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EXAMINING TEACHER KNOWLEDGE AND PREPAREDNESS: TEACHERS FROM INDIA IN SOUTH CAROLINA AND THE IMPLEMENTATION OF UDL PRINCIPLES IN GENERAL EDUCATION CLASSROOMS

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by

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ABSTRACT

Increasing student diversity and the global emphasis on inclusive education necessitate a critical focus on teacher preparedness in implementing inclusive practices within classrooms. Teacher preparedness in inclusive practices is essential to ensure all students thrive in a truly inclusive educational environment. Universal Design for Learning (UDL) promotes equitable learning environments by empowering educators to address the diverse needs of their students. This framework is aligned with inclusive education legislation and provides multiple ways for learners to engage, understand information, and express their knowledge. UDL recognizes learner variability and supports student self-determination by offering choices along the learning journey, fostering greater ownership, engagement, and adaptability based on unique needs.

This study examines the self-reported knowledge and preparedness of teachers from India in implementing Universal Design for Learning (UDL) principles in South Carolina classrooms. Understanding these influences, grounded in UDL's proactive approach to inclusive education and Vygotsky's emphasis on the sociocultural context of learning, is crucial for creating effective professional development programs that support teachers from India as they adapt their instructional strategies for success in diverse U.S. classrooms. The study investigates how factors such as U.S. teaching experience, education level, and inclusive education coursework influence UDL preparedness in these teachers.

The study adopted a quantitative research approach, utilizing a survey refined through a pilot study with local and international teachers. Participants included Indian-origin teachers teaching in South Carolina with diverse experiences. The data collection methods used cross-sectional surveys, snowball sampling, and a digital format to ensure accessibility. Descriptive statistics,

multiple regression, and correlational analyses were employed to gain insights into teachers' preparedness levels. Findings indicate that while U.S. teaching experience initially boosts UDL preparedness, this growth may plateau over time. Teachers with master's degrees or higher consistently exhibited greater UDL knowledge. Specific areas, particularly supporting multilingual learners, necessitate targeted UDL training for all teachers, regardless of experience level.

The study identifies potential gaps in teachers' UDL preparedness and highlights the crucial role of supportive school environments with collaborative communities for ongoing professional development. Recommendations include comprehensive UDL professional development, prioritizing multilingual supports, collaborative UDL communities within schools, administrator training on UDL, and expanding UDL training in Indian pre-service teacher preparation programs. This study highlights a critical disconnect between South Carolina's commitment to inclusion and the lack of UDL training mandates for all teachers. The study's specific sample and reliance on self-reported data may limit the generalizability of findings and potentially introduce bias into the assessment of UDL preparedness.

DEDICATION

With boundless love, reverence, and heartfelt gratitude, I dedicate this work to the benevolent guides that have inspired and illuminated my path and bestowed their blessings upon me. To Jagad Guru Adi Shankaracharya, Adi Shankara Seva Samithi, Vijayawada, India, whose enduring wisdom, and fortitude are a constant source of inspiration, I prostrate in humble gratitude. To Sri Vijaya Ganapathi Maharaj, Nutakki, Andhra Pradesh, India, Beloved Remover of Obstacles, I offer my deepest appreciation for your boundless blessings. As the Lord of Auspicious Beginnings, you have cleared the path for my endeavors, empowering me to overcome challenges with grace and determination. May the blessings of Maa Sringeri Sharadamba, the embodiment of knowledge and wisdom, guide this work. And to Anjana Nandana Rama Duta Hanuman, Pavani Aurvedalayam, Vijayawada, India, I am deeply inspired by your undivided focus, immense strength, and profound wisdom. These qualities fuel my own dedication and determination to fulfill my purpose.

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CHAPTER 1: INTRODUCTION

The education landscape is constantly evolving, in response to societal trends and legal frameworks that govern the schooling experience. Classrooms, once homogenous entities, are now microcosms of global diversity, presenting both opportunities and challenges in equal measure. This metamorphosis is particularly noticeable in the United States, where legal mandates have reshaped the educational environment from segregation to a more inclusive paradigm. The Universal Design for Learning (UDL) framework is the core of inclusive educational practices, providing a solution to cater to the diverse needs of all students, including English language learners, students with disabilities, and other diversities (Meyer et al., 2014).

The educational terrain in South Carolina reflects this global shift. With the state's growing emphasis on inclusive practices, examining how well educators are prepared to navigate this landscape is imperative. This dissertation seeks to scrutinize the knowledge and preparedness of teachers from India in South Carolina's general education classrooms, specifically in implementing UDL principles.

The Changing Demographics of Classrooms

Across the globe, classrooms are becoming increasingly diverse. The United States is no exception, as reflected in the changing demographics within its schools. This change is partially attributed to legal mandates such as the Education for All Handicapped Children Act (EHA) of 1975, which opened the doors to public education for many students previously denied this fundamental right (Brock, 2018). The Individuals with Disabilities Education Act (IDEA) has further cemented the presence of students with disabilities in general education settings, revealing an enrollment surge from 6.5 million to 13 million between 2009-2010 and 2020-2021 (Snyder et al., 2018).

The representation of students with disabilities (SWD) in general education classrooms has climbed to 66%, up 7% since the 2009-2010 school year (Snyder et al., 2018). However, the increased integration has yet to translate into academic parity. Data from South Carolina's End-of-Course Examination Program (EOCEP) indicate a persistent performance gap between students with disabilities (SWD) and their non-disabled peers (SWND), with the former scoring significantly lower across multiple subject areas ("End-of-Course examination program (EOCEP)," n.d.). These statistics are not just numbers; they reflect the lives and potential of young learners. The graduation rate for all students in 2019 was at a commendable 86%, yet it staggered to only 72% for students with disabilities (U.S. Department of Education, 2023). Such discrepancies underscore the urgency to address educational equity and effectiveness for all students.

The Merits of Inclusion and UDL

Inclusion has shown benefits for all students, not only those with disabilities. Research suggests that inclusive educational settings can enhance social outcomes, foster a sense of belonging, and bolster self-esteem for SWD, aligning their experiences closer to those of their non-disabled peers (Blazer, 2017). The UDL framework stands out among various instructional models due to its proactive design and emphasis on accommodating diverse learners from the beginning (Hall et al., 2015). Unlike reactive strategies that adjust to learning differences after they become apparent, UDL anticipates variability in learning needs, making educational environments accessible and effective for all from the start (CAST, 2018).

Teacher Preparedness: A Global Concern

While the transition to inclusive education is crucial, it comes with its own set of challenges. Recent research by Adelman & Taylor (2017) suggests a connection between

teachers feeling unprepared for increasing classroom diversity and potential negative impacts on student achievement and behavior. This study is particularly relevant in our context. This sense of unpreparedness also contributes to teacher stress and attrition, exacerbating the teacher shortage crisis (Garcia & Weiss, 2020). The United States, in response to this shortage, has turned to the international recruitment of teachers. Data reveal a significant rise in international educators, particularly from India, the Philippines, and Jamaica (SCDE, n.d.). However, this solution presents new challenges. The visa regulations and the "revolving chair" phenomenon of these international teachers necessitate continual training and adaptation for both educators and institutions (Garcia & Weiss, 2020).

Research Gap and Study Focus

Despite the influx of international teachers, there needs to be more literature regarding their knowledge and preparedness, specifically concerning implementing UDL principles in general education classrooms. This research aims to bridge that gap by examining the self-reported knowledge and preparedness of Indian teachers in South Carolina, offering insights that could inform policy and practice. While there is a significant body of research on the preparedness of teachers in the United States for inclusive education, and similarly, studies addressing the readiness of Indian educators for inclusive practices within India's educational framework, there is a noticeable void in the literature concerning the preparedness of Indian teachers in the United States for such practices. This lack of comprehensive study into how Indian educators adapt to and implement inclusive education principles, particularly Universal Design for Learning (UDL), in the American educational context, underscores a critical area for further research. This study endeavors to fill this gap, examining the self-reported knowledge and preparedness of Indian teachers in South Carolina when implementing UDL principles. This

research has the potential to provide valuable insights that could influence educational policy and practice.

Purpose of the Study

The purpose of this (quantitative) study is to examine the knowledge and preparedness of teachers from India in implementing the Universal Design Learning (UDL) principles. Specifically, the study aims at examining the self-reported knowledge and preparedness of teachers from India working in the South Carolina State in implementing the UDL principles in general education classrooms.

The objectives of the study are to investigate the relationship between the level of knowledge and preparedness with the number of years a teacher has taught at their current level in the United States, the teacher's level of education in India before coming to the United States, and the number of courses/credit hours taken related to diverse populations during their teacher preparation program in India (before beginning their career in the United States). Further to examining the knowledge and preparedness of teachers, the study intends to offer recommendations to school districts and other educational agencies in designing need-based professional development programs for teachers.

Research Topic

Examining Teacher Knowledge and Preparedness: Teachers from India in South Carolina and the implementation of UDL principles in general education classrooms

Broad Research Question:

How do teachers from India self-assess their knowledge and preparedness in implementing Universal Design for Learning (UDL) principles in general education classrooms?

Sub-questions:

1. Does the number of years a teacher has taught at their current level in the United States impact their level of knowledge and preparedness in implementing UDL principles for Indian teachers who receive their teacher education degree in India and then come to the United States to teach?
2. What is the correlation between Indian trained teachers' education levels and their knowledge and preparedness in Implementing UDL Principles when teaching in the United States?
3. Does the number of special education or inclusive education courses taken during teacher preparation programs differentiate levels of UDL preparedness in teachers from India that come to the United States to teach?

Theoretical Framework

The Universal Design for Learning (UDL) framework provides a robust foundation for exploring inclusive education practices in South Carolina's general education classrooms. This study specifically focuses on evaluating the academic outcomes for all students and the preparedness of teachers from India. UDL's demonstrated effectiveness in accommodating diverse student needs (Rao et al., 2015; Evmenova, 2018) makes it an ideal lens for this investigation. UDL offers flexible teaching strategies that cater to a wide spectrum of learners, including those from various cultural and linguistic backgrounds and students with different learning abilities, significantly reducing the need for individualized accommodations. UDL's principles are instrumental in crafting inherently inclusive learning experiences. Katz's (2013) research on UDL in primary and secondary education provides crucial insights into how UDL principles can support diverse learners, including English Language Learners, aligning with the

study's objective of exploring effective strategies for classrooms with diverse student demographics. Moreover, Courey et al.'s (2013) research on UDL's integration in online learning environments highlights its relevance in today's digital learning platforms. By promoting educational methods adaptable to the multifaceted nature of learning, UDL ensures that every student feels valued and supported, fostering an environment where students can reach their full potential. This approach aligns with the study's commitment to exploring how teachers can effectively create learning environments that accommodate the unique needs of each student, thus promoting academic success and inclusion.

UDL stands out as a proactive, comprehensive educational design addressing the diverse needs of all learners from the beginning, in contrast to theories focusing on remediation or targeted interventions post-identification of learning challenges. This preemptive approach is vital in modern, diverse classrooms with varied abilities, learning preferences, and backgrounds. The flexibility and customization offered by UDL, advocating multiple means of representation, expression, and engagement, is a significant shift from rigid or traditional educational models that may only partially accommodate learner variability (TIES Center, 2021). UDL, based on neuroscientific insights, provides a flexible approach to accommodate individual learning differences. Its three core principles - multiple means of representation, action and expression, and engagement - cater to diverse learning needs and preferences. This framework is particularly relevant in contemporary classrooms, where diverse student populations, including SWD, are prevalent (CAST, 2018; Ok et al., 2016).

The adoption of UDL as the theoretical underpinning of this study reflects a proactive approach to inclusive education. It underscores the importance of flexibility in instructional design from the outset, thus minimizing the need for subsequent modifications. By offering

varied learning choices, UDL not only addresses the diverse needs of students but also supports the development of an educational environment where every student can thrive.

Vygotsky's Social Constructivism: The Role of Social Interaction in Learning

Understanding cognitive development is crucial, and Vygotsky's theory is pivotal. The theory emphasizes the importance of considering the social interaction and cultural context in which development occurs. The Zone of Proximal Development (ZPD) is a significant aspect of Vygotsky's theory, highlighting the importance of guided learning. The Zone of Proximal Development (ZPD), one of the critical concepts of Vygotsky's theory, highlights the gap between what learners can accomplish independently and what they can achieve with guidance and support. In the study context, Indian teachers in South Carolina can apply the ZPD to identify and bridge the gap between what students can do independently and what they can achieve through guidance and support.

Scaffolding is another important concept that provides structured support to learners as they face new challenges. Scaffolding is closely aligned with Vygotsky's Social Constructivism. It focuses on the support provided by more knowledgeable others (teachers, peers) to help learners achieve tasks within their Zone of Proximal Development (ZPD). Scaffolding aims to make learning accessible and effective for diverse learners (Alber, 2014). Vygotsky's focus on social interaction is crucial in multicultural classrooms, supporting effective teaching methods and cognitive skill development among diverse learners. Additionally, Vygotsky’s theory acknowledges the role of cultural tools and language in cognitive development, which can help explore how teachers use cultural and linguistic resources to facilitate learning. This perspective is critical when considering the diversity of classroom populations and the cultural backgrounds of international teachers (Vygotsky, 1978).

Integrating Vygotsky's Theory with UDL Principles

Integrating UDL and Vygotsky's Social Constructivism provides a dynamic framework for inclusive education. UDL's design of inclusive learning environments intersects with Vygotsky's emphasis on social learning processes. This dual approach ensures that the educational environment and interactive processes are inclusive and effective for all learners. The Zone of Proximal Development (ZPD) concept aligns with UDL's principle of providing multiple means of representation, adapting teaching to individual learner needs within their ZPD. Additionally, Vygotsky's scaffolding complements UDL's focus on diverse expressions of learning, facilitating meaningful learning experiences within students' ZPD.

UDL and the Three Brain Networks

Integrating UDL and Vygotsky's theory influences the three brain networks involved in learning: recognition, strategic, and affective networks. UDL's varied teaching strategies address the recognition network by presenting information in diverse ways, while its principles of action and expression align with the strategic network. The affective network is supported by UDL's engagement strategies and Vygotsky's emphasis on social and emotional learning (Sewell et al., 2022).

- Recognition Network: UDL's principle of providing multiple means of representation addresses the recognition network, which is responsible for how information is perceived and processed. By presenting information in various formats, UDL ensures that learning is accessible and meaningful to all students, regardless of their learning preferences or abilities. This approach is supported by research indicating the benefits of multi-modal learning strategies (Zahrndt, 2020). The use of multiple forms of representation in the classroom, as advocated by UDL, can also be seen as a way of creating a social and

interactive learning environment, which aligns with Vygotsky's ideas about learning. Vygotsky's social constructivist theory and the recognition network are related in that they both emphasize the importance of the social context of learning. Teachers can create a more inclusive and engaging learning environment that caters to diverse learning needs by providing students with different ways of accessing and processing information. This, in turn, can facilitate the development of cognitive skills and abilities central to Vygotsky's theory of social constructivism.

- Strategic Network: The strategic network, essential for how learners plan, execute, and monitor their actions, is effectively activated through UDL's emphasis on multiple means of action and expression. This approach not only empowers students to demonstrate their understanding and mastery of content in ways that align with their individual strengths and address their weaknesses but also interlocks with Vygotsky's concept of scaffolding. Such scaffolding, an essential aspect of UDL, provides step-by-step assistance that aligns with course objectives, facilitating a learning process that is accessible yet maintains high standards of achievement and rigor (Black et al., 2014). This seamless integration of UDL's diverse expression methods and Vygotsky's tailored support enables learners to progressively achieve independence in their educational journey.
- Affective Network: Vygotsky's social constructivism theory emphasizes the importance of social interaction and emotional connections in learning, which is closely related to the affective network. By fostering a positive and supportive learning environment, students feel more engaged and motivated to learn. UDL's engagement strategies also enhance the affective aspects of learning by providing students with a stimulating and relevant learning experience. Together, the integration of UDL and Vygotsky's theory creates a

comprehensive framework that addresses the cognitive and emotional aspects of learning, leading to a more effective and inclusive educational environment (Eun, 2017; Meyer et al., 2014; Vygotsky, 1978).

Supporting Diverse Learners

This integrated approach effectively caters to diverse learners, including ELLs, gifted students, and culturally diverse populations. It promotes social and emotional needs, providing autonomy, choice, and flexibility, and recognizes learner variability. For ELLs, UDL's varied representation methods combined with Vygotsky's social learning support accessible content and language development through interaction. Gifted students benefit from UDL's flexible curriculum design and Vygotsky's ZPD concept, offering enriching learning activities. Culturally diverse populations are supported through UDL's inclusive design and Vygotsky's focus on cultural context in learning.

Integrating UDL and Vygotsky's Social Constructivism offers a robust and multidimensional theoretical framework for researching inclusive education strategies. This combined approach provides a comprehensive understanding of both the learning environment design and the interactive process for effective learning. This framework aligns with the goals of inclusive education and addresses the practicalities and challenges faced by educators in diverse classrooms. Together, UDL and Vygotsky's theory integration provides a comprehensive framework that addresses all aspects of the learning process, from cognitive processing to emotional engagement, thereby creating a more effective and inclusive educational environment.

Scope of the Study

The scope of the study is to investigate the level of knowledge and preparedness of teachers from India in implementing Universal Design for Learning (UDL) principles in general

education classrooms in South Carolina. By focusing on teachers in South Carolina, the study provides insights into specific cross-cultural challenges and opportunities related to UDL implementation. The Study excludes teachers from other countries and teachers from India in states other than South Carolina. The research emphasizes UDL principles in general education classrooms. It delves deeply into how these teachers apply UDL principles in their classrooms, utilizing quantitative and qualitative data collection methods. This approach will provide comprehensive data and insights into the teachers' perspectives. Additionally, the study is grounded in the theoretical frameworks of UDL and Vygotsky's Social Constructivism. These frameworks provide a robust foundation for analyzing teacher preparedness and knowledge in inclusive education settings. Ultimately, the study aims to identify areas where teachers need more support to implement UDL principles effectively in their classrooms, thereby creating a more inclusive learning environment.

Limitations of the Study

The study's limitations are significant because they affect the generalizability and accuracy of the findings. Firstly, the study only included teachers from India who work in South Carolina. This means that the findings may not apply to teachers from other countries or comprehensively represent the experiences of teachers from India in other parts of the United States or other international contexts, making it difficult to draw broad conclusions about teachers' experiences from different cultural backgrounds. Secondly, when surveying these teachers, their immigration visa status could be a potential barrier. This means that some teachers may feel uncomfortable or reluctant to share negative experiences or opinions due to concerns about their visa status. As a result, the responses may not be more accurate and in-depth, which could limit the study's usefulness. Lastly, by using primarily Universal Design for Learning and

Vygotsky's Social Constructivism as theoretical frameworks within this study, it should be noted that other frameworks might provide unique perspectives and insights that were not explored in this study. Additionally, the study assumes that self-reported data from teachers provides a reasonably accurate measure of their UDL preparedness and knowledge.

Significance of the Study

The significance of this study lies at the intersection of inclusive education, teacher preparedness, and the academic outcomes of diverse learners. Another factor that signifies this study is underscored by the fact that nearly 240 million children worldwide have disabilities (Larson, 2023), and inclusive education models have become increasingly prevalent in U.S. schools. The focus on teachers, especially those internationally recruited in South Carolina, USA, and their preparedness in inclusive educational settings is crucial in shaping diverse learners' educational experiences and outcomes. This study aims to understand teachers' preparedness, mainly from India, in implementing Universal Design for Learning (UDL) principles and catering to the diverse needs of students, including those with disabilities. Universal Design for Learning (UDL) stands out as a proactive approach, accommodating the diverse learning needs of all students from the start (Bruckner & Nunna, 2023), a prominent difference in its approach.

