of Nursing Scholarship, 33*(1), 93–96.

Osborne, J. W., & Waters, E. (2021). Four assumptions of multiple regression that researchers should always test. *Practical Assessment, Research, and Evaluation, 8*(2), 1–9.

Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). McGraw-Hill Education.

Patton, M. Q. (2021). *Qualitative research and evaluation methods* (4th ed.). SAGE Publications.

Rao, K., Okolo, C., & Reber, A. (2014). Designing inclusive lessons with Universal Design for Learning: Empirical evidence and implications. *Journal of Special Education Technology, 29*(3), 1–14.

Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal Design for Learning*. Association for Supervision and Curriculum Development.

Sawyer, R. K. (2006). *The Cambridge handbook of the learning sciences*. Cambridge University Press.

Scott, S. S., McGuire, J. M., & Shaw, S. F. (2003). Universal Design for Instruction: A framework for anticipating and responding to disability and other diverse learning needs in the college classroom. *Equity & Excellence in Education, 36*(2), 49–59.

Sieber, J. E. (2020). *Planning ethically responsible research* (3rd ed.). SAGE Publications.

Smith, S. J. (2012). Barriers to implementing Universal Design for Learning in secondary schools. *Journal of Special Education Technology, 27*(1), 39–50.

Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson.

Zimmerman, B. J. (2019). Self-regulated learning and academic achievement: An overview. *Educational Psychologist, 25*(1), 3–17.