Classroom Diversity

The increasing diversity in modern classrooms demands a nuanced approach to education, one that accommodates varied learning needs. Smith & Tyler (2011) and Gilmour (2022) have emphasized the critical role of teachers in this respect. This research addresses the crucial gaps in inclusive education strategies by focusing on the implementation of Universal Design for Learning (UDL) principles by Indian teachers in South Carolina. The importance of

addressing diverse cognitive, psychological, communicative, and motor needs in education, as highlighted by Coleman and Gallagher (2015), cannot be overstated. Examining how teachers from diverse backgrounds adapt and implement UDL principles can inform the refinement of educational practices. This refinement, in turn, fosters a more inclusive learning environment for all students.

Teacher Impact

The disparity in educational outcomes, especially for students with disabilities, highlights the urgency of this study. In 2019, while the overall graduation rate was 86%, it was only 72% for disabled students (Snyder et al., 2018). Such discrepancies underscore the need for better-prepared educators who can make a significant difference in the educational achievement of their students, as noted by Smith and Tyler (2011). The relationship between teacher preparedness and student outcomes forms the core of this research. Rao and Meo (2016) have demonstrated that teachers adept in UDL principles can significantly enhance academic results and student engagement. Investigating the preparedness levels of Indian teachers in UDL could directly influence the effectiveness of education delivery and student success. This is aligned with the findings of Gottfried & Kirksey (2020), who underscore the importance of teacher preparation for students with special needs. Furthermore, the study's exploration into how cultural and educational background influences teachers' approach to UDL offers valuable insights into enhancing teacher effectiveness across diverse educational settings.

Policy and Legal Aspects

This study has profound implications for educational policy and legal compliance. The preparedness of teachers in UDL is critical for adhering to legislative mandates such as the IDEA and ESEA. These laws necessitate appropriate choices and flexible pathways for students in

general education classrooms, a requirement closely tied to teacher preparedness in UDL principles. By examining Indian teachers' readiness in this area, the study could inform policy changes and teacher training programs to ensure legal compliance, echoing the concerns Brown (2010) raised about the need for teacher preparation to meet legal educational standards.

Training and Development

The significant rise in international teachers in the U.S., especially from India, presents a challenge and an opportunity for the educational system. The potential of this study to influence professional development is significant. Understanding how Indian teachers' educational backgrounds, years of teaching experience in the U.S., and exposure to diverse populations during training impact their UDL preparedness can guide the development of targeted professional development programs. The present study offers insights into effective teacher training and development strategies, especially in multicultural settings. The research findings can lead to targeted professional development programs addressing the unique needs of international teachers, particularly in the context of inclusive education.

Cross-Cultural Insights

The study also offers valuable cross-cultural insights, contributing to the broader understanding of how cultural and educational backgrounds influence teaching methods and effectiveness, particularly in inclusive education. This research has global significance. By exploring the nuances of Indian teachers' experiences in a U.S. educational setting, it highlights the complexities of cross-cultural education. This understanding can inform strategies for working with teachers from diverse backgrounds globally, addressing the underlying challenges and opportunities.

In summary, this study is crucial in advancing the understanding and implementation of UDL principles among Indian teachers in South Carolina. It significantly contributes to managing classroom diversity, enhancing teacher effectiveness, shaping educational policy, informing teacher training and development, and providing cross-cultural education insights. Collectively, these aspects underscore the importance of current research in fostering an inclusive and effective educational environment.

Definition of Terms

Universal Design for Learning (UDL)

Universal Design for Learning (UDL) is an educational framework tailored to meet the diverse needs of all learners. It is a comprehensive approach that transcends the traditional one-size-fits-all model, offering flexible and customizable instructional goals, methods, materials, and assessments (Burgstahler, 2020). UDL aims to reduce barriers in education while maintaining high achievement standards for every student, fostering an environment where each can acquire knowledge, skills, and a passion for learning (University of Kentucky, n.d.). Grounded in cognitive neuroscience research, UDL emphasizes learner variability and advocates for adaptable, responsive teaching strategies. This approach facilitates numerous ways of content representation, student expression, and engagement, enabling educators to cater to each student's unique learning needs and preferences (Morin, 2019; Edutopia, 2022). UDL seeks to enhance and optimize educational practices by integrating scientific insights into human learning processes, ensuring equal learning opportunities for all students, regardless of their learning preferences or abilities (Stanford Medicine, n.d.). Overall, Universal Design for Learning (UDL) is an educational framework that embraces the best practices of Response to Intervention (RTI), Multi-Tiered System of Supports (MTSS), and differentiation (CAST, 2018).

Inclusive Education

Inclusive education is a comprehensive approach that aims to cater to the diverse needs of all students, irrespective of their abilities or disabilities. It goes beyond classroom practices and encompasses transformative changes across the education system, including legislation, policy, financing, administration, and educational delivery (UNICEF, 2017). Inclusive education places students in age-appropriate general education classes within their local community schools, including those facing various challenges. It emphasizes providing high-quality instruction, interventions, and support, enabling every student to succeed in the core curriculum (Bui et al., 2010; Alquraini & Gut, 2012). In a holistic process, inclusive education responds to and addresses the diversity of needs among all learners, enhancing their participation in learning, cultures, and communities while actively working to reduce exclusion from educational opportunities (Namanyane & Shaoan, 2021). Overall, inclusive education is rooted in equity, social justice, and human rights principles and endeavors to create an equitable educational landscape where every student can learn and thrive. It reflects a commitment to embracing diversity and promoting an inclusive society.

Teacher Preparedness

Teacher preparedness encompasses the skills, knowledge, and attitudes essential for educators to impact student learning positively. Defined by the National Board for Professional Teaching Standards (NBPTS) and The National Center for Education Statistics (NCES), it includes competencies acquired through formal education and practical teaching experience (NBPTS, 2021; NCES, 1999). This concept also involves a thorough understanding of the subject matter, effective teaching methods, classroom management skills, and the ability to adapt instruction for diverse learners. The South Carolina Department of Education further clarifies that teacher preparedness includes both these instructional skills and the professional dispositions necessary to enhance student learning inside and outside the classroom (South Carolina

Department of Education, n.d.). The National Education Association (NEA) broadens this definition to emphasize the role of teachers in preparing students for future success in college, career, and life. According to the NEA, teacher preparedness extends beyond subject expertise and pedagogical methods to include a commitment to providing high-quality education for all students (NEA, 2020b). This comprehensive view of teacher preparedness highlights the importance of educators being well-equipped with a blend of knowledge, skills, and professional attitudes to support diverse learners in various educational settings.

Diverse Learners

"Diverse Learners" is a term that encompasses a wide range of students with varying backgrounds and learning needs. It recognizes the diversity in academic and physical abilities, language proficiency, cultural and ethnic backgrounds, gender, religious beliefs, socioeconomic status, individual experiences, learning preferences, modalities, interests, talents, and personalities. Diverse learners require teachers to recognize and respect their uniqueness and design instruction accordingly. This approach includes considerations for linguistic diversity, as seen in students from non-English speaking homes, and calls for educational practices that are adaptable, culturally responsive, and inclusive. The definition of "Diverse Learners" highlights the shift in education towards accommodating the full range of student diversity, ensuring equitable access to learning opportunities for all (NAGC, 2019; Oklahoma State Department of Education, n.d.).

Students with Disabilities

In the context of education, the term "students with disabilities" refers to students who require special education and related services due to a physical or mental impairment that limits one or more major life activities. According to the Individuals with Disabilities Education Act

(IDEA) regulations, a child with a disability can include intellectual disability, hearing impairment (including deafness), speech or language impairment, visual impairment (including blindness), severe emotional disturbance, orthopedic impairment, autism, traumatic brain injury, other health impairment, specific learning disability, deaf-blindness, or multiple disabilities (Center for Parent Information and Resources, 2017; IDEA, 2004). The National Institute of Child Health and Human Development (NICHD) defines learning disabilities as differences in a person's brain that can affect how well they read, write, speak, do math, and handle similar tasks (National Institute of Child Health and Human Development, n.d.). The U.S. Department of Education also recognizes students with disabilities as those with physical or mental impairments that limit their major life activities, or those with a record of such an impairment, or who are regarded as having such an impairment (U.S. Department of Education, 2023). In summary, "students with disabilities" refers to a diverse group of learners who have distinct educational needs due to a variety of physical, mental, or cognitive impairments. Recognizing these needs is crucial for providing appropriate academic support and accommodations to ensure equitable access to learning for these students.

Teachers from India in the United States

Teachers from India in the United States are foreign educators who could work in accredited primary and secondary schools across the United States. To teach in a school in the United States, teachers from India must complete a comprehensive application process, including obtaining a suitable visa through the U.S. embassy in their home country. To work as a teacher in the United States, Indian teachers must meet several eligibility criteria outlined by the U.S. Department of State, including possessing the necessary qualifications and meeting the requirements of their country of nationality or last legal residence. They need to be working as a

teacher in India at the time of application or meet specific eligibility qualifications, which include having recently completed an advanced degree and possessing two years of full-time teaching experience within the past eight years. Indian teachers must also possess a degree that matches the standards of a U.S. bachelor's degree in the specific academic subject or education field they want to teach. Additionally, they must have a minimum of two years of teaching or related professional experience, comply with the standards of the U.S. state where they will teach, have a good reputation, and character, and have adequate proficiency in the English language (U.S. Department of State, n.d.). Overall, Indian teachers who aspire to teach in the U.S. bring unique experiences and perspectives to the American educational system. They must navigate a stringent process to become qualified professionals and work as full-time teachers of record at certified primary or secondary educational institutions in the U.S.

CHAPTER 2: LITERATURE REVIEW

While understanding the importance of UDL is vital, we must now focus on its implementation. Chapter 2 explores the historical and legislative context of inclusive education, tracing the evolution of policies that have led to today's diverse classrooms. It also examines the specific strategies and applications of Universal Design for Learning (UDL), providing practical guidance for teachers seeking to create accessible and equitable learning environments for all students.

Changing Demographics and Legislative Foundations

The Global Trend

Globally, a shift in classroom demographics is becoming evident as there is a notable increase in English Language Learners (ELLs), students with disabilities, and individuals from diverse cultural and socioeconomic backgrounds (Evmenova, 2018). The past few decades have seen a growing momentum in the global movement toward the integration of students with special education needs (SEN) into general education classrooms. This movement finds its roots in the foundational policies and declarations, among which the Warnock Report of 1979, the UNESCO Salamanca Statement of 1994, and Article 24 of the UN Convention on the Rights of Persons with Disabilities (CRPD) are particularly noteworthy.

The Warnock Report, formally titled “Special Educational Needs,” emerged in the UK from an inquiry led by Baroness Mary Warnock. Its objective was to critically assess the educational provisions for children with SEN and suggest avenues for their enhancement. Such a stance became foundational to the inclusive education movement, which advocates integrating students with disabilities into regular classrooms (Lindsay et al., 2020). The report also marked a transition from merely categorizing children by their disabilities to concentrating on the specific

support and resources they would require. A significant reinforcement of the principles of inclusive education came with the UNESCO Salamanca Statement in 1994. This declaration, adopted by the World Conference on Special Needs Education held in Salamanca, Spain, appealed to the international community to endorse the inclusive school model (UNESCO, 2020). By highlighting the unique attributes, interests, abilities, and learning needs of every child, the Salamanca Statement signified a shift towards systems designed to cater to these individual differences.

Further strengthening the push for inclusive education was Article 24 of the UN Convention on the Rights of Persons with Disabilities (CRPD), adopted in 2006. This article emphasizes that, "States Parties are obligated to ensure individuals with disabilities can access general tertiary education, vocational training, adult education, and lifelong learning on an equal basis and without any discrimination" ("Article 24 – Education," n.d.). This affirmation underscores the commitment to equal educational opportunities for all, regardless of abilities or disabilities. Together, these pivotal policies and declarations signify the international commitment to inclusive education, motivating many countries to enhance their educational provisions for students with diverse educational needs (Donnelly & Watkins, 2011; Faragher et al., 2021).

Milestones in the U.S. Inclusive Education Legislation

The contemporary educational landscape in the United States has undergone transformative changes over the last few decades. Encouragingly, today, over 90% of students with disabilities are integrated into mainstream schools, spending a huge portion of almost 80% of their day in general education classrooms (Snyder et al., 2018). In a span of 12 years, from 2009-2010 school year through 2020-2021, the percentage of students served under IDEA Act in

public schools grew from 6.5 million (13%) to 7.2 million (15%). Moreover, the percentage of English language Learners (ELLs) surged from 9.2% to 10.4% between 2009 and 2019 (Irwin et al., 2022). The National Education Association (NEA) further predicts that by 2025, one out of every four students in the nation will be an ELL, underscoring the importance of inclusive education practices that cater to diverse learners (NEA, 2020a).

The Education for All Handicapped Children Act (EHA) of 1975 was a pivotal step for American education. Its main aim was to ensure that children with disabilities did not miss out and had the same chance to get a free public education along with their non-disabled peers (Wehmeyer et al., 2021). Public schools were tasked with the responsibility to evaluate these children. With input from parents, the idea was to integrate them into regular classrooms, removing any barriers of isolation. Building on EHA's principles, the Individuals with Disabilities Education Act (IDEA) of 1990 was introduced. IDEA took things a step further. It was not just about granting students with disabilities access to education. It was about making sure they received the right kind of support tailored to their individual learning needs. Schools were encouraged to provide a Free and Appropriate Public Education (FAPE) in an environment that was the least restrictive (LRE) and best suited to each student's needs.

Alongside these, the Bilingual Education Act of 1968 came into play with a specific goal: to help students who spoke limited English. By supporting bilingual educational programs, it aimed to give these students equal educational opportunities, ensuring they were not left behind because of language barriers. Section 504 of the Rehabilitation Act of 1973 had a broader scope, aiming to eliminate discrimination based on disability in any federally funded program. It was a statement, a commitment to ensuring that people with disabilities had equal rights and opportunities, especially in the realm of education.

The journey of inclusive education continued with the No Child Left Behind Act (NCLB) of 2001. NCLB's vision was clear: every student, regardless of their background, should achieve academic proficiency. Schools were held accountable, and the focus was on elevating the quality of education across the board. Every Student Succeeds Act (ESSA) of 2015 replaced NCLB but carried forward the torch of commitment to equal opportunity. ESSA was all about empowerment; states got more say in setting academic standards, there was a renewed push to ensure high school graduates were ready for the world, be it college or careers, and there was added support for students who needed it the most.

Collectively, these laws have not just shaped policies; they have transformed classrooms. They have steered us towards a vision where classrooms are not just rooms filled with students, but diverse, inclusive spaces where every child, irrespective of their abilities, background, or language, feels they belong.

Toward Greater Classroom Inclusivity

Inclusion is the practice of educating students from diverse backgrounds, interests, abilities, and skill sets alongside their non-disabled peers in general education classrooms (Gilmour, 2022). The shift towards inclusive classrooms in the U.S. has been driven by a combination of legal mandates, research findings, and societal values emphasizing equity and civil rights (Dudley-Marling & Burns, 2014). The movement from segregated setting to inclusive and diverse general education classrooms in the U.S. reflects broader shifts in societal values towards equity and the rights of all individuals. Legal mandates and research evidence have driven the adoption of inclusion in many educational settings, as it has been shown to have considerable benefits and foster a more equitable and diverse education landscape for all (Najarro, 2022). Ensuring equitable educational opportunities for all learners is the essence of

inclusive education (Navarro et al., 2016). In their 5-year longitudinal study, Cole et al. (2020) reported that students with disabilities who spent more time in general education classrooms achieved significantly higher scores on reading and math standardized tests than their peers educated in more segregated settings.

The UDL Lens: Achieving Total Inclusivity

Aligning with Inclusive Mandates

To address this diversifying educational environment, the concept of Universal Design for Learning (UDL) has emerged as an instrumental framework (CAST, 2018). UDL offers an approach where educational practices and curricula are designed to accommodate individual learning differences. Given its foundational principles, UDL seamlessly complements and helps realize the mandates of IDEA, EHA, Section 504, and the Bilingual Education Act. By offering flexible learning environments that can be customized and adjusted for individual needs, UDL embodies the essence of inclusive education as envisioned by these legislations.

UDL aligns seamlessly with the historical legislations and mandates that mandate inclusive classrooms. While acts like IDEA, Section 504, and the Bilingual Education Act advocate for inclusive education and equal opportunities, UDL provides the methodology (Smith Canter et al., 2017). It offers educators a blueprint to cater to diverse needs, fulfilling the objectives of these acts. For instance, where IDEA ensures students with disabilities learn in general education classrooms, UDL ensures that the teaching methods employed are accessible and beneficial to them (Scott, 2018). Universal Design for Learning (UDL) is an educational framework designed to accommodate diverse learning needs by providing flexible and customizable instruction (Stapleton-Corcoran, 2022).

Policy Endorsement of UDL

UDL was first recognized in the Higher Education Opportunity Act (HEOA; P.L. 110-315) in 2008. This legislation supported the use of differentiated instructional practices to meet the needs of all learners, including students with disabilities. UDL is not just a theoretical approach but is deeply embedded in practical teaching strategies, fostering inclusive classrooms, and promoting a tailored learning experience for every student. The Higher Education Opportunity Act defines UDL as a scientifically valid framework guiding educational practice, which provides flexibility in content presentation, student engagement, and student response. It is designed to reduce instructional barriers while maintaining high achievement expectations for all, including those with disabilities. Furthermore, acts like Every Student Succeeds Act (ESSA) and the Strengthening Career and Technical Education for the 21st Century Act have also endorsed and adopted the principles of UDL, signaling a significant shift towards a more inclusive educational landscape (CAST, 2022).

The Higher Education Opportunity Act (PL 110-135) defines UDL as a scientifically valid educational framework. It advocates for flexibility in presenting information, ways students can respond or demonstrate their understanding, and how students are engaged. The objective is to ensure all students, irrespective of their abilities, receive a holistic education (MLS, 2023; Thompson & Thompson, 2018). The UDL framework emerged as a beacon of hope for creating learning experiences that were not just accessible but also engaging, challenging, and tailored to individual interests (Evmenova, 2018).

Every Student Succeeds Act (ESSA), governing K-12 education, endorses UDL, mirroring its definition as presented in the Higher Education Opportunity Act 2008. It emphasizes a flexible teaching approach, reducing instructional barriers and maintaining high

academic standards for all students, including those with disabilities and English language learners (CAST, 2022). The Strengthening Career and Technical Education for the 21st Century Act is a federal law that aims to enhance the quality and accessibility of career and technical education (CTE) programs offered in the United States. The act includes a provision highlighting the significance of facilitating personalized learning experiences for all students, including those with disabilities. This provision is consistent with the principles of Universal Design for Learning (UDL), which emphasize adopting flexible and inclusive teaching practices that effectively cater to the diverse needs of learners. Furthermore, the CTE Act requires state leadership activities to include appropriate training that prepares educators to implement the UDL principles (CAST, 2022).

The push for UDL is also visible at state levels. South Carolina, for instance, actively supports UDL through initiatives like the Universal Design for Learning Implementation Guide, aimed at aiding educators in integrating UDL principles seamlessly into their teaching methodologies (SCDE, 2020). Moreover, states such as California and Massachusetts have incorporated UDL principles into their educational policies, indicating a nationwide trend toward inclusive education (California Department of Education, 2020; Massachusetts Department of Elementary and Secondary Education, 2015).

UDL as a vehicle for Educational Equity

A deeper dive into UDL's essence reveals its comprehensive nature. At its core, it aims to provide flexibility in how information is presented, how students respond or demonstrate their acquired knowledge and skills, and how they are engaged throughout the learning process. By reducing barriers in instruction and offering a suite of appropriate accommodations and supports, UDL champions high achievement expectations for every student, regardless of their abilities or

background (“UDL Guidelines,” 2023). This commitment is evident in federal mandates such as the Higher Education Opportunity Act and Every Student Succeeds Act, both of which underscore UDL's principles and the urgency of its adoption (“UDL Guidelines,” 2023). UDL bridges the gap between legislative mandates and practical classroom application, ensuring every student, irrespective of their background or abilities, receives high-quality education as emphasized by acts like ESSA (Scott et al., 2017).

In conclusion, the American education system's journey towards a more inclusive general education classrooms have been long but steadfast. Rooted in powerful legislations, the shift towards diversity and inclusion in classrooms underscores a broader move in societal values towards equity and civil rights. With an appreciation of differences becoming a shared value, the 21st century classroom is set to be a beacon of inclusive education, driven by frameworks like UDL (Benton-Borghi, 2015; Boroson, 2017). Inclusion is more than a policy; it is a commitment to ensuring every student, irrespective of their abilities, receives an equitable education (Basham, 2022; Thompson & Thompson, 2018). The 21st century classroom is a symbol of this commitment. Through the adoption and adaptation of frameworks like UDL and supported by robust federal and state policies, the United States stands at the cusp of an educational renaissance, where diversity is not just accepted but celebrated. As classrooms continue to diversify, frameworks like UDL will play an increasingly crucial role in ensuring that every student, irrespective of their background or abilities, has an equitable chance at education and success (Capp, 2017).

Universal Design for Learning

Concept of UDL

Universal design in architectural and transportation planning integrates features like ramps, automatic doors, and curb cuts to ensure optimal accessibility and inclusivity, particularly for individuals with special needs or exceptionalities (MLS, 2023; Kennette & Wilson, 2019; Lopes-Murphy, 2012). Universal Design for Learning (UDL) embraces this concept of universal design from architectural design and adapts it for educational settings ("CAST's response to the PARCC accommodations manual," 2013; MLS, 2023; Smith Canter et al., 2017) to remove barriers that impede learning (Lopes-Murphy, 2012). The UDL framework, defined by a set of principles (Rao & Meo, 2016) and guidelines (Evmenova, 2018), aims at improving teaching and creating a learning environment that is accessible and inclusive for all students, with and without disabilities, in an effective manner ("About universal design for learning," 2022; Scott et al., 2017; Scott, 2018). UDL, a scientifically based framework (Evmenova, 2018), incorporates flexible pathways (Rao & Meo, 2016), providing a robust alternative to the conventional "one-size-fits-all" approach in education (Lopes-Murphy, 2012; Rowan & Townend, 2016).

"The Center for Applied Special Technology (CAST) has played a crucial role in the development of the Universal Design for Learning (UDL) framework, focusing on enhancing educational opportunities for a diverse range of learners, particularly those with disabilities. Established in 2018, CAST's commitment to UDL is rooted in over four decades of extensive research integrating insights from learning sciences, cognitive psychology, and neurosciences. This interdisciplinary approach has enabled CAST to delve deep into how individuals learn, acknowledging and addressing the diverse needs inherent in any educational setting (Evmenova, 2018; Meyer et al., 2014; Scott, 2018). Furthermore, CAST's work in UDL has been instrumental

in shaping how curricula are designed. The principles of universal design that form the foundation of UDL emphasize not just physical accessibility but also the importance of creating learning experiences that are inherently inclusive and collaborative. By focusing on personalized learning environments, UDL aims to cater to teaching each student's unique learning preferences and abilities (Burgaj, 2018; Capp, 2017; Scott, 2018).

UDL's approach to education is fundamentally rooted in the concept of learner variability, as highlighted in the research by Hartmann (2015) and Rao & Meo (2016). This approach recognizes that educational strategies should be flexible and adaptable to meet the specific requirements of each student, ensuring that every learner is included. This is particularly critical in fostering inclusion and equity within educational systems. By designing materials and strategies that align with these differences, UDL advocates for an educational landscape where access and opportunity are available to students from all backgrounds, abilities, and disabilities. This inclusive nature of UDL not only supports those with recognized needs but also creates an environment conducive to learning for all students, as echoed in the works of Black et al. (2014), Lopes-Murphy (2012), and UNESCO (2017).

UDL Framework

The Universal Design for Learning (UDL) framework is grounded in three primary principles, each accompanied by associated guidelines and checkpoints. These principles are designed to cater to students with a diverse array of abilities (Trostle Brand et al., 2012). Drawing from the best educational research practices, these principles, along with their detailed guidelines and checkpoints, were developed to offer a comprehensive approach to inclusive education (CAST, 2018). Moreover, the UDL framework presents a set of guidelines for integrating flexible options into curriculum and instruction under the three domains of

representation, action and expression, and engagement (Rao & Meo, 2016). In particular, the first principle, Multiple Means of Representation, often referred to as the "what" of learning, underscores the need to diversify the ways information and knowledge are presented to learners. The second, Multiple Means of Action and Expression, known as the "how" of learning, emphasizes varied methods through which students can convey their understanding and insights. The third, Multiple Means of Engagement, addresses the "why" of learning, targeting the motivation and interest aspects of the learning process ("About universal design for learning," 2022; Rao & Meo, 2016).

These foundational principles of UDL are not just theoretical but have deep roots in cognitive and neurological research. They aim to make learning experiences rich and accessible for all students, a thought echoed by both the CAST (2018) and Meyer et al. (2014). These principles are elaborately connected with brain research on cognition and learning (Rao & Meo, 2016). In the process of learning, the three primary brain networks interact. As we acquire new skills and knowledge, these networks enable us to recognize, comprehend, internalize, express, and relate to information. The UDL principles echo the redundancy effect by emphasizing "multiple." Educators achieve this by using diverse methods to engage students, presenting content in various formats, and allowing students to display knowledge through suitable avenues. Neuroscientific insights and cognitive learning research support these approaches (Evmenova, 2018; Meyer et al., 2014). For instance, the principles align with the Affective Networks responsible for motivation, the Recognition Networks that manage information gathering and analysis, and the Strategic Networks that oversee planning and action (Meyer et al., 2014). Embracing the UDL principles ensures students have varied opportunities to access information,

articulate their learning, and deeply engage with content in meaningful and impactful ways (Hartmann, 2015).

According to Rao et al. (2015), Universal Design for Learning (UDL) is a set of flexible teaching strategies that aim to proactively accommodate the diverse needs of all students without the need for extensive individualized accommodations. Furthermore, UDL offers multiple approaches that cater to the needs of students who may be unable or unwilling to obtain a formal diagnosis of a learning disability due to economic, social, or cultural reasons. UDL acknowledges that learning is multifaceted and that educational methods should be adaptable to honor this diversity (IRIS Center, n.d.). By taking a proactive approach to instruction, UDL ensures that instruction is flexible from the outset, reducing the need for post-hoc accommodations (Evmenova, 2018). UDL offers a variety of learning choices that meet the unique needs of every student, irrespective of their circumstances.

In basic terms, UDL involves flexible strategies planned to accommodate all students, offering a variety of learning solutions (Rao et al., 2015). Expanding on this UDL acknowledges the variety in learning processes and preferences. UDL's proactive approach ensures that instruction is flexible from the outset, diminishing the need for post-hoc accommodations (Evmenova, 2018). It champions the belief that learning is multifaceted and that educational methods should be adaptable to honor this diversity (IRIS Center, n.d.).

UDL Guidelines and Check Points

The UDL framework provides nine guidelines and 31 checkpoints detailing how a teacher can integrate flexible pathways into a lesson (Capp, 2018). Description of these checkpoints and goals is imperative to understand their significance. By considering these factors during the lesson plan phase, the UDL framework reduces the need for individual

accommodations and promotes inclusive, diverse, and accessible learning environments (Evmenova, 2018; Meyer et al., 2014). The CAST's research portal contains a decade's worth of research evidence for UDL guidelines and their checkpoints. The research portal managed by CAST organizes the literature supporting Universal Design for Learning into four primary groups: foundational UDL studies, investigations into UDL principles, explorations of effective practices, and studies on UDL's practical applications. Additionally, CAST furnishes detailed research evidence for each UDL checkpoint, segmented into two sections: one presenting experimental and quantitative data and the other comprising scholarly analyses and authoritative perspectives (CAST, 2018)

CAST provides the UDL framework as a graphic organizer depicting the guidelines and checkpoints. A copy of version 2.2 released by CAST in 2018, is provided at the end of this chapter (Figure 1). A detailed description of each of the principles covering the philosophy of the principle along with examples, the educator's role in implementing in the classroom to embrace diversity, and research-based implementation strategies is detailed below.

UDL Principle 1: Multiple means of representation (MMR)

The Multiple Means of Representation (MMR) is a foundational educational approach based on the premise that students possess varied cognitive approaches to learning. Advocating for diverse presentations of instructional content, MMR aims to enhance comprehension and engagement, ensuring not just the provision of information but genuinely captivating and motivating learners ("UDL principles," n.d.). Central to MMR's philosophy is the integration of multiple instructional mediums. Beyond traditional text, the inclusion of graphics, videos, and interactive simulations is championed. This presentation is about more than variety; it is about ensuring every student can access and engage with the content meaningfully. Embedded video

captions cater to those with auditory challenges, while contextual hyperlinking in texts provides deeper insights into complex terminologies, promoting a more layered understanding. Enhancing this accessibility, tools like text-to-speech utilities come into play, especially beneficial for students where content decoding is not the central learning objective (Kennette & Wilson, 2019; Novak, 2021).

Educators, within the MMR framework, are more than just transmitters of knowledge. They are envisioned as enablers, creating an environment fostering active student engagement. As highlighted by Meyer et al. (2014), this role necessitates educators to constantly innovate, offering diverse methods that nurture the development of autonomous, engaged learners. Tools such as graphic organizers and storyboards are not mere aids but crucial components that can redefine the way information is perceived and assimilated. Encouraging students to take ownership of their learning by generating their own materials cultivates a sense of responsibility and connection to the content. Through such dynamic, multifaceted lessons, educators craft experiences that resonate with every student, ensuring an inclusive and responsive classroom atmosphere (Dzaman et al., n.d.; Scott, 2018)

The Multiple Means of Representation (MMR) principle is systematically structured into three main guidelines, each with specific checkpoints. The first guideline emphasizes customizing the sensory modalities for content delivery to ensure a tailored approach to meet individualized learning requirements. This guideline provides options for perception, such as visual presentations through streaming, enlarged print, and multimedia presentations like Windows Movie Maker and PowerPoint presentations. The second guideline focuses on making linguistic and symbolic content accessible for all learners, entails clarifying complex vocabulary and symbols, analyzing syntax and structure, and aiding in decoding text, mathematical

notations, and other symbolic representations. Additionally, internet links to background information can help expand understanding. The third guideline emphasizes assisting students in deriving meaning from educational content by providing options for comprehension. It emphasizes patterns and overarching themes for enhanced clarity. As students venture through the educational journey, the adaptability of these guidelines ensures support at every turn (Watts-Taffe, 2022).

UDL Principle 2: Multiple means of action and expression

Multiple means of action and expression are foundational to the Universal Design for Learning framework, emphasizing students are provided with varied methods to display their understanding. This principle accentuates the significance of choice and control in the learning journey, urging educators to diversify how students can demonstrate mastery. While some students may excel in traditional essay writing, others might resonate more with visual presentations or hands-on projects. The core tenet of this principle is about the "how" of learning—the diverse avenues students employ to immerse themselves in and articulate their learning (Kennette & Wilson, 2019; Levey, 2021).

When educators embrace the principle of multiple means of action and expression, they acknowledge the significance of providing a variety of options for students to demonstrate their understanding (Navarro et al., 2016). For instance, instead of solely relying on traditional exams, teachers encourage students to display their grasp of topics via multimedia presentations, concept maps, or comprehensive projects. A student skilled in visual representation might opt for a concept map, while another with a flair for articulation might lean toward a multimedia presentation. These diverse methods of assessment not only acknowledge the distinct talents and proficiencies each student brings in but also promote executive functioning. This enables

students to strategically apply, organize, and utilize the information they have learned in many ways (Finnegan & Dieker, 2019).

The principle of 'Multiple Means of Action and Expression' within the Universal Design for Learning (UDL) framework fosters an inclusive learning environment. It is divided into three meticulously designed guidelines, each with its own set of checkpoints, to address the diverse ways students interact with content and express their understanding. The 'Physical Action' guideline within the UDL framework's 'Multiple Means of Action and Expression' principle emphasizes. This approach is essential for accommodating different physical needs and learning preferences. Interactive whiteboards, for instance, create an engaging and tactile learning environment, allowing kinesthetic learners to interact with content physically. Additionally, speech-to-text technology caters to students facing challenges with traditional writing by allowing them to verbalize and transcribe their thoughts. These varied tools collectively ensure that all students, regardless of their physical abilities or preferences, have equitable access to learning and can actively participate in the educational process (Rao et al., 2021).

The second guideline, 'Expression & Communication,' is crucial in acknowledging the varied ways students communicate and express their understanding. This guideline encourages the adoption of many tools and media formats for content construction and composition, catering to students' different communicative strengths and preferences. For example, keyboarding with spelling support can be a valuable aid for students who find written expression challenging, while podcasting offers an alternative platform for those more articulate in verbal communication. These options ensure that conventional modes of expression do not limit students and can utilize mediums that resonate more closely with their capabilities and learning preferences (Hovey et al., 2022).

The third guideline, 'Executive Functions,' is crucial for addressing the needs of neurodiverse learners, and students with intellectual disabilities and cognitive impairments, including Traumatic Brain Injury (Diamond, 2013). This guideline is pivotal in guiding students in effective goal setting, planning, and strategic development. It becomes instrumental in helping these students structure their learning process and navigate their educational journey more independently. One can use strategies that support executive functions, such as providing explicit instructions, breaking tasks down into smaller steps, using visual aids, and providing organizational tools. These strategies align with the idea that supporting executive functions can help students with cognitive impairments and other conditions to structure their learning process and navigate their educational journey more independently (Keenan et al., 2019).

UDL Principle 3: Multiple means of engagement

The principle of multiple means of engagement examines the “why” of learning, focusing on the effective networks of the human brain. At its core, this principle offers a variety of options for student motivation and engagement in the classroom by considering their individual interests, preferences, and learning goals (Pacheco-Gaffrey, 2019). By offering a wide range of activities, materials, and instructional strategies that cater to different learning preferences and preferences, teachers can help maintain student interest and motivation throughout the learning process. This constructivist approach focuses on capturing student interest, underscoring the importance of learning objectives, and fostering a sense of collaboration and community among learners (Scanlon et al., 2018; Trostle Brand et al., 2012).

Educators play a crucial role in bringing the Multiple Means of Engagement to life in the classroom by focusing on the guidelines of Recruiting Interest. Teachers can optimize individual choice and autonomy, ensuring each learning experience is tailored and resonant. By optimizing

individual choice and autonomy, teachers can create a learning environment that is more personalized and engaging for each student. Giving prominence to content's relevance, value, and authenticity nurtures a more profound connection with students. Maintaining consistent student participation is vital to building an environment free from threats and distractions. When we discuss sustaining effort and persistence, setting clear goals and objectives, ensuring a balance between resources and demands, and promoting a sense of community are paramount. Feedback that emphasizes mastery can significantly enhance the student's sense of achievement. To attain Self-Regulation, educators shape the environment by setting optimistic expectations, introducing coping strategies, and fostering a culture of self-reflection (Russell et al., 2022).

To fully embrace the Multiple Means of Engagement principle, diverse learning modalities must be seamlessly integrated into educational practices. Using audio/visual/hands-on activities provides students with a multisensory learning experience, appealing to various learning preferences. Multimedia projects encourage creativity and leverage technological skills, making learning relevant in today's digital era. WebQuests serve as structured pathways for students to navigate and collate online information, refining their research skills. Championing project-based inquiries allows students to engage in in-depth and contextual learning experiences. Tools like email projects actively bridge traditional teaching methods with the expansive possibilities of the digital age, fostering collaboration and positioning students to be more competitive and innovative in upcoming technological shifts (Hall et al., 2015; Rao et al., 2021).

Effectiveness of Universal Design for Learning (UDL): A Comprehensive Overview

Universal Design for Learning (UDL) is an educational approach that tailors teaching methods and materials to individual learners. This synthesis presents findings from numerous studies on the effectiveness of UDL across various grade levels and educational contexts.

K-12 Education

Capp (2018) underscored the significance of systematically implementing UDL principles in K-12 education, highlighting that it not only improves academic outcomes and enhances student engagement but also promotes greater satisfaction among educators and students. Central to these positive outcomes was an emphasis on flexibility in teaching and a tailored approach that addresses the distinct learning preferences of each student (Capp, 2018). In another study, Capp (2017) performed a meta-analysis encompassing empirical studies from six countries targeting K-12 and higher education. With an effect size of 3.56, UDL emerged as an inclusive teaching methodology that can elevate the learning process. However, the need for further studies to consolidate these findings was acknowledged. The study by Ok et al. (2016) supported these results, emphasizing UDL's potential in pre-K to grade 12 settings to boost both academic and social outcomes.

Cooper-Martin & Wolanin (2014) conducted evaluations in Montgomery County Public Schools and found that just over half of the educators consistently employed UDL practices. The applications of UDL had a considerable positive impact on fostering student independence and engagement. Furthermore, differences were observed based on grade, process type, and student subgroups. Another study by Hall et al. (2015) featured UDL's efficacy for grades 4-6 in enhancing reading comprehension, especially when utilizing online tools. Hartmann (2015) highlighted the potential of UDL in offering flexible learning environments, particularly for

students with severe support needs in grades 4-6. Similarly, Cook and Rao (2018) spotlighted UDL's effectiveness for students with learning disabilities, emphasizing its adaptability and beneficial impact in areas like reading comprehension.

Postsecondary and Higher Education

UDL's applicability extends beyond K-12. As noted by Izzo (2012), UDL, when paired with universally designed technology, can aid in boosting learning outcomes in college settings, significantly benefiting those pursuing challenging and lucrative fields like STEM (Science, Technology, Engineering, and Mathematics). Seok et al.'s (2018) systematic review further corroborated this, highlighting UDL's potential benefits for postsecondary students, regardless of disability status. UDL strategies, encompassing course design and instructor training, showed positive outcomes across varied delivery methods, such as online and blended learning.

Meta-analyses and Broader Insights

King-Sears et al. (2023) conducted a comprehensive meta-analysis and observed moderate positive effect of UDL on learners, indicating its research-backed effectiveness. Meanwhile, (Al-Azawei et al., 2016) synthesized findings from twelve articles, mostly centered on the U.S. education system. Their analysis attested to UDL's efficacy in diverse learning environments but also signaled the necessity of research in a broader range of educational and cultural contexts. Another investigation by (Al-Azawei et al., 2017) underlined the advantages of combining UDL with the Technology Acceptance Model in higher education, particularly for e-learning platforms. Their study affirmed the value of UDL in enhancing student acceptance and satisfaction in e-learning environments. Finally, Kennedy et al. (2014) underscored UDL's impact in developing multimedia tools for social studies, leading to significant growth in student outcomes across disability statuses.

Translating UDL theory into practice has tremendous promise (Levey, 2021). Universal Design for Learning is a pivotal framework in modern education, offering strategies emphasizing flexibility, inclusivity, and adaptability to different learning preferences (UNICEF, n.d.). With its emphasis on individual needs, UDL holds immense potential in elevating educational experiences across grade levels and student backgrounds (CAST, 2018). UDL is a flexible approach that can be applied to different settings and contexts, from early childhood education to higher education, from traditional classrooms to online courses. It can benefit all learners, including those with disabilities, those who are English language learners, those who are gifted and talented, and those who have different learning preferences and styles (Basham, 2022; Coyne et al., 2012; Evmenova, 2018; Kennedy et al., 2014; King-Sears et al., 2015)

UDL and Teacher Preparedness

Contemporary education systems increasingly emphasize inclusive education, aiming to offer equal learning opportunities to all students, particularly those with disabilities. Universal Design for Learning (UDL) plays a crucial role in fostering educational environments that cater to the diverse needs of every learner. This approach involves providing flexible learning opportunities to guarantee equitable access to education for all. The efficacy of UDL is heavily dependent on teachers' level of preparedness, which ensures that every student receives the education they deserve.

The imperative of Teacher Preparedness

In today's educational environment, the increasing diversity in general classrooms necessitates a pivotal role for general education teachers (Smith & Tyler, 2011; Gilmour, 2022). These educators are tasked with addressing students' varied learning needs across cognitive, psychological, communicative, and motor domains, as highlighted by Coleman and Gallagher

(2015). This challenge underscores the significance of teacher preparedness, especially in implementing inclusive strategies like Universal Design for Learning (UDL).

Research illustrates a direct link between teacher preparedness and student outcomes. Rao and Meo (2016) have shown that teachers proficient in UDL enhance academic results and foster higher levels of student engagement. Conversely, a lack of necessary skills and knowledge in educators can impede the effective implementation of UDL, resulting in diminished student achievement and engagement. Gottfried & Kirksey (2020) reinforce this notion, emphasizing the critical role of teacher preparation in ensuring students with disabilities receive appropriate instruction and access to the general curriculum. Moreover, legislative mandates such as the Individuals with Disabilities Education Act (IDEA) and Every Student Succeeds Act (ESEA) have significantly shaped the responsibilities of teachers. These laws require that students with disabilities be provided with appropriate classroom accommodations ensuring their access to the general curriculum.

As a result, teachers need to prepare adequately to fulfill these legal obligations and cater to the diverse needs of learners. Brown (2010) further argues that despite comprehensive literacy programs, the irreplaceable role of knowledgeable and responsive teachers in guiding each student's literacy journey is crucial. In conclusion, the imperative of teacher preparedness in modern education extends beyond legal compliance to fundamentally impact the quality of education. Teachers must be well-equipped with the skills and knowledge necessary to accommodate students' diverse learning needs and implement inclusive educational strategies effectively, thereby enhancing student outcomes and upholding the principles of equitable education (Kahn & Lewis, 2014).

Present Condition of Teacher Preparedness

The education system in the United States has been struggling to prepare teachers for the inclusion of students with disabilities. Advocacy groups such as Understood and the National Center for Learning Disabilities, in a survey conducted on 1,350 general education teachers, found that only 17% felt well-prepared to instruct students with these disabilities. Furthermore, 60% of the same group felt unprepared or needed more confidence, specifically when they had not previously worked with this student demographic (Harper, 2019; Keierleber, 2019). Compounding these issues, the National Council on Teacher Quality's report suggests that the U.S. teacher training system frequently churns out rookie educators who, while eager, often need more teaching skills and hands-on classroom experience. Notably, these novice teachers originate from a collective of 1,130 institutions, making up 80% of all new teachers entering the profession each year (Greenberg et al., 2014, Simon, 2013).

The current state of teacher preparedness for inclusive education shows significant gaps, especially in meeting the needs of diverse learners. The lack of preparedness among teachers is evident from the alarming numbers mentioned in various surveys conducted over the years. Kolano et al. (2014) reported a shortfall in training educators to work effectively with English Language Learners (ELLs). Additionally, Lin & Bates (2014) found that many teachers need more cultural knowledge and understanding to teach students from varied backgrounds effectively. D'Addio and April (2022) noted a substantial deficit in training on inclusive educational practices among teachers, which can profoundly affect student outcomes. Teaching students with disabilities poses a challenge for both general and special education teachers, as they often feel unequipped for the task, according to Lynch (2020). In line with this, a survey by the National Center for Learning Disabilities and Understood (Benetech, 2019)

revealed that even though students with learning differences spend significant time in general education classrooms, only 17% of general education teachers felt highly competent in teaching them. Sharma (2018) noted that teacher education programs must adequately prepare pre-service teachers for inclusive teaching, raising further concerns about the need for more preparedness among educators.

Additionally, the task force of the California School Boards Association (Burness, 2021) has highlighted that teachers with general education credentials often report their training as insufficient for serving students with disabilities effectively. Mader (2017) found that general education teachers often receive insufficient training in content, experience, and skills for addressing the needs of students with high-incidence disabilities. Furthermore, the National Council on Teacher Quality (Greenberg et al., 2014) underscores a systemic issue within the U.S. teacher training system, which predominantly produces new educators who often lack the necessary teaching skills and practical classroom experience. Whether it is the Universal Design for Learning (UDL) framework or addressing students with diverse learning disabilities, general education teachers consistently express inadequacy in their knowledge and skills (Scott, 2018).

Collectively, these statistics demonstrate a concerning trend: a significant number of teachers across the United States do not feel adequately prepared to teach in today's diverse classrooms, which include students with a wide range of disabilities as well as those who are gifted. This data suggests a critical need for reformed teacher training programs to prepare educators for the multifaceted nature of contemporary classrooms (Kurniawati et al., 2016). In conclusion, teacher preparedness is crucial in ensuring that general education classrooms are diverse and inclusive. Addressing the barriers to teacher preparedness is essential for the benefit of all stakeholders in the educational ecosystem.

Impact and Consequences of Unpreparedness of Teachers

According to Sikhwari et al. (2019), teachers' approaches and preparedness play a significant role in students' academic success. The authors highlight the importance of educators' approaches to academic success, noting that teachers need more skills and knowledge to address diverse needs to improve student engagement. On the other hand, adopting student-centered teaching methods and active student engagement are crucial factors for academic achievement. Rowan and Townend (2016) point out that teachers who lack the skills and knowledge to address diverse needs can negatively impact student engagement, leading to poor learning outcomes, behavior, and self-esteem. Adelman and Taylor (2017) stress that teachers must prepare themselves sufficiently to teach diverse learners using student-centered teaching methods and engaging with their students.

In their study on Teacher Effects on Student Achievement, Boonen et al. (2014) found that first-grade teachers' impact on student achievement in mathematics, reading, and spelling is significantly shaped by their use of varied instructional modalities, such as differentiated instruction and subject-specific teaching practices. These practices contribute to modest to substantial outcomes in these essential academic areas. Therefore, teachers must be well-prepared to implement these strategies effectively to enhance student achievement. In a study by Mitchell (2019), only 26% of teachers reported feeling adequately prepared to teach students with disabilities.

Teacher preparedness plays a crucial role in student achievement and engagement. Research has shown that well-prepared teachers who implement inclusive principles (UDL) can help students achieve better academic results and higher levels of engagement (Rose & Meyer, 2002). However, teachers needing more skills and knowledge may need help implementing UDL

effectively, leading to lower student achievement and engagement (Dempsey & Dally, 2014). Teachers must be well-prepared to provide appropriate accommodations to students with disabilities, as a lack of knowledge in this area can have legal and ethical implications. The Individuals with Disabilities Education Act (IDEA) mandates that all students receive suitable accommodations in the classroom, and failing to do so can result in legal disputes and ethical violations. Therefore, to ensure compliance with the law and uphold ethical standards, teachers must be adequately prepared to provide appropriate accommodations to students with disabilities.

Unpreparedness among teachers can have significant consequences, such as increased stress and burnout, ultimately resulting in staff shortages and high turnover rates. Teachers' lack of job satisfaction can negatively impact classroom stability and student learning (Gottfried & Kirksey, 2020). In addition to the consequences for the teachers, unpreparedness among teachers can also have a negative impact on students' overall growth. Research shows that teachers lacking the necessary skills and knowledge to support students with diverse learning needs can lead to disengagement, frustration, and even lower academic achievement (Rose & Meyer, 2002; Meyer et al., 2014). A survey by the National Education Association (NEA) revealed alarming trends in the teaching profession, with 55% of educators indicating their readiness to leave their jobs earlier than anticipated, primarily due to significant staff shortages in America's public schools. This critical situation is further compounded by the fact that 98% of educators identified teacher stress and burnout as the primary issue, with an additional 95% acknowledging the escalating number of teachers exiting the profession as a significant concern (Jotkoff, 2022). According to Torpey (2018), the U.S. Bureau of Labor Statistics predicts a challenging future for

the education sector, estimating an average of over 270,000 primary and secondary education teachers are expected to exit their profession annually from 2016 to 2026.

In conclusion, the impact, and consequences of unpreparedness on teachers can be far-reaching, affecting students' learning outcomes, engagement, behavior, and self-esteem and leading to legal disputes and ethical concerns. Therefore, teachers must be well-prepared to teach diverse learners and implement UDL principles, providing appropriate accommodations for students with disabilities.

Bridging Teacher Shortages: South Carolina's Global Initiative

The American education system faces a significant challenge in teacher shortages, a crisis that has escalated in recent years. This situation has led to an increased reliance on international teachers, particularly evident in states like South Carolina. This section delves into the magnitude of teacher shortages nationally and in specific states, the factors contributing to these shortages, the role of international teachers in filling this gap, and a detailed look at South Carolina's approach to this crisis.

Teacher Shortages in Numbers

Nationally, the U.S. grappled with an estimated shortage of 112,000 teachers in 2018 (Yan et al., 2019). Sutcher et al. (2019) predicted an annual teacher shortage of approximately 112,000 teachers for the 2017-18 academic year based on trends observed in national databases through 2016. They also highlighted that 109,000 individuals were uncertified for their teaching positions in the U.S. in 2017. This widespread deficiency is more prevalent in states like California, where 80% of districts faced a qualified teacher deficit in the 2017-2018 school year (Betancourt, 2018), and Arizona, which had approximately 7,000 teacher vacancies (Yan et al., 2019). South Carolina exemplifies this crisis, with a notable increase in teacher shortages from

4,000 in 2019 to 5,000 in 2021 (Garrett, 2021). Furthermore, the state observed that nearly 6,500 teachers did not return to their jobs in the 2016-17 school year, underscoring the severity of the situation (Bowers, 2017).

Factors Contributing to Teacher Shortages

The teacher shortage in the U.S. is a multifaceted issue influenced by several key factors. Between 2009 and 2014, the period saw a significant 35% decline in teacher preparation program enrollment, coupled with a 6% increase in teacher turnover, reflecting a growing disenchantment with the profession (Bowers, 2017). Sutcher et al. (2019) point out that increasing demand for teachers due to rising student enrollments, shifts in pupil-teacher ratios, and teacher attrition significantly contribute to this crisis. Beyond these factors, stress and burnout have emerged as critical issues contributing to the crisis. Educators face significant stress due to the demands of their profession, including heavy workloads, the need to meet accountability standards, and the emotional labor involved in teaching (Betancourt, 2018; Garrett, 2021). The impact of stress and burnout on teacher attrition is significant, as they not only affect the health and well-being of educators but also reduce the overall quality of education and student learning experiences (Yan et al., 2019). The pandemic further exacerbated the shortage, intensifying competition for top teaching talent (Ayroso, 2023).

International Teachers: Numbers and Percentages

To mitigate this crisis, the U.S. has turned increasingly to international teachers. There was a 69% increase in international teachers, from 2,517 in 2015 to 4,271 in 2021 (Heubeck, 2022). In North Carolina, there was a 23% increase in international teachers, with about 500 new educators joining last year (Krueger, 2023). Arizona has also engaged significantly in overseas teacher recruitment (Yan et al., 2019). As of the 2021-2022 school year, there were 1,161

international teachers from 40 counties teaching in South Carolina, a number that continues to rise (South Carolina Baptist Convention, 2021-2022), and International visiting teachers made up about 4% of all new hires in 2021, a 3% increase from 2020 (Garrett, 2021).

South Carolina Initiatives

South Carolina has implemented the International Teacher Initiative to address the teacher shortage in the state. This initiative facilitates recruitment of teachers from various countries to teach in schools across South Carolina, aiming to provide students with diverse learning experiences while filling teacher shortages. The Mutual Educational and Cultural Exchange Act of 1961, or the Fulbright-Hays Act, supports this initiative by facilitating cultural exchanges and promoting mutual understanding between the U.S. and other countries (SCDE, n.d.). In the 2016-17 school year, South Carolina employed 546 foreign exchange teachers through a state-run program and private agencies, and in some rural school districts, the international exchange teachers constituted about a third of all teachers, showcasing the significant role these educators play (Bowers, 2017). This initiative reflects a broader trend in the U.S. education system, where the demand for qualified teachers far exceeds the supply, necessitating innovative solutions like international recruitment.

With South Carolina as a focal example, the U.S. education system is navigating a critical teacher shortage by increasingly relying on international teachers. This reliance is a short-term solution and part of a broader strategy to address ongoing educational challenges. The integration of international teachers in South Carolina, supported by initiatives like the International Teacher Initiative, underscores the U.S.'s dynamic and evolving nature, highlighting both the challenges and the innovative approaches employed to ensure educational continuity and quality.

Inclusive Education in the Indian Context

As defined by Sharma and Das (2015), inclusive education in India transcends the mere integration of students with and without disabilities. It encompasses a broad spectrum of diversity, addressing the needs of learners marginalized due to language, socio-economic status, religion, and other factors. This comprehensive definition lays the groundwork for an approach aimed at educational equity. This section examines the history, legislation, challenges, and level of teacher preparedness in the context of inclusive education in India.

History and Legislation Shaping Inclusion in India

India's journey toward inclusive education began post-independence and gained momentum with initiatives like the Integrated Education for Disabled Children (IEDC) scheme in the 1970s (Sharma & Das, 2015). Further, legislation like the Persons with Disabilities (PWD) Act of 1995 and the Right to Education Act of 2010 reinforced the mandate for inclusive education, emphasizing equal opportunities for all students regardless of their diverse backgrounds (Bhatnagar & Das, 2013).

Challenges in Implementing Inclusive Education

Implementing inclusive education in India is challenged by a variety of factors. Schools often need help with resource constraints and more facilities and materials to support effective inclusion (Shah et al., 2016). Additionally, the inflexibility of curricula and large class sizes impede the full participation of all students, particularly those with special needs (Narsaiah, 2018). Societal attitudes towards disability and diversity also pose significant challenges, as prevailing negative perceptions need substantial transformation. Inadequate support from the community and political leaders, along with a lack of integration between disability-focused research and educational practices, have made it challenging to promote inclusive education

(Bhat & Geelani, 2017; Narsaiah, 2018). Addressing these multifaceted issues is essential for developing an inclusive education system in India.

Level of Teacher Preparedness

The reviewed studies emphasize the importance of teacher preparedness for inclusive education in India. Das et al. (2013) and Bhatnagar and Das (2013) found that teachers in India require more training in special education, with 70% of them receiving no training in this area and 95% still in need of training. This lack of training has resulted in moderate levels of concern about inclusive education, as Shah et al. (2016) reported. Teachers consistently rate their competence levels as low or limited, which reflects the impact of the lack of training and support they receive (Das et al., 2013). Additionally, Bhat and Geelani (2017) suggest that teacher education programs must be more effectively aligned with the inclusive education mandate, failing to equip teachers with the necessary skills and knowledge. According to Narsaiah (2018), there is a significant gap in teacher education, and teachers need to be effectively prepared to manage the education of children with disabilities. The cumulative impact of these factors points to an urgent need for comprehensive reforms in teacher education and professional development, aligning them more closely with the principles and practices of inclusive education.

In conclusion, India's legislative strides towards inclusive education are commendable. However, the challenges, especially in teacher preparedness, require a comprehensive approach that includes policy enhancement, professional development of teachers, and a shift in societal attitudes towards diversity and inclusion. Implementing such an approach is crucial for realizing the nation's educational equity and inclusion vision.

Chapter Summary

The global movement towards inclusive education emphasizes integrating students of diverse backgrounds and abilities into general classrooms. Laws like the IDEA, EHA, and ESSA in the United States establish a legal framework. The Universal Design for Learning (UDL) framework provides a flexible and proactive approach to tackling the challenges arising from classroom diversity, and this approach is rooted in brain science. UDL emphasizes customizable instruction that reduces barriers and aligns with the goals of inclusive legislation. The growing research supports UDL's effectiveness, and federal legislation like the Higher Education Opportunity Act endorses its principles. UDL implementation is critical to ensuring that all students, regardless of their abilities, background, or learning preferences, have a chance to succeed as classrooms become increasingly diverse.

Inspired by universal design in architecture, UDL aims to create inclusive learning environments for all students from the start. UDL emphasizes flexibility in how teachers present information, how students demonstrate their knowledge, and how they engage with the learning process. This strategy supports diverse learners and reduces the need for later accommodations. Research shows that UDL improves student outcomes and engagement across grade levels and subjects. The framework's three core principles – Multiple Means of Representation, Multiple Means of Action and Expression, and Multiple Means of Engagement – are grounded in neuroscience. These principles guide educators in creating lessons that cater to the diverse ways students learn, ultimately fostering a more inclusive and equitable educational experience for all.

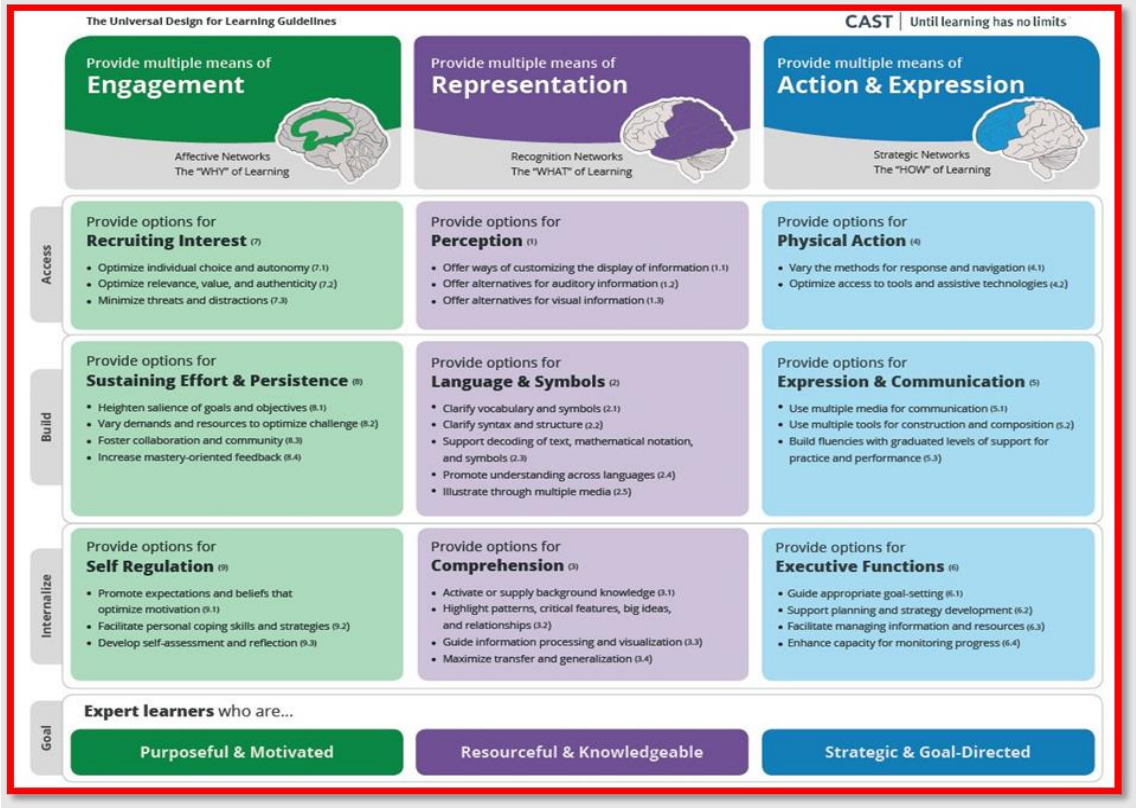
Teacher preparedness is critical for successful inclusive education. Research shows many teachers feel underprepared to address diverse student needs, posing a barrier to the successful implementation of inclusive frameworks like UDL. This lack of preparation can lead to lower

student achievement, reduced engagement, increased student behavior issues, and even legal and ethical concerns. These challenges, in turn, contribute to teacher stress, burnout, and staff shortages. In response to the challenges stemming from teacher shortages, some states, like South Carolina, are increasingly relying on international teachers to fill these gaps. This includes educators from India, among other countries. With the increasing number of international teachers, it is becoming more important to ensure that they are adequately prepared and equipped to teach effectively. Similar challenges exist internationally. For example, despite legislation promoting inclusion in India, many teachers need more training and resources to support diverse learners effectively.

While legislation like the Persons with Disabilities Act (1995) and the Right to Education Act (2010) support inclusion in India, several challenges hinder its implementation. These include resource constraints, inflexible curricula, negative societal attitudes, and inadequate teacher preparation. Research reveals that many Indian teachers lack specialized training and express concerns about their ability to implement inclusive practices effectively. Comprehensive reforms encompassing policy, teacher training, and societal shifts are necessary to achieve India's goal of equitable education for all. Investigating the preparedness level of teachers from India in the United States regarding UDL and other inclusive practices is essential for achieving true inclusion.

Figure 1

Universal design for learning guidelines version 2.2 (CAST, 2018)



CHAPTER 3: METHODOLOGY

This chapter details the methodological approach used to investigate the self-assessed knowledge and preparedness of Indian teachers in South Carolina regarding the implementation of Universal Design for Learning (UDL) principles within general education settings. Building upon the pilot study, the chapter outlines the research design, sampling method, data collection and analysis procedures, and ethical considerations.

Pilot Study

To explore the preparedness of general education teachers to instruct students with diverse needs and disabilities in general education classrooms, the researcher conducted a qualitative pilot study. This qualitative study involved individual interviews conducted via Zoom with a diverse group of four teachers representing varied backgrounds and experience levels, each having provided informed consent. This qualitative study involved individual interviews conducted via Zoom with a carefully selected group of four teachers, each having provided informed consent. The diverse group comprised two international teachers – a novice and a veteran – and two local teachers with two and six years of experience, respectively. Their mixed educational levels, ranging from bachelor's to master's degrees, provided rich and varied insights into the challenges and support needs in teaching students with disabilities. The interviews began with collecting demographic information, followed by a 21-question interview designed to explore various aspects of teaching in inclusive settings. The diversity in their backgrounds, from international to local contexts and novice to experienced educators, was pivotal in understanding the challenges and needs of teaching students with disabilities. The findings from these interviews were instrumental in shaping the survey questions for the more extensive study, aiming to delve deeper into the self-assessment of teachers from India teaching in South Carolina

regarding their implementation of Universal Design for Learning (UDL) principles in general education classrooms. From the interviews, several key findings emerged:

Partial Preparedness and Training Gaps

Interviews with teachers revealed a sense of partial preparedness when it came to teaching students with diverse learning needs. They acknowledged their ability to draw upon practical classroom strategies and past experiences. However, a significant gap was identified in their formal training, particularly regarding accommodating students with high-incidence disabilities. This finding suggests a heavy reliance on on-the-job learning to fill these gaps. Furthermore, it highlights the teachers' own recognition of the need for more comprehensive and targeted professional development opportunities to enhance their preparedness.

The Power of Experience

While the teachers interviewed acknowledged the value of formal education on this topic during their pre-service training, they consistently emphasized the invaluable role of hands-on experience. This experience significantly shaped their understanding and the teaching approaches they employ in serving students with diverse needs and disabilities.

Need for Enhanced Training

Despite their practical experiences, which included a strong emphasis on collaboration with special education teachers and adaptation of general teaching strategies, teachers acknowledged a significant need for more comprehensive training. Teachers expressed a desire for formal education and professional development programs that would build upon their existing knowledge. These programs should also facilitate greater collaboration among general education and special education peers.

Informing the Broader Study

These findings from the pilot study have been pivotal in shaping the research direction of the more extensive study. The insights regarding teachers' self-perceived preparedness, reliance on practical experience over formal training, and the desire for more targeted professional development have informed the development of survey questions. These questions aim to delve deeper into how teachers from India teaching in South Carolina self-assess their knowledge and preparedness in implementing Universal Design for Learning (UDL) principles in general education classrooms. The pilot study's outcomes underscore the complexities in preparing general education teachers for inclusive classrooms and highlight the need for enhanced professional development and training in special education.

Research Design

The study adopts a quantitative research approach, utilizing a structured survey as the primary data collection tool. This approach is selected for its ability to quantify and analyze teachers' perceptions and self-assessments systematically. The justification for adopting a quantitative research design is strongly supported by the principles of Creswell (2014) and Bryman (2012). Creswell emphasizes the alignment of research design with research questions, ensuring that structured and empirical methods used in quantitative research are suitable for objectively assessing teachers' perceptions and self-assessments, particularly within UDL and Vygotsky's Social Constructivism frameworks (Creswell, 2014). This method enables the use of statistical techniques to test hypotheses and draw conclusions, which is vital to evaluating the effectiveness of inclusive teaching strategies. Bryman's principles highlight the need for a methodology that aligns closely with the research objectives, which is crucial for generating specific and measurable outcomes (Bryman, 2012). A quantitative approach is thus beneficial

due to its objectivity and capacity to provide empirical insights that can be applied more broadly, essential for understanding and executing inclusive educational procedures.

This study employed a quantitative approach, utilizing a survey refined through a pilot study involving interviews with local and international teachers about their readiness to teach diverse students. This pilot study was crucial for enhancing the survey's relevance and effectiveness, aligning with the importance of pilot studies in research, as van Teijlingen & Hundley (2002) emphasized. Vomberg and Klarmann's (2021) recommendations were followed in the survey design for this study to ensure clarity, conciseness, and direct alignment with research objectives. This approach is crucial in creating an effective survey tool, especially when adapting from existing instruments. By focusing on straightforward language and relevance, the survey is poised to efficiently gather the desired data, significantly contributing to the validity and reliability of the research findings.

Participants and Sampling Method

The target population for this study comprised of teachers from India who are currently teaching in South Carolina. This study excludes teachers from any other country and teachers from India in other states other than South Carolina. Given their dispersed nature across the state, a purposive snowball sampling method was employed. This approach allowed the researcher to utilize initial contacts within the teaching community, who then referred other eligible participants, expanding the sample through professional networks. Such a method is conducive to accessing a specific demographic and encourages a higher response rate (Goodman, 1961).

Data Collection Methods

In this study, the data collection methods have been carefully designed to capture a broad and in-depth understanding of the preparedness and experiences of Indian-origin teachers in

South Carolina. Utilizing a cross-sectional survey approach, the methods involved snowball sampling to reach this specific group of teachers. The survey is administered digitally, enhancing accessibility and convenience for participants while ensuring confidentiality. This approach is aligned with modern survey research practices and is particularly effective in gathering data from a dispersed population. This study included teachers with varying experience levels to understand the current landscape of inclusive practices, particularly UDL implementation.

Cross-sectional research allowed for data collection at a single point in time from a diverse group, offering a snapshot view encompassing a range of experiences and perspectives. This method was effective for studies aiming to understand current conditions or characteristics within a population, such as examining the preparedness of Indian-origin teachers in South Carolina (Kesmodel, 2018). Collecting data from teachers of different experience levels enriches the dataset, providing a more comprehensive picture of the educational landscape and the implementation of inclusive practices like UDL (Mertens, 2019). The data collection process for this study, utilizing snowball sampling as recommended by Biernacki and Waldorf (1981), effectively targeted the dispersed and potentially hard-to-reach population of Indian-origin teachers in South Carolina, including those who had been residing in the state for a long time. This approach aids in capturing a diverse range of experiences.

The survey design for this study meticulously adhered to the best practices set by (Dillman et al., 2014), which are crucial for enhancing response rates and ensuring informed consent. The design included a comprehensive survey packet with a welcome letter outlining the study's objectives, estimated completion time, confidentiality assurances, and an appeal for honest responses. Additionally, the survey required participant consent, allowing them to opt-out. The packet also contained a brief overview of Universal Design for Learning (UDL), equipping

participants with essential background information pertinent to the study's focus. This thorough approach ensured that participants were well-informed and comfortable with the survey process, fostering a reliable and ethical data collection environment.

Data Collection

To gain a comprehensive understanding of current inclusive educational practices, a cross-sectional survey was administered to Indian-origin teachers in South Carolina with diverse experience levels. This cross-sectional approach, as outlined by (Shaughnessy, et al., 2012), allowed for the inclusion of insights from newly appointed and long-standing educators. It provided a diverse perspective on teaching strategies, challenges, and adaptations in inclusive education settings. This methodology ensured a rich and varied dataset, offering valuable insights into the effectiveness of UDL and other inclusive teaching practices among teachers with different tenure lengths in the state. The digital format of the survey in this study was not only in line with modern research practices and offered several significant advantages (Menon & Muralidharan, 2020). Internet-based surveys could reach a larger pool of potential participants within a shorter period, especially those who may be geographically dispersed. Additionally, Menon & Muralidharan (2020) also highlighted the cost-effective and timesaving nature of digital surveys, eliminating the need for physical materials and reducing the time for distribution and collection. The digital format of online surveys ensured enhanced participant privacy through secure, anonymous submissions (Wright, 2006), and the ability to complete surveys on various devices offers potential advantages for participants (Mavletova, 2013). Also, instant data availability accelerated turnaround time for analysis, further enhancing the research process's efficiency.

The data collection for the study was structured into a two-part survey. The first part captured demographic information. The second part, comprising five sections, used Likert-scale questions. Section 1, “Preparedness for Implementing UDL,” adapts 20 questions from Basham et al. (2020) to evaluate teachers' confidence in UDL implementation. Section 2, “Knowledge of UDL Principles,” included 20 questions adapted from Almutairi & Alsuwayl (2023). Section 3, “Professional Development and Training,” consisting of five questions, explored the alignment of current training with UDL implementation needs. Section 4 addressed “Challenges in UDL Implementation” with five questions. Finally, Section 5, “Perceptions and Beliefs about UDL,” used six questions to understand teachers' attitudes toward UDL. This comprehensive survey aimed to provide a detailed understanding of various facets of UDL application in diverse educational settings.

Survey Description

Demographic Section (10 Questions)

- Objective: To collect background information about the participants, including their education, specialization, experience, and origin.
- Relevance: Demographic data was crucial for understanding the context of the responses and making informed generalizations about the study's findings. It aided in correlating educational background, specialization, and teaching experience with the level of knowledge and preparedness in UDL.

Preparedness for Implementing UDL (20 Questions)

- Objective: To assess teachers' self-reported preparedness in various aspects of UDL implementation, including content delivery, expression of understanding, and student engagement.

- Relevance: These questions align with the UDL principles of providing multiple means of representation, expression, and engagement. The section evaluated how confident teachers felt about applying these principles in diverse classroom settings, which is essential for inclusive education (Meyer et al., 2014).

Knowledge of UDL Principles (20 Questions)

- Objective: To evaluate teachers' understanding and knowledge of UDL principles, particularly in adapting content and engaging students.
- Relevance: This section addressed the conceptual grasp of UDL, a critical component for effective implementation. Understanding UDL principles is foundational for adapting teaching strategies to meet diverse learning needs (CAST, 2018).

Professional Development and Training (5 Questions)

- Objective: To explore teachers' perspectives on the adequacy, effectiveness, and frequency of professional development related to UDL.
- Relevance: Professional development is critical to teacher preparedness in UDL (Courey et al., 2013). This section seeks to identify gaps between existing training and the requirements for effective UDL implementation.

Challenges in UDL Implementation (5 Questions)

- Objective: To identify perceived challenges in implementing UDL, including resource limitations, cultural differences, and systemic issues.
- Relevance: Understanding challenges was crucial for developing strategies to overcome barriers to UDL implementation. This section provides insights into teachers' practical obstacles in diverse educational settings (Duncan, 2022).

Perceptions and Beliefs about UDL (6 Questions)

- Objective: To assess teachers' beliefs and attitudes towards UDL and its effectiveness in meeting diverse learners' needs.
- Relevance: Teachers' perceptions and beliefs can significantly influence their willingness to adopt and implement UDL strategies in their teaching (Al-Azawei, 2016). This section explores the acceptance and integration of UDL principles in teaching practices.

Research-Based Evidence

- UDL Framework: The UDL framework is based on research in neuroscience, particularly regarding learning variability (Meyer et al., 2014).
- Teacher Preparedness: Studies indicate that teacher preparedness in UDL is crucial for its successful implementation, impacting student engagement and learning outcomes (Courey et al., 2013).
- Professional Development: Ongoing professional development is essential for teachers to implement UDL effectively and adapt to the evolving educational landscape (Duncan, 2022).
- Inclusive Education: UDL is particularly significant in inclusive education settings, where teachers must address various learning needs and preferences (Al-Azawei, 2016).
- This survey design aligned with the dissertation's objectives to examine the knowledge and preparedness of teachers from India in South Carolina regarding UDL implementation. Each section of the survey provided insights into specific aspects of UDL, contributing to a holistic understanding of its application in inclusive educational settings.

Reliability

The reliability of the survey in this study was substantiated by adapting instruments from Basham et al. (2020) and Almutairi & Alsuwayl (2023). Basham et al.'s UDL-OMT, characterized by its internal solid consistency, provides a reliable foundation for assessing UDL implementation. This ensured the adapted survey questions consistently measure teachers' perceptions and preparedness in UDL. In Basham et al. (2020), the UDL Observation Measurable Tool (UDL-OMT) underwent field testing for reliability. The study conducted 22 observations and analyzed data using Cronbach's alphas and intraclass correlation coefficients (ICC). The study's findings indicate that there was a high level of internal consistency, as evidenced by Cronbach's alphas being above 0.80 for all sections and an alpha score above 0.90, which is an excellent indication of consistency. ICC scores above 0.509 suggested moderate agreement. The study concluded that despite observers' differing perspectives and focus during observations, there was consistent internal agreement in their ratings, supporting the UDL-OMT's reliability for measuring UDL implementation. In the study by Almutairi and Alsuwayl (2023), the reliability of the survey items was assessed through a pilot study with 30 participants. The survey's reliability was measured using Cronbach's alpha, resulting in an overall coefficient of 0.80. This indicates that the survey items were reliably consistent for the study's purposes.

Validity

In the study by Basham et al. (2020), the validity of the UDL Observation Measurable Tool (UDL-OMT) was strongly supported by the comprehensive UDL framework, which is extensively researched and validated across various disciplines. With its principles, guidelines, and checkpoints, this framework provides a detailed foundation for the UDL-OMT, confirming its effectiveness and applicability in assessing UDL implementation in diverse educational

settings. In the study by Almutairi and Alsuwayl (2023), the validity was examined using content validity and internal consistency validity. For content validity, scale statements were reviewed by seven special education experts from Saudi universities, ensuring clarity and relevance to the dependent variable. The final scale draft incorporated their suggestions. Pearson's correlation coefficient was calculated for each statement in the survey to ensure that the survey items were valid and consistent. All correlation values were statistically significant at the 0.05 level, indicating that the survey items were both excellent and homogeneous.

Data Analysis

The study analyzed survey data using various statistical techniques, including descriptive statistics, multiple regression analysis, and correlational analysis. The goal was to gain insights into the preparedness of Indian-origin teachers in South Carolina for implementing inclusive teaching practices, specifically Universal Design for Learning (UDL). Descriptive statistics provided an overview of the participants' demographics and means for critical data points (Trochim et al., 2015). Multiple regression analysis employed explored relationships between teaching experience, qualifications, and UDL preparedness variables (Field, 2017). The correlational analysis identified associations between years of experience and levels of UDL preparedness (Cohen et al., 2013). This comprehensive approach offered insights into the preparedness of Indian-origin teachers in South Carolina for UDL implementation. By examining UDL implementation challenges, this study identified ways to better support teachers in creating inclusive classrooms for all students.

Ethical Considerations

Ethical approval for this study was sought from the Institutional Review Board (IRB) of the researcher’s institution. The study adhered to ethical guidelines stipulated by the IRB,

including obtaining informed consent, ensuring participant confidentiality and anonymity, and maintaining data security. These measures were crucial for upholding the research's integrity and safeguarding participants' rights and well-being.

Limitations and Delimitations

This study acknowledged the potential for response bias in its use of self-reported data. The focus on Indian teachers in South Carolina may affect the generalizability of the findings. Delimitations included the reliance on teachers' self-assessments and emphasized UDL implementation within a particular cultural and geographic context.

Summary of Methods

This chapter has outlined the study's methodological approach, detailing the research design, participants, data collection and analysis methods, and ethical considerations. The methodology is designed to robustly investigate the research questions within the UDL and Social Constructivism framework, ensuring a comprehensive understanding of inclusive education practices among Indian teachers in South Carolina.

CHAPTER 4: RESULTS

This chapter presents the results of a research study that evaluated the self-reported preparedness and knowledge of Indian teachers in South Carolina regarding their implementation of Universal Design for Learning (UDL) principles in general education settings. The study explored the impact of the number of years teaching in the U.S., the participants' educational level, and the number of courses focusing on inclusion and Universal Design taken during their teacher preparation programs in India on their implementation of UDL principles.

The study employed a two-part survey to gather demographic information and insights into implementing Universal Design for Learning (UDL). The survey, created on Google forms and approved by the University's Institutional Review Board (IRB), was disseminated to Indian-origin teachers in South Carolina using a snowball sampling method. Over six weeks, the researcher contacted 84 teachers and received 67 responses, resulting in a 79.6% response rate. These results highlight the success of the recruitment process and teachers' willingness to participate in the study. Personalized messages, emails, reminders, and thank you notes were used to enhance anticipated response rate.

Demographic Data Analysis

The demographic overview in Table 1 reflects a detailed picture of the participants' educational backgrounds, areas of specialization, experience with inclusive education during college, gender distribution, and teaching experience both in India and the United States. The data reveals a diverse range of educational achievements among the participants. Most participants (59.7%, or 40 teachers) have completed a master's degree. Additionally, a substantial number (29.9%, or 20 teachers) possess qualifications beyond a master's degree, while a smaller group (10.4%, or seven teachers) have completed only their bachelor's degree.

Concerning the participants' specialization areas, about 47.8% (32 teachers) are general education teachers, and the other half are special education teachers, showing a balance between the data collected. A small number of participants, 4.4% (3 teachers), hold dual certifications and are skilled in general and special education.

Regarding the number of inclusive courses taken during their college education, more than half of the participants, 53.7% (36 individuals), reported taking 0 and 2 inclusive courses. While 20.9% (14 individuals) reported taking 3 to 5 courses, the remaining 25.4% (17 teachers) took more than five courses. Gender distribution among those survey indicated a balanced composition between female participants (49.2%) and male participants (47.8%). Additionally, two individuals (3.0%) opted not to specify their gender. For the data on teaching experience in India, 16.4% of individuals (11 teachers) fall into the 0 to 3 years of experience category, while 28.4% (19 teachers) have been teaching for 4 to 6 years. The majority, accounting for 55.2% (37 teachers) hold more than six years of teaching experience. Teaching experience in the United States showed variation in the participants in this study, with a significant majority,72.7% (48 teachers), who reported over six years of teaching experience. Meanwhile, 15.2% (10 teachers) have 0 to 3 years of experience, and 12.1% (8 teachers) have 4 to 6 years of experience.

This demographic analysis reveals a highly educated group of Indian teachers in South Carolina, characterized by a harmonious gender balance and certifications spanning both general and special education. Findings also highlight participants' substantial teaching experience within India and the United States and diverse levels of formal training in inclusive education methodologies.

Analysis for Missing Values

Using SPSS, a missing value analysis (Table 2) was performed to find missing data. None of the Preparedness items (P1-P17) had missing responses. In the Knowledge section, items K1 to K16 had minimal missing responses: K5 had two (3.0%), K10 had one (1.5%), and K12 also had one (1.5%). According to the research literature, these low missing value percentages are well below the levels that could introduce bias into the statistical analysis. Schafer (1999) pointed out that missing data rates of 5% or less generally do not affect the analysis significantly, while Bennett (2001) warned that rates above 10% could result in biased findings. Based on this research supporting minimal impact, missing data cells were left blank in SPSS.

Analysis for Outliers

The examination of missing data in Table 2 shows extreme values or outliers in the knowledge section. Upon review using boxplot summaries (Figure 1), it becomes apparent that scores of 1s and 2s fall outside the typical distribution. A closer look at the data reveals that these lower scores primarily stem from educators with 0-3 years of teaching experience in the U.S. and, to an extent, those with 4-6 years. Since 27% of participants have less than six years of teaching experience, these outliers effectively represent the varied experiences and perspectives within this specific group of teachers. Considering the nature of Likert scales, where each response option signifies a level of agreement or readiness, less common scores should not immediately be deemed outliers. Instead, these responses offer unique insights. Every value is significant in fully understanding the experiences and viewpoints of Indian educators in South Carolina.

Reliability Analysis

The present study employed SPSS statistical software to evaluate the reliability of the survey instruments and assess Indian teachers' preparedness and knowledge of UDL principles in South Carolina. As presented in Table 3**,** Cronbach's Alpha and Intraclass Correlation Coefficients (ICC), assessed through a two-way mixed-effect model recommended by Koo & Li (2016), gauged the survey's internal stability and consistency. The study found the Cronbach's Alpha value for the 17-item preparedness section to be 0.964. This value indicates a high internal consistency among the preparedness items, demonstrating the survey's strong internal coherence. This finding echoes the foundational study by Basham et al. (2020), which reported Cronbach's Alpha value of above .90. The knowledge section of the survey, adapted from Almutairi & Alsuwayl (2023), reported a Cronbach's Alpha of 0.850. The reported Cronbach's alpha value for knowledge is in concurrence with the alpha value of 0.80 in the foundational study. These scores indicate robust internal consistency as they fall into Cortina's (1993) criteria for "Excellent" internal consistency ($\alpha \geq .9$) and "Good" reliability range ($\alpha = .8$ to $.899$) scales.

The ICC values using a two-way mixed effect model for consistency and absolute agreement between groups for both the preparedness section (0.954) and the Knowledge section (0.775) exceed Cicchetti's (1994) and Koo & Li's (2016) range for "good" agreement (0.60 to 0.74). These ICC values of the current study surpass Basham et al.'s moderate agreement level (all scores above 0.509). Together, these reliability tests validate the adapted survey as a reliable tool for evaluating the self-reported knowledge and preparedness of Indian teachers in South Carolina.

Analysis for Research Question 1

This question investigated the impact of the U.S. teaching experience on Indian teachers' knowledge and preparedness in implementing UDL principles. First, the descriptive analysis provided an overview of the mean UDL knowledge and preparedness scores across different experience levels (0-3 years, 4-6 years, and above six years). ANOVA analysis was conducted to examine potential differences among these experience groups, followed by Tukey post-hoc analysis to pinpoint where significant differences lie.

Descriptive Data Analysis for Preparedness

The composite descriptive data analysis of the preparedness of Indian teachers in South Carolina with reference to their level of teaching experience in the United States (Table 4) reveals insightful trends about their self-assessed preparedness in implementing Universal Design for Learning (UDL) principles in general education classrooms, as reflected by their varying years of experience in the USA.

Analysis of the mean scores suggests that experience correlates positively with self-perceived proficiency in UDL applications. Teachers with 0-3 years of experience report feeling moderately prepared, with mean scores between 3.1 and 3.9. This range is below the total participant group's average mean score of 4.27, highlighting the gap in self-perceived preparedness among less experienced teachers. The group with 4-6 years of experience shows a tangible increase, with scores ranging from 3.87 to 4.5, which are closer to or above the total group average, indicating a progression toward feeling 'very prepared.' The most experienced cohort, those with more than six years, maintain similar scores to the 4–6-year group, consistently ranging from 4.02 to 4.4, aligning closely with the total group average, implying a sustained high level of perceived preparedness.

In addition to the mean score analysis, the median scores indicate a moderate level of preparedness for teachers with 0-3 years of experience, as shown by median scores of 3 and 4. The shift is more pronounced for teachers with 4-6 years of experience, where median scores elevate to 4.5 and 5, reflecting an increase in self-confidence and competency. Teachers with more than six years of experience exhibit a strong consensus in their readiness to apply UDL principles very similar to the median scores of the 4–6-year group. The more seasoned teachers with over six years of experience display a lower standard deviation across most items, suggesting a consensus in self-assessment and a deeper understanding of UDL principles. The consistently higher standard deviations for items P2 and P13 across all levels of experience indicate that these aspects of UDL may be assessed and understood among the teachers. In contrast, lower standard deviations in P5 and P6 indicate a shared understanding and feeling of preparedness.

The variance data confirms and complements the insights from the standard deviation analysis. The mean-variance across all items provides a benchmark for gauging the level of consensus, with item P2 manifesting the highest variance (1.762), signifying substantial diversity in teacher perceptions. Conversely, items such as P5 and P12, with lower variance, suggest a harmonious view among teachers in their preparedness in these UDL domains.

The descriptive analysis for preparedness shows that the more teaching experience U.S. teachers in this sample have, the more confident they feel in applying UDL strategies. However, this increase in confidence plateaus, suggesting that other factors influence more seasoned teachers. Certain aspects of UDL remain challenging, indicating the need for continued training regardless of experience. This analysis emphasizes the importance of ongoing support for a consistent understanding of UDL principles.

Descriptive Data Analysis for Knowledge

The descriptive data analysis of Indian teachers in South Carolina's self-reported knowledge about UDL shows informative patterns connected to their teaching experience in the United States (Table 5). Analysis of the mean scores indicates a positive association between teaching experience and self-reported knowledge in UDL practices. Teachers in their beginning years of service (0-3) have demonstrated intermediate knowledge of UDL principles, with mean scores ranging from the lowest score of 3.1 to the highest score of 4.7, below the overall average of 4.27. Educators with 4-6 years of experience appeared to be more knowledgeable, with mean scores between 3.3 and 4.4, often surpassing the group average. This average score difference pattern indicates a knowledge gap between experienced and newcomers. However, despite their experience, senior teachers reach a point where additional years may only sometimes lead to increased expertise.

Besides analyzing mean scores, the median scores reveal insights into the level of knowledge of UDL principles. Teachers with 0-3 years of experience display median scores of 3 and 4, indicating a emerging knowledge of UDL principles. For teachers with 4-6 years of experience, median scores increase to 4.5 and 5, showing enhanced confidence and proficiency. Educators with more than six years of experience maintain this trend, evidencing strong competence in applying UDL principles. Yet, the uniformity in median scores between the 4–6-year group and those with more experience suggests a point of diminishing returns, where additional years do not significantly impact self-assessed knowledge of UDL principles.

Upon further analysis of response variability using standard deviation and variance, there is a significant variation in educators' confidence and assurance. This variability is particularly noticeable in the emerging 0–3-year group, especially in areas such as K2 reversed and K1.

However, this variability decreases somewhat among the 4–6-year cohort, indicating a deep understanding. Nevertheless, specific domains, notably K11, continue to present differing levels of comfort or interpretation. For educators with more than six years of experience, reduced standard deviation and variance signify a unanimous agreement in their self-evaluation, showing a firm and consistent grasp of UDL principles. In short, this analysis shows the complex relationship between teaching experience in the U.S. and self-assessed knowledge of implementing UDL strategies. While experience generally leads to deeper understanding, there is an apparent leveling off, emphasizing the influence of other factors at higher experience levels.

ANOVA Analysis Summary

An Analysis of Variance (ANOVA) investigated the impact of teaching experience in the United States on preparedness levels. The researcher examined all individual items of preparedness and knowledge to comprehensively assess the differences based on the teaching experience. The analysis revealed distinct patterns. Most preparedness items—specifically P1, P2, P5, P8, P10, P11, P13, P15, P16, and P17—showed no significant differences across experience levels. On the other hand, there were significant differences in items P3, P4, P6, P7, P9, and P12, with p-values falling below 0.05.

These findings highlight areas where the number of years of teaching in the United States is associated with varying levels of self-assessed preparedness. These areas include supporting multiple levels of content understanding, clarifying content-specific vocabulary, facilitating varied student expressions, providing access to diverse tools and technologies, providing support for students problem-solving and critical thinking abilities, and encouraging sustained effort and focus on students. These areas primarily emphasize providing multiple ways for students to access and understand information (Representation), as well as demonstrating their knowledge

and skills (Action and Expression). They also touch upon supporting strategic thinking skills and fostering student engagement. Identifying these significant areas of preparedness paves the way for a deeper investigation into how and why teaching experience influences specific UDL implementation skills.

Contrastingly, all items relating to knowledge (K1-K16) exhibited no significant differences, indicating a consistent self-reported knowledge of UDL principles across different experience levels. While practical experience may influence teachers' confidence in their preparedness to apply UDL, their theoretical understanding of these principles remains unaffected. These findings imply that teaching experience in the U.S. contributes to varying degrees of confidence in executing UDL strategies but only sometimes equates to a more profound knowledge of UDL principles.

Tukey HSD Post Hoc Test Analysis

The Tukey HSD post hoc analysis revealed distinct patterns in self-assessed UDL preparedness among Indian teachers in South Carolina based on their U.S. teaching experience (Table 6). Teachers with 0-3 years of experience consistently felt less prepared in key UDL areas—such as supporting multiple content understanding levels, clarifying vocabulary, providing varied expression methods, offering diverse tools, and promoting sustained effort—compared to those with more than six years of experience. Notably, teachers with 4-6 years of experience often showed a marked improvement in preparedness, yet not consistently surpassing those with the most experience. For example, in areas such as allowing varied student expressions (P6) and providing support for problem-solving and critical-thinking abilities (P9), preparedness of 4–6-year experience group was closer to that of 0-3-year experience group, with no significant differences noted compared to the above 6-year experience group.

This analysis illustrates a nuanced growth in confidence and readiness to apply UDL principles as teachers gain experience, yet also suggests a possible plateau effect where additional years may not correlate with substantial increases in perceived preparedness.

Analysis for Research Question 2

Research question 2 explored the relation between Indian trained teachers' education levels and their knowledge and preparedness in Implementing UDL Principles when teaching in the United States. First, descriptive analysis provided an overview of the mean UDL knowledge and preparedness scores for teachers with each education level. To determine if significant differences existed between these groups, an ANOVA analysis was conducted. If differences are found, Tukey post-hoc analysis will identify where those specific differences existed.

Descriptive Data Analysis for Preparedness

The descriptive analysis (Table 7) observes a noticeable connection between UDL preparedness and the education levels of teachers from India in South Carolina. Teachers with bachelor's degrees showed varying levels of preparedness across the preparedness items (P 1-P 17). Mean scores ranged as low as 3.00 for clarifying content-specific vocabulary (P 2) to as high as 4.29 for promoting sustained effort and focus (P 5). This variation in the mean scores indicates areas requiring further professional development for teachers with bachelor's degrees in relation to UDL principles. In contrast to those teachers with only bachelor's degrees, teachers with a master's degree reported higher mean scores consistently above 4.00. These scores indicate a strong sense of preparedness across all UDL domains, closely approaching or surpassing the overall group average mean score of 4.27. This trend of increased confidence continues for educators with qualifications above a master's degree. However, their scores, such as 4.15 for

promoting sustained effort and focus (P9), do not significantly deviate from those with a master's, implying a plateau in perceived readiness beyond this level of education.

Median scores further differentiate the three groups of teachers based on their educational level. Bachelor's degree holders occasionally displayed the highest mark of preparedness, reflecting strong confidence in specific UDL areas despite their overall lower median scores. Educators with master's degrees or higher often achieved the top median score of 5.00, suggesting a widespread agreement on high preparedness. The median scores revealed no significant improvements, affirming the plateau observed in the median score analysis among educators with master's and above master's degrees. Variability in preparedness, as indicated by standard deviation and variance, was the most among bachelor's degree holders. The group displayed the highest standard deviations and variance, particularly in clarifying content-specific vocabulary (P2) and facilitating problem-solving and critical-thinking abilities (P9). These patterns suggest that their perceptions of readiness differ more than those with a master's degree. Teachers with advanced degrees displayed less variability in areas like providing diverse tools and technology (P5) and allowing students to express themselves in various ways (P6). These findings indicate a consensus in their preparedness levels, resembling the master's group. These patterns suggest that while educational level positively impacts teachers' perceived preparedness in UDL, there are diminishing returns after achieving a master's degree. Educational leaders can use these insights to customize professional development programs for the bachelor's level to ensure high UDL implementation standards.

Descriptive Data Analysis for Knowledge

Indian teachers of different educational levels show a distinct pattern in their self-reported knowledge of UDL principles (Table 8). Those with bachelor's degrees displayed a

range of mean scores from 2.71 to 4, indicating less certainty in understanding UDL principles. The median scores for this group often recorded a score of 4, indicate a foundational understanding of UDL, although the variance in responses suggests a diversity in knowledge levels. On the other hand, the mean and median scores for the teachers with master's degrees mostly recorded high 4s and 5s. Teachers with master's degrees demonstrated strong knowledge of UDL principles, with similar patterns observed for educators with advanced degrees. However, the similarity in scores between these two groups suggests that additional academic qualifications may not necessarily contribute to an expanded knowledge base in UDL.

Altogether, the findings reveal that while higher educational attainment of master's degrees rather than simply bachelor's degrees correlate with a more profound self-reported knowledge of UDL principles, the incremental gains in knowledge tend to level off once educators have reached a master's degree level. This analysis underscores the importance of continuous, differentiated professional development, suggesting that while advanced degrees bring a consistent understanding of UDL principles, those with bachelor's degrees may particularly benefit from targeted support to elevate their knowledge to a uniform standard.

ANOVA Analysis Summary

An ANOVA analysis was conducted to compare the UDL knowledge and preparedness levels among teachers based on the level of education completed by teachers in India. The researcher examined all individual items of preparedness and knowledge to comprehensively assess the differences based on education levels. The ANOVA analysis for Research Question 2 indicated that all items in the preparedness domain, items P1 through P17, resulted in a non-significant ANOVA analysis (Table 10). In the knowledge domain, items K3 (instructional delivery), K5 (differentiated instruction), and K9 (completion of work by all students) are

statistically significant, with p-values less than 0.05. These findings are noteworthy because all three significant knowledge items (K3, K5, K9) address learner variability, a core principle of UDL. UDL's approach to education is fundamentally rooted in the concept of learner variability, as highlighted in the research by Hartmann (2015) and Rao & Meo (2016). Effective instructional delivery, differentiated instruction, and ensuring work completion for all students require teachers to consider and adapt to the diverse needs and learning styles within their classrooms. We performed Tukey HSD Post Hoc analysis for these three items on knowledge to find the direction of the significance.

Tukey HSD Post Hoc Test Analysis

The Tukey HSD Post Hoc analysis is being performed to determine the direction of significance for the items found significant in the ANOVA analysis for knowledge items based on education level (Table 9). In evaluating the knowledge of designing and delivering instruction (K3), a notable gap is apparent between bachelor's degree holders and those with a master's degree. The difference in knowledge is significant, with teachers having master’s degrees outperforming those with bachelor’s by a mean difference of -0.961 (p=0.005). However, when comparing the bachelor’s group with those holding qualifications above a master's degree, the difference is not statistically significant (mean difference of -0.336; p=0.541), suggesting that additional education beyond a bachelor's does not significantly change the understanding of this UDL principle. Interestingly, the comparison between master’s group and above master’s group shows a significant difference (mean difference of 0.625; p=0.007), indicating that the understanding of K3 increases with education level beyond a master's degree.

Regarding promoting sustained effort and focus (K5), bachelor's degree holders again show a significantly lower understanding than the master's group, with a mean difference of -

0.733 (p=0.047). The comparison between bachelor's and above master's, as well as between master's and above master's, does not yield significant differences (p=0.525 and p=0.164, respectively), implying a plateau in knowledge enhancement beyond the master's degree level for K5. The analysis does not indicate significant differences among any of the groups regarding completion of work by all students (K9), suggesting that the level of education does not significantly affect the teachers' knowledge in this area of UDL implementation.

Spearman Correlation Coefficient

To find the correlation between education level with preparedness and knowledge, the researcher used Spearman Correlation coefficient. Prior to that, the composite scores for preparedness items (Preparedness_Score) and knowledge items (Knowledge_Score) were calculated. Using SPSS, Spearman Correlation Coefficients were calculated between the composite scores of the two domains with the education level and the outcomes are presented below.

In Table 10, the Spearman Correlation Coefficient data was obtained through SPSS. The correlation between educational level and composite preparedness shows a slight negative connection with a value of 0.049. Moreover, the p value linked to this correlation is 0.692 suggesting that the relationship lacks significance. From this information we can infer that there is no correlation between teachers' educational levels and their preparedness scores. The correlation between educational level and composite Knowledge score (Table 10) is very low at 0.006 showing a feeble or no correlation. Further, the p value of 0.960 does not meet the significance test, and we conclude that there is no significant relationship between the educational level and knowledge score either.

Analysis for Research Question 3

Research question 3 explored the relation between the number of special education or inclusive education courses taken during teacher preparation programs differentiate levels of UDL preparedness in teachers from India that come to the United States to teach. First, descriptive analysis provided an overview of the mean UDL knowledge and preparedness scores for teachers that completed various number of UDL courses. To determine if significant differences existed between these groups, an ANOVA analysis was conducted. If differences are found, Tukey post-hoc analysis will identify where those specific differences existed.

Descriptive Data Analysis for Preparedness

Now we delve into the descriptive analysis of the average preparedness level scores and UDL course count taken during their training in India, as presented in Table 11. Teachers who have taken 0-2 inclusive courses reported moderate levels of preparedness, with mean scores ranging from the lowest score of 0.83 for P3 (clarifying content-specific vocabulary) to the highest score of 4.28 for P5 (promoting sustained effort and focus). These means scores are slightly below the total group's average mean score of 4.27. Teachers that completed 3-5 courses demonstrated a modest increase in self-assessed preparedness, reporting higher means like 4.29 for P5 and 4.43 for P6 (providing diverse tools and technology). The mean score of this middle group is at or above the total average. Educators thar completed more than five courses exhibited comparable means, such as 4.41 for P4 (enabling varied student expressions) and 4.18 for P7 (offering diverse tools and technology). These averages of the top tier group reflect a sustained sense of readiness aligned with the group average.

The median scores also reflect a progression in confidence with increasing course count. Those with the least number of courses have medians typically at 4.00, suggesting agreement on

being 'prepared' in areas like P1 (supporting multiple levels of content understanding). In the 3-5 courses group, median scores peak at 5.00 for items like P6. These peak scores indicate a more substantial consensus on 'very prepared' status. For the group of more than five courses, median scores of 5.00 on items like P8 (promoting self-regulation and responsibility) suggest a high level of agreement on their preparedness. Standard deviation and variance analyses indicate the breadth of responses within each group. The 0-2 courses group displays notable variation, with standard deviations of 1.06 for P4 and variances like 1.70 for P2, signaling diverse perceptions of their preparedness. The group with 3-5 courses shows less variability, as seen in lower variances, such as 0.53 for P1. The most educated group, with more than five courses, also demonstrated low variance, such as 0.49 for P5, reinforcing a unified sense of readiness across more complex UDL principles.

Descriptive Data Analysis for Knowledge

The descriptive data analysis of average knowledge scores based on the number of Universal Design for Learning (UDL) courses taken during pre-service teacher preparation programs in India is reported in Table 12. Teachers with 0-2 inclusive courses reported lower knowledge levels, with mean scores ranging from the lowest score of 3.33 in K1 (hierarchy) to the highest score of 4.51 in K10 (knowledge of engaging students in learning). The group mean was below the overall average of 4.39, suggesting areas for growth in UDL knowledge. Those with 3-5 courses had mean scores closer to or exceeding the total average, with 4.29 in K3 (knowledge of customizing information) and 4.36 in K10, showing an improved understanding. For teachers with more than five courses, the means, such as 4.41 in K3 and 4.47 in K10, suggested a high level of knowledge that aligns with the total group's mean. Median scores among those with 0-2 courses often reached 4.00, indicating perceived adequacy in UDL

knowledge, yet the group's medians were generally lower than the other groups. In the 3-5 courses group, medians typically reached the 'very knowledgeable' mark of 5.00, reflecting a higher level of consensus on UDL knowledge. The group with more than five courses similarly reached medians of 5.00, indicating a high UDL knowledge shared among these educators.

There was significant variability within the 0-2 courses group, with higher standard deviations, such as 1.27 for K1 (knowledge about the hierarchy of UDL's principles), and variances, showing diverse levels of self-assessed knowledge. This variability contrasts with the 3-5 and more than five-course groups, which exhibited less variability, suggesting more consistent knowledge across these educators. These findings suggest that an increase in the number of inclusive courses taken correlates with higher self-reported knowledge of UDL. However, this does not continue to rise significantly beyond five courses. The consistency in expertise within the groups with more inclusive courses implies a consolidated understanding of UDL principles. This analysis can inform the development of professional learning opportunities, particularly enhancing the knowledge base of those with fewer inclusive courses to ensure a uniformly informed approach to UDL across all teacher education levels.

ANOVA Analysis Summary

An ANOVA analysis was conducted to compare the UDL preparedness levels among teachers based on the number of special education or inclusive education courses taken. The researcher examined all individual items of preparedness and knowledge to comprehensively assess the differences based on the number of courses. The ANOVA results indicate whether there were statistically significant differences in UDL preparedness levels based on the number of courses taken. The ANOVA analysis for Research Question 3 indicated no statistically significant differences across all the preparedness and knowledge items (P1-P17 and K1-K16). This suggests

that within this sample of Indian teachers in South Carolina, the variation in the number of inclusive education courses taken during their teacher preparation programs does not significantly affect their self-assessed UDL preparedness or knowledge.

Summary of Results

This This study explored how Indian teachers' preparedness and knowledge regarding Universal Design for Learning (UDL) in South Carolina were influenced by factors like U.S. teaching experience, education level, and inclusive education coursework. Participants were highly educated, with most holding master's degrees or higher.

Teachers with more U.S. teaching experience generally felt better prepared to use UDL strategies. However, a plateau effect was observed, meaning additional years of experience didn't always lead to further gains. This was particularly noticeable in areas like supporting multilingual learners (P2) and promoting learner choice and self-determination (P11). Knowledge of UDL principles wasn't significantly affected by teaching experience. A master's degree was linked to significantly higher UDL knowledge compared to a bachelor's degree, particularly in instructional design and differentiation. Further education beyond a master's didn't lead to additional knowledge gains. Interestingly, while teachers who took more inclusive education courses reported higher preparedness, statistical analysis (ANOVA) showed no significant differences in either preparedness or knowledge based on the number of courses.

Overall, these findings suggest that while U.S. teaching experience improves UDL implementation confidence, targeted professional development (PD) is needed to address the plateau effect, particularly for newer teachers and those with only bachelor's degrees. This PD should emphasize strategies for multilingual learners and fostering student choice. Further research is needed to understand the disconnect between inclusive coursework and its practical

application within UDL implementation. These findings highlight the importance of ongoing, targeted professional development for all teachers, regardless of experience level or education. Professional development should address specific gaps in UDL implementation skills and the need for practical strategies to support multilingual learners and foster learner choice within inclusive classrooms.

Tables and Figures

Table 1

Demographic Data Table

Category	Subcategory	Number	Percentage (%)
Total Sample Size		67	100
Highest Level of Education	Bachelor's	7	10.4
	Master's	40	59.7
	Above Master's	20	29.9
Area of Specialization	General Education	32	47.8
	Special Education	32	47.8
	Dual Certified	3	4.4
Number of Inclusive Courses	0-2	36	53.7
Taken	3-5	14	20.9
	More than 5	17	25.4
Gender	Female	33	79.3
	Male	32	47.8
	Prefer not to say	2	3.0
Teaching Experience in India	0-3 years	11	16.4
	4-6 years	19	28.4
	More than 6 years	37	55.2
Teaching Experience in the	0-3 years	10	14.9
United States	4-6 years	8	11.9
	More than 6 years	49	73.2

Table 2

Missing Value Analysis Table

Preparedness Items N=67	Missing		No. of Extremes		Knowledge items N=67	Missing		No. of Extremes	
	Count	Percent	Low	High		Count	Percent	Low	High
P1	0	0.0	1	0	K1	0	0.0	7	0
P2	0	0.0	0	0	K2	0	0.0	0	0
P3	0	0.0	6	0	K3	0	0.0	2	0
P4	0	0.0	6	0	K4	0	0.0	3	0
P5	0	0.0	0	0	K5	2	3.0	1	0
P6	0	0.0	3	0	K6	0	0.0	1	0
P7	0	0.0	3	0	K7	0	0.0	0	0
P8	0	0.0	0	0	K8	0	0.0	0	0
P9	0	0.0	4	0	K9	0	0.0	0	0
P10	0	0.0	1	0	K10	1	1.5	0	0
P11	0	0.0	0	0	K11	0	0.0	0	0
P12	0	0.0	1	0	K12	1	1.5	0	0
P13	0	0.0	0	0	K13	0	0.0	1	0
P14	0	0.0	4	0	K14	0	0.0	1	0
P15	0	0.0	4	0	K15	0	0.0	1	0
P16	0	0.0	6	0	K16	0	0.0	0	0
P17	0	0.0	2	0					

Table 3

Reliability Analysis for Preparedness and Knowledge

	Cronbach's Alpha	Intraclass Correlation Coefficients (ICC) Absolute agreement	Number of Items
Preparedness	0.964	0.954	17
Knowledge	0.850	0.775	16

Table 4

Descriptive Analysis for Average Preparedness Score vs Experience in the USA

Item	Mean	Median	Std. Deviation	Variance
P1	4.27	4	0.755	0.571
P2	2.94	3	1.299	1.689
P3	3.97	4	0.928	0.861
P4	4.2	4	0.964	0.93
P5	4.3	4	0.723	0.522
P6	4.26	5	0.933	0.871
P7	4.23	4	0.825	0.68
P8	3.98	4	1.015	1.031
P9	4.2	4	0.898	0.807
P10	4.23	4	0.76	0.578
P11	3.92	4	1.1	1.21
P12	4.18	4	0.783	0.613
P13	3.88	4	1.031	1.062
P14	4.21	4	0.92	0.847
P15	4.18	4	0.875	0.766
P16	4.03	4	1.007	1.014
P17	4.24	4	0.878	0.771

Table 5

Descriptive Analysis for Average Knowledge Score vs Experience in the USA

Item	Mean	Median	Std. Deviation	Variance
K1	3.36	3	1.211	1.466
K2	2.21	2	1.330	1.770
K3	4.39	5	0.802	0.642
K4	4.09	4	0.854	0.730
K5	4.41	5	0.771	0.594
K6	4.20	4	0.789	0.622
K7	4.20	4	0.851	0.725
K8	2.84	3	1.273	1.620
K9	3.92	4	0.815	0.666
K10	4.48	5	0.731	0.535
K11	4.09	4	1.027	1.504
K12	4.30	4	0.770	0.593
K13	4.17	4	0.834	0.695
K14	4.35	5	0.868	0.754
K15	4.20	4	0.845	0.714
K16	3.72	4	1.139	1.297

Table 6

Tukey HSD Post Hoc data between Preparedness and Experience in the USA

Dependent Variable	Comparison	Mean Difference	Significance (p-value)
P 3	0-3 yr. vs. 4-6 yr.	-1.025	0.037
P 3	0-3 yr. vs. Above 6 yr.	-1.022	0.003
P 3	4-6 yr. vs. Above 6 yr.	0.003	1
P 4	0-3 yr. vs. 4-6 yr.	-0.375	0.662
P 4	0-3 yr. vs. Above 6 yr.	-0.888	0.018
P 4	4-6 yr. vs. Above 6 yr.	-0.513	0.308
P 6	0-3 yr. vs. 4-6 yr.	-1	0.051
P 6	0-3 yr. vs. Above 6 yr.	-0.867	0.017
P 6	4-6 yr. vs. Above 6 yr.	0.133	0.918
P 7	0-3 yr. vs. 4-6 yr.	-0.65	0.206
P 7	0-3 yr. vs. Above 6 yr.	-0.727	0.029
P 7	4-6 yr. vs. Above 6 yr.	-0.077	0.966
P 9	0-3 yr. vs. 4-6 yr.	-0.85	0.09
P 9	0-3 yr. vs. Above 6 yr.	-0.947	0.005
P 9	4-6 yr. vs. Above 6 yr.	-0.097	0.951
P 12	0-3 yr. vs. 4-6 yr.	-0.75	0.087
P 12	0-3 yr. vs. Above 6 yr.	-0.806	0.007
P 12	4-6 yr. vs. Above 6 yr.	-0.056	0.978

Table 7

Descriptive Statistical Analysis for Average Preparedness Score vs Educational Level

Item	Mean	Median	Std. Deviation	Variance
P1	4.27	4	0.75	0.56
P2	2.93	3	1.29	1.68
P3	3.97	4	0.92	0.85
P4	4.19	4	0.96	0.92
P5	4.30	4	0.72	0.52
P6	4.25	5	0.93	0.86
P7	4.21	4	0.83	0.68
P8	3.99	4	1.01	1.02
P9	4.19	4	0.89	0.8
P10	4.22	4	0.76	0.57
P11	3.93	4	1.09	1.19
P12	4.18	4	0.78	0.6
P13	3.88	4	1.02	1.05
P14	4.21	4	0.91	0.83
P15	4.18	4	0.87	0.76
P16	4.03	4	1	1
P17	4.24	4	0.76	0.76

Table 8

Descriptive Statistical Analysis for Average Knowledge Score vs Educational Level

Item	Mean	Median	Std. Deviation	Variance
K1	3.36	3	1.20	1.45
K2	2.22	2	1.32	1.75
K3	4.39	5	0.80	0.64
K4	4.09	4	0.85	0.72
K5	4.40	5	0.77	0.59
K6	4.19	4	0.78	0.61
K7	4.18	4	0.85	0.73
K8	2.85	3	1.25	1.55
K9	3.91	4	0.81	0.66
K10	4.47	5	0.73	0.53
K11	4.09	4	1.01	1.02
K12	4.27	4	0.78	0.60
K13	4.16	4	0.83	0.68
K14	4.34	5	0.86	0.74
K15	4.19	4	0.84	0.70
K16	3.72	4	1.13	1.27

Table 9

Tukey HSD Post Hoc Analysis for Knowledge vs. educational level

Dependent Variable	Comparison	Mean Difference	Significance (p-value)
K 3	bachelor's vs. master's	-0.961	0.005
K 3	bachelor's vs. above master's	-0.336	0.541
K 3	master's vs. above master's	0.625	0.007
K 5	bachelor's vs. master's	-0.733	0.047
K 5	bachelor's vs. above master's	-0.353	0.525
K 5	master's vs. above master's	0.379	0.164
K 9	bachelor's vs. master's	-0.671	0.101
K 9	bachelor's vs. above master's	-0.271	0.713
K 9	master's vs. above master's	0.400	0.159

Table 10

Correlational Analysis between Educational level and Composite Preparedness and Knowledge Scores

Spearman's Rho			Educational Level	Composite Preparedness Score	Composite Knowledge Score
	Educational Level	Correlation Coefficient	1.000	-0.049	0.006
		Sig. (2-tailed)		0.692	0.960
		N	67	67	63

Table 11

Descriptive Statistical Analysis for Average Preparedness Score vs Inclusive Course Count

Item	Mean	Median	Std. Deviation	Variance
P 1	4.27	4	0.75	0.56
P 2	2.93	3	1.3	1.68
P 3	3.97	4	0.92	0.85
P 4	4.19	4	0.96	0.92
P 5	4.3	4	0.72	0.52
P 6	4.25	5	0.93	0.86
P 7	4.23	4	0.82	0.67
P 8	3.99	4	1.01	1.02
P 9	4.19	4	0.89	0.8
P 10	4.22	4	0.76	0.57
P 11	3.93	4	1.09	1.19
P 12	4.18	4	0.78	0.6
P 13	3.88	4	1.02	1.05
P 14	4.21	4	0.91	0.83
P 15	4.18	4	0.87	0.76
P 16	4.03	4	1	1
P 17	4.24	4	0.87	0.76

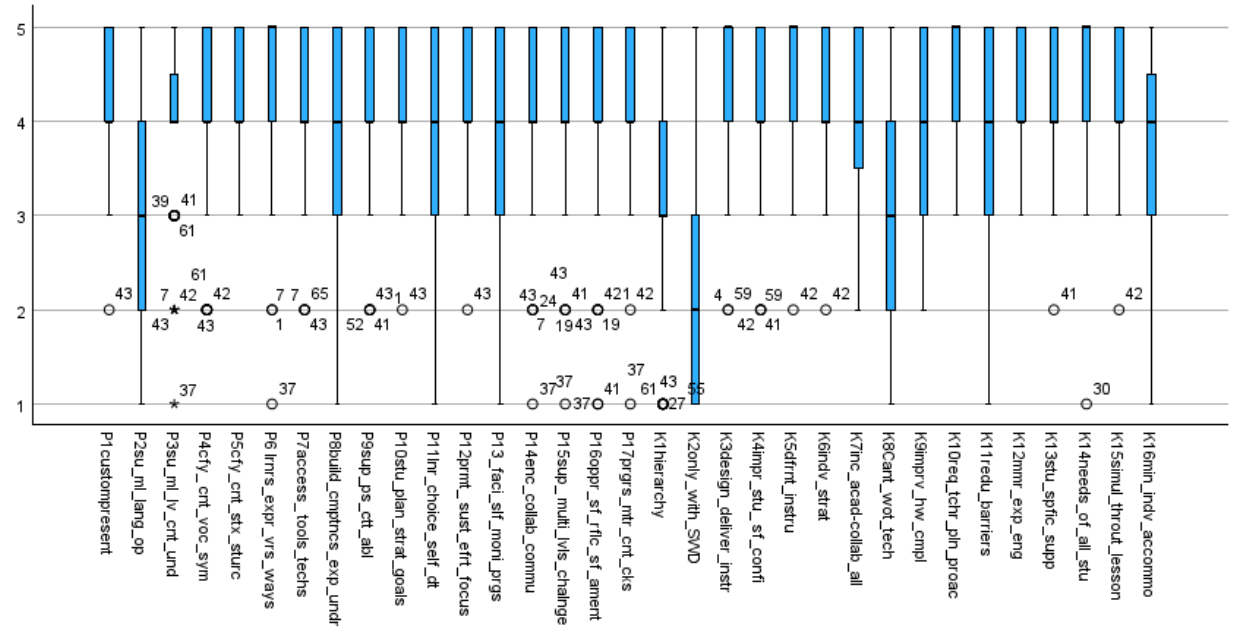
Table 12

Descriptive Statistical Analysis for Average Knowledge Score vs Inclusive Course Count

Item	Mean	Median	Std. Deviation	Variance
K1	3.36	3	1.20	1.45
K2	2.22	2	1.32	1.75
K3	4.39	5	0.80	0.64
K4	4.09	4	0.85	0.72
K5	4.40	5	0.77	0.59
K6	4.19	4	0.78	0.61
K7	4.18	4	0.85	0.73
K8	2.85	3	1.25	1.55
K9	3.91	4	0.81	0.66
K10	4.47	45	0.73	0.53
K11	4.09	4	1.01	1.02
K12	4.27	4	0.78	0.60
K13	4.16	4	0.83	0.69
K14	4.34	5	0.86	0.74
K15	4.19	4	0.84	0.70
K16	3.72	4	1.13	1.27

Figure 2

Simple Boxplot: Summaries of Separate Variables



CHAPTER 5: DISCUSSION

The purpose of the current study was to examine the self-reported knowledge and preparedness of teachers from India in South Carolina in implementing the Universal Design Learning (UDL) principles in general education classrooms. The three research questions that guided this study were:

1. Does the number of years a teacher has taught at their current level in the United States impact their level of knowledge and preparedness in implementing UDL principles for Indian teachers who receive their teacher education degree in India and then come to the United States to teach?
2. What is the correlation between Indian trained teachers' education levels and their knowledge and preparedness in Implementing UDL Principles when teaching in the United States?
3. Does the number of special education or inclusive education courses taken during teacher preparation programs differentiate levels of UDL preparedness in teachers from India that come to the United States to teach?

This study employed a quantitative structured survey methodology to collect data. The survey was created and administered using Google Surveys. Following a pilot study, the survey instrument was refined. The survey adapted items from Basham et al. (2020) for the preparedness section and from Almutairi and Alsuwayl (2023) for the knowledge section. The survey utilizes validated instruments with established reliability, strengthening the data's dependability.

The target population for this study comprised teachers from India who are currently teaching in South Carolina. Given the dispersed nature of these teachers across the state, a

purposive snowball sampling method was employed. In this study, snowball sampling was utilized to recruit Indian-trained teachers currently working in South Carolina. This technique involves identifying a few initially qualified participants. These participants then refer the researcher to potential additional participants with shared characteristics and experiences. The initial goal was to reach at least 30 participants. Through the snowball sampling method, 84 teachers were contacted, with 67 providing responses to the survey. Informed by the data analysis presented in the previous chapter, this chapter will delve into the study's research findings. Additionally, it will explore implications for practice, recommendations for future research, and limitations.

Analysis of Research Question 1

The purpose of the research question one was to explo the impact of the teaching experience in the United States on the self-reported preparedness and knowledge of Indian Teachers in implementing the UDL framework. UDL strategies are vital because they help teachers design flexible learning environments that meet the needs of diverse learners (CAST, 2018). Through dynamic, multifaceted lessons that UDL promotes, students have equal opportunities to access and engage with the material. They can demonstrate their understanding in ways that best suit their unique strengths and needs (Scott, 2018).

Impact of Experience on Preparedness

Descriptive analysis of the data revealed a clear trend suggesting a positive association between the U.S. teaching experience and Indian teachers' self-reported preparedness and knowledge regarding the UDL framework. Teachers with 0-3 years of experience in the U.S. reported a foundational level of preparedness, as reflected in mean scores like 2.7 (P 2), 3.1 (P1) and 3.4 (P13) – far below the overall group average of 4.27. This gap in self-perceived readiness

among less experienced teachers aligns with research emphasizing the importance of teacher preparedness for student success (Sikhwari et al., 2019; Rowan & Townend 2016; Adelman & Taylor, 2017). It also aligns with research conducted in India, where Krishnan and Sharma (2023) found limited awareness of UDL principles among teachers. Furthermore, it resonates with concerns raised by the National Council on Teacher Quality, which highlights a systemic issue in U.S. teacher training that often leaves new educators lacking essential skills and experience (Greenberg et al., 2014). Adding to these concerns, Scott et al. (2017) found that more than half of newly graduated teachers felt only somewhat or very little prepared to apply UDL principles.

As teachers gain more experience, their confidence grows. Teachers with 4-6 years of experience show a noticeable increase in preparedness, with scores reaching up to 4.5 in areas like providing varied student expressions (P6). Those with over six years of experience report high preparedness levels (mean scores ranging from 4.02 to 4.4) except P 2 (2.94). These high means suggest a strong and sustained understanding of UDL principles. This aligns with the idea that UDL implementation benefits from teacher preparedness (Rose & Meyer, 2002).

Further analysis, inferential analysis, revealed specific UDL areas where the impact of experience was even more pronounced. Results from the ANOVA indicated statistically significant differences in preparedness for areas including supporting content understanding (P3), clarifying vocabulary (P4), expressing understanding in multiple ways (P 6), providing varied tools and technologies (P7), promoting focus (P9), and fostering sustained effort and persistence (P12). These challenges directly align with the UDL principles of providing multiple means of representation, expression, and engagement, highlighting specific aspects of UDL implementation where experience plays a critical role. Particularly relevant are the areas of

information processing and visualization, optimizing access to technology, and highlighting patterns and relationships. These directly align with the unique skills students need to thrive in the 21st century. This finding aligns with research that highlights teachers feeling less prepared for specific groups such as gifted learners, English language learners, and students with mental health needs (Madler et al., 2022) as well as broader unpreparedness for teaching students with disabilities (Mitchell, 2019)

Tukey HSD post hoc analysis provides even more insights into how preparedness evolves with experience. It shows that teachers with less U.S. teaching experience consistently feel less prepared in important UDL areas compared to their more experienced colleagues. Interestingly, even as preparedness increases with years of experience, it still appears to reach a plateau. This suggests a potential limit to how much perceived readiness continues to grow with additional experience alone. Furthermore, the plateauing of knowledge highlights a potential disconnect between preparedness and a deeper theoretical understanding of UDL principles. This disconnect aligns with concerns about a gap between pre-service teacher preparation and the demands of inclusive teaching (Sharma, 2018). This persistent lack of preparedness aligns with findings on teachers within the U.S. educational system. For example, the study 'Novice general education teachers' perceptions of preparedness in U.S. public schools: The impact of learning about and working with multilingual students' (Kiramba et al., 2022) revealed that teachers feel inadequately prepared for multilingual classrooms. This suggests a potential systemic issue in teacher preparation, extending beyond the specific context of this study.

Addressing the plateau effect and the knowledge-preparedness gap

To address teacher plateau effects and knowledge gaps, continuous professional development (PD) opportunities are essential. Effective PD emphasizes active learning, content

focus (such as UDL), and sustained duration (Darling-Hammond et al., 2017). These dimensions are crucial for building both theoretical and practical expertise in areas such as UDL. This aligns with research on teacher development, which indicates the largest productivity gains often occur early on, followed by a slower growth rate (Harris & Sass, 2011). This highlights the potential benefits of ongoing, targeted professional development throughout a teacher's career, with implications for student achievement (Dempsey & Dally, 2014) and the potential to reduce teacher burnout and workforce shortages (Gottfried & Kirksey, 2020; Jotkoff, 2022; Torpey, 2018).

A critical examination of the preparedness data reveals an exceptionally low average score on Question P 2 related to multiple languages ("How prepared are you to support multiple language options in your teaching materials?"). The mean score for this item sits at 2.94 across all experience levels, suggesting a lack of training and resources for teachers on this specific skill set. The number of English Language Learners (ELLs) is increasing rapidly. Between 2009 and 2019, they surged from 9.2% to 10.4% of the student population (Irwin et al., 2022). The NEA predicts that by 2025, one out of every four students will be an ELL (NEA, 2020a). This highlights the urgent need to better prepare teachers to work with this growing student population.

To address the knowledge-preparedness gap and foster on-going development, professional development programs for teachers should align with both UDL and Vygotsky's principles. Following a UDL approach, professional development itself should offer multiple means of representation, expression, and engagement for teachers modeling hands-on practical examples of adoption of UDL within the classroom. Additionally, creating collaborative learning communities amongst teachers pursuing UDL training holds great promise. These communities

can strengthen support and facilitate ongoing discussions focused on practical UDL applications in the classroom. This aligns with Vygotsky's emphasis on the power of social peer learning. New skills can be gained, and continuous teacher development is supported through interactions with more advanced peers (Shabani, 2016).

Impact of Experience on Knowledge

Shifting our focus to knowledge, descriptive analysis suggests a potential link between experience and self-reported understanding of UDL principles. Participants in the 0-3 years group demonstrate knowledge levels generally between “prepared” and “very prepared,” with average responses below a four across 11 of the 16 knowledge-based items. In contrast, the 4-6-year group demonstrates mostly “very prepared” knowledge levels, with average responses above a four on all 16 items. Similarly, the group with more than 6 years of experience exhibits knowledge levels exceeding “very prepared,” with average responses above a four on 13 of the 16 items. This trend could reflect a developing understanding of UDL over time. However, despite this initial knowledge growth, there seems to be a point where more experience (beyond six years) does not consistently lead to greater expertise. Interestingly, while descriptive analysis suggests a potential association between experience and knowledge, ANOVA did not yield statistically significant differences in knowledge based on experience levels.

This plateau highlights a potential gap between experience-based confidence in UDL-related teaching techniques, and deeper UDL understanding. This aligns with concerns about inadequate teacher training for inclusive practices (Sharma, 2018). Research highlights the importance of targeted professional development for building both inclusive practices and effective collaboration skills (Ronfeldt et al., 2015). Specifically, Courey et al. (2013) found that UDL training led to improvements in teachers’ ability to provide differentiated instructional

strategies for diverse learners. Therefore, to bridge the knowledge gap and better support inclusive learning for all students in South Carolina, targeted professional development specifically designed for Indian teachers is recommended. This development should encompass both theoretical and practical application knowledge of UDL.

Analysis of Research Question 2

The descriptive analysis of Indian teachers' UDL preparedness and their education level in South Carolina depicts a varied pattern. Teachers with bachelor's degrees showed variability in preparedness, with mean scores ranging from 3.00 (multiple language options - P2) to 4.29 (content-based syntax and structure - P5). In contrast, those with master's degrees consistently scored with mean scores around 4.00, indicating higher preparedness across UDL domains. This trend continues for those with qualifications above a master's, though their scores don't significantly surpass the master's group (e.g., 4.2 for promoting focus - P9), suggesting a plateau in perceived readiness. Additionally, teachers with master's degrees or above frequently achieved the higher median scores, indicating widespread agreement on high preparedness.

There's also a trend in how the responses vary across experience levels. New teachers (0-3 years) show much wider variation in their answers than the average. Teachers with 4-6 years of experience demonstrate more consistency in their preparedness. Interestingly, experienced teachers (more than 6 years) show much less variation, with a few exceptions. This suggests that experience may play a role in how consistently educators understand UDL concepts.

A one-way ANOVA analysis indicated that the impact of Indian teachers' education level on their UDL preparedness is minimal. Across all preparedness items (P1-P17), there were no statistically significant differences based on whether teachers held a bachelor's, master's, or higher degree. The demographic data analysis notes that the sample included a sizable

percentage of teachers holding master's degrees (59.7%) and even qualifications above a master's degree (29.9%). This suggests that factors beyond formal education level might have a greater influence on shaping teachers' confidence in their UDL implementation abilities. While our data suggests no significant overall UDL knowledge differences based on education level, the Mackey (2014) study highlights a similar pattern. Teachers in that study reported feeling inadequately prepared for inclusive education after their undergraduate programs. This aligns with the possibility that bachelor's programs may not consistently provide a strong foundation in UDL principles. Research supports this notion, demonstrating that targeted professional development programs can significantly enhance teachers' UDL skills and preparedness. For example, VanTassel-Baska et al. (2008) found that teachers participating in extended professional development focused on differentiation showed marked improvement in their UDL practices over time. The Bivariate Spearman's Correlation analysis between the composite preparedness score and educational level revealed a weak negative correlation (-.049). This finding underscores that formal education alone does not fully explain teachers' confidence in UDL implementation.

To further investigate factors influencing UDL implementation, the survey included questions specifically designed to assess teachers' perceived support from administration and colleagues. Importantly, ANOVA analysis revealed a significant relationship between teachers' perceived support and their UDL preparedness and knowledge scores. Colleagues seem particularly influential in enhancing preparedness for clarifying vocabulary (P4), problem-solving (P9), and promoting focus (P12). Administrative support is crucial for developing teacher knowledge in key areas like differentiated instruction (K5), Knowledge about hierarchy of the principles (K1), and UDL's ability in serving all students (K9). This suggests a supportive and

collaborative school environment can be even more influential than formal education in shaping teachers' UDL confidence. Despite a high percentage of teachers with advanced degrees, their UDL preparedness and knowledge did not consistently surpass those with bachelor's degrees. This underscores the importance of ongoing professional development, targeted UDL training, and supportive school environments for teachers of all education levels. Administrators can ensure professional development integrates UDL principles, thereby addressing limitations in formal teacher preparation highlighted by the study. Targeted professional development should focus specifically on differentiation and UDL-aligned instructional strategies.

Schools should prioritize collaborative learning communities to foster UDL skill development. Vygotsky's Zone of Proximal Development (ZPD) highlights the space where learners can develop new skills with support. In a study on, Applications of Vygotsky's sociocultural approach for teachers' professional development, Shabani (2016) illustrates that Vygotsky's sociocultural theory, known for emphasizing collaboration and guidance for student learning, is also highly relevant to teacher professional development. With structured staff development the teachers reported that the scaffolding of the staff development and peer support increase their knowledge.

Now, we delve into the descriptive analysis Indian teachers' UDL knowledge as it relates to their education level. Those with bachelor's degrees displayed a range of mean scores (2.71 to 3.86) and median scores around 4.00. This suggests a foundational UDL understanding with potential gaps in specific areas. Teachers with master's degrees exhibited strong UDL knowledge, with consistently high means and medians (mostly 4s and 5s). This trend extends to those with higher qualifications, though without significantly surpassing the master's group, hinting at a potential plateau. Bachelor's holders also showed more variability in knowledge, particularly in

using different individual strategies (K6), compared to the more uniform understanding demonstrated by those with advanced degrees.

The one-way ANOVA analysis data pinpointed specific knowledge areas where education level makes a significant difference:

- Instructional Delivery (K3): A clear gap exists between bachelor's and master's degree holders, with the master's group demonstrating greater knowledge.
- Differentiated Instruction (K5): Like K3, those with master's degrees show significantly stronger understanding compared to the bachelor's group.
- Completion of work by all students (K9): ANOVA analysis finds significance, but Tukey’s HSD is not significant. Surprisingly, education level does not significantly impact teachers' knowledge within this UDL domain.

Tukey's HSD Post-Hoc analysis further clarified the knowledge gaps identified by ANOVA analysis. Teachers with master's degrees reported a significantly higher knowledge base in UDL compared to those with bachelor's degrees. Spearman Correlation analysis supported this outcome, revealing a very weak relationship (0.006, p=0.960) between education level and the composite knowledge score. This weak correlational score indicates that educational level is not a strong predictor of overall UDL knowledge.

ANOVA analysis indicated that teachers with master's degrees or higher demonstrated significantly stronger self-perceived knowledge of instructional delivery (K3) and differentiated instruction (K5) compared to those with bachelor's degrees. Additionally, ANOVA revealed a significant positive relationship between support from colleagues and teachers' knowledge in these same areas: instructional delivery (K3) and differentiated instruction (K5). These findings highlight the complex interplay between formal education and school-based support structures in

shaping teachers' UDL knowledge. While formal education at the master's level and above seemsto provide a foundational advantage in areas like instructional delivery and differentiated instruction, ongoing support from colleagues appears crucial for continued growth and development of these specific UDL skills. This emphasizes the need for a comprehensive approach to UDL professional development that includes targeted training to address potential gaps from formal education programs and focused, collaborative support systems within schools.

Analysis of Research Question 3

Question three explores the connection between inclusive education coursework completed during Indian teacher preparation programs and self-reported UDL preparedness in the U.S. context. Teachers with limited coursework (0-2) reported means as low as 2.69 for supporting multiple language options (P 2) and as high as 4.28 for using technology (P 7), clarifying syntax (P 5), and customizing presentation (P 1). Overall, this group's mean scores are slightly below the average for all 17 items. Their variance is high in almost all cases, exceeding both other groups and the average variance.

Educators that completed more course work (3-5) reported on par or higher mean scores than the overall average across all areas. In five out of 17 areas, they even outscored teachers with more than five courses. Scores ranged from 2.93 (P 2) to 4.43 (P 17: progress monitoring) and 4.43 (P6: express in multiple ways). Their variance is mostly less than the group variance. Significantly, scores for educators who completed more than 5 courses were consistently above average. Additionally, this group also had less variance compared to other groups. Their scores were the highest overall in most cases, ranging from 3.41 (P 2) to 4.47 (P 12: promoting sustained effort). Two specific UDL areas emerge as key findings. Firstly, teachers across all subgroups reported significantly low perceived preparedness in supporting multiple language

options (P2), with a group average of 2.93. Secondly, promoting learner choice and self-determination (P11) is a challenge for many teachers. Only the top tier group scored above the 4.0 “very prepared” level, though coursework is positively correlated with preparedness in this area.

The UDL guideline for “Recruiting Interest” highlights the value of providing learners with choice and autonomy. Giving learners choice and autonomy is essential for their learning. This can be achieved using methods like project-based learning or flexible assignments. This approach has been proven to boost engagement and overall achievement (CAST, 2018). Offering choices in the learning process sparks student motivation and fosters self-determination, a critical factor in student success. Research demonstrates the value of self-determination, especially for students with disabilities. These students experience enhanced educational outcomes and overall quality of life (Wehmeyer & Shogren, 2016; Ju et al., 2017).

Self-determination encompasses essential skills for academic success, including goal setting, problem-solving, and self-advocacy (Ju et al., 2017; Burke et al., 2018). Interventions designed to build self-determination skills are not limited to specific students or situations. They prove beneficial across grade levels, abilities, and backgrounds, showing that every student can benefit from these strategies (Burke et al., 2018). Targeted training and coaching empower students with disabilities to utilize available support systems, further emphasizing the universal applicability of these interventions (Ju et al., 2017; Burke et al., 2018). By actively nurturing choice and self-determination in the classroom, educators create a pathway for all learners to achieve their full potential.

These findings suggest that Indian teacher preparation programs may promote foundational UDL awareness, but areas like multiple language options and learner choice need

deeper focus. This limited understanding of key UDL principles aligns with concerns about inadequate Indian teacher preparation for inclusive education (Bhat & Geelani, 2017). Their research highlights numerous barriers to successful inclusive practices, including non-inclusive curriculum and lack of resources, which likely hinder teachers' ability to implement UDL effectively. These challenges likely limit teachers' ability to implement UDL principles, such as providing multiple language options and learner choice. Research consistently demonstrates low levels of teacher preparedness, as highlighted in the study 'Secondary teachers and ELLs: attitudes, perceptions, and implications' (Rubinstein-Avila & Lee, 2014). This study notes that, most teachers perceive themselves unprepared to teach multilingual students targeted professional development in supporting multilingual students could be particularly beneficial for Indian teachers working in the U.S.

Looking at UDL knowledge by number of inclusive courses, we see a clear pattern. Teachers with limited coursework (0-2) reported lower overall UDL knowledge, with means below the group average. Knowledge in this group was inconsistent, with high variability. For example, they showed stronger understanding of engaging students (mean = 4.51) but lower scores in areas like UDL hierarchy (mean = 3.33). Educators with 3-5 courses showed improved understanding, with means often matching or exceeding the group average. Their knowledge was more consistent. This suggests that a moderate level of inclusive coursework may lead to a significant jump in UDL understanding. Teachers who completed more than five inclusive courses demonstrated high UDL knowledge with means above the group average. They had strong agreement on their knowledge, with low variability. This indicates that extensive inclusive coursework fosters both strong UDL knowledge and a shared understanding of those principles.

The clear positive association between coursework and UDL knowledge aligns with the findings from the demographic information about teacher preparation. Over half (53.7%) of the participants reported taking 0-2 inclusive education courses while the remaining 46.3% had completed 3 or more. This suggests a potential connection between limited exposure to inclusive pedagogy during teacher preparation and the observed gaps in knowledge and preparedness. Additionally, research by Sharma and Das (2015) highlights that inclusive education courses in India may be optional and under-enrolled, further emphasizing the need for revised teacher preparation in this area. While descriptive analysis suggested differences in both knowledge and preparedness based on inclusive coursework, ANOVA results did not yield statistical significance for these differences. However, the clear trends observed in the data suggest a potential association between coursework and both knowledge and preparedness. This potential relationship calls for further investigation.

Summary of findings

This study examined the preparedness of Indian teachers in South Carolina for the successful adoption of Universal Design for Learning (UDL) principles in their teaching, and further investigated its' impact with their teaching experience. It also explored the correlation with education level and exposure to inclusive coursework. The findings revealed that UDL preparedness and knowledge increase with teaching experience in the U.S. However, this study found that this growth in understanding theory and application of UDL levels off for those with 6+ years of experience, indicating a need for a sustained and targeted professional development in UDL implementation.

Furthermore, teachers with master's degree and above exhibited stronger UDL preparedness than those with bachelor's degrees. The plateau effect continued here as well,

possibly hinting that having a higher degree does not guarantee deep UDL expertise. The research also recognized the impact of valuable support from peers and administrators. This support is positively associated with educators' understanding of Universal Design for Learning (UDL) principles and readiness for application of UDL principles, highlighting the significance of collaborative and supportive learning settings. Additionally, data on professional development reveals a concerning lack of UDL training. A significant number of teachers (38 out of 67) received no UDL training in the past year, and 35 out of 67 have not had any professional development training that incorporates UDL or UDL-related principles in the past three years. Lastly, the research indicated that taking more inclusive education courses during teacher preparation is associated with higher UDL preparedness and knowledge. This suggests that some Indian teacher preparation programs may need to enhance their inclusive practices and UDL training.

Limitations of the Study

Despite rigorous efforts to ensure the validity of this study, several limitations should be acknowledged. First, the focus on teachers of Indian origin working in South Carolina, who represent a relatively small and specific group, limits the ability to generalize the findings to a broader population of educators. Second, using purposive snowball sampling method further impacts the generalizability of the results. This sampling method relies on referrals within existing networks. For these reasons, snowball sampling technique can introduce bias and reduce the representativeness of the sample (Parker et al., 2019).

In addition to these limitations related to the sample, the study design introduces further considerations. The third limitation, the reliance on self-reported data through surveys introduces the potential for bias (van de Mortel, 2008). Participants may, without intending to purposely

mislead, exaggerate their actual UDL knowledge and skills by selecting UDL knowledge where no practical applications or experiences may have yet taken place. This tendency, known as social desirability bias, can make it difficult to assess their abilities accurately (Morre et al., 2021). Additionally, teachers' perceptions of their preparedness in terms of UDL theory itself might not match how effectively or frequently they implement UDL in a classroom setting.

An additional limitation, the fourth, is the distribution of participants across demographic categories. Over 73% of participants had more than 6 years of teaching experience in the United States. Additionally, almost 90% of teachers held a master's degree or higher. This skewed distribution limits the ability to generalize the findings to teachers with less experience or lower educational qualifications. Furthermore, more than half the sample (53.7%) had taken 0-2 inclusive education courses. This could impact the representativeness of the findings regarding the relationship between coursework and UDL preparedness. Another potential limitation could be the study's focus on experience within the U.S. educational system with prior experience in India. Their UDL preparedness may be influenced by unique factors related to their previous teaching contexts. This possibly could limit the generalizability of the findings.

Finally, the study only examined a limited set of independent variables, including experience in the U.S., teacher’s educational level, and number of inclusive courses completed. Future research could explore the impact of additional factors, such as teachers' prior experience in India's educational system, their areas of specialization or certification during their academic programs, as well as possibly inquiring into number and type of UDL activities implemented within their classrooms.

Implications and Recommendations

This study examined the knowledge and preparedness of Indian teachers in South Carolina in implementing the Universal Design for Learning (UDL) framework. Data is analyzed based on their teaching experience in the United States, educational level, and the number of inclusive courses taken. Key findings include significant differences in UDL preparedness related to levels of teaching experience within the United States, along with significant differences in a few specific areas of UDL knowledge. Also, the study observed the positive impact of administrative and peer support on teachers' theoretical understanding of UDL, and a plateau effect in preparedness and knowledge as teaching experience and educational level increase.

Based on these findings, several recommendations can be made. First, targeted training that incorporates both UDL theory as well as practical, hands-on examples of UDL across categories is crucial. Pre-service training programs in India should emphasize support for multilingual learners (P2) and the development of problem-solving and critical thinking skills (P9), as these areas showed teachers' perceptions of lower preparedness in the study. Sponsorship agencies should consider offering intensive introductory UDL training, potentially focusing on the core principles and effective implementation strategies. School and district in-service training should target knowledge gaps in multilingual support strategies (P2), understanding UDL's research backing (K3), and promoting effective peer collaboration based on these findings.

Administrative support for professional development opportunities in an on-going manner for K12 teachers focused on UDL is also essential. Administrators themselves would benefit from training on how to foster collaborative learning communities focused on UDL implementation, aligning with the study's findings about the importance of Vygotskian peer-

based support systems for successful UDL classroom implementations. To combat the plateau effect, training should also focus on designing targeted and sustained professional development opportunities. Pre-service and in-service teachers need field-based experiences to practice applying UDL with diverse learners, particularly in areas where gaps were found (helping students complete work and differentiating instruction). Finally, this study underscores the importance of policy alignment and support. Potential areas where teacher preparedness gaps could impact compliance with federal legislation like IDEA and ESSA should be a focus for future policy changes and updates to teacher preparation programs. Additionally, it is vital to ensure that existing policy initiatives supporting UDL, such as South Carolina's Universal Design for Learning Implementation Guide, are robustly implemented through appropriate teacher training and resources.

Data on professional development reveals a concerning lack of UDL training. A significant number of teachers (38 out of 67) received no UDL training in the past year, and 35 out of 67 have not had any in the past three years. This highlights the need for further research to address this gap, including:

- Investigating the root causes behind limited UDL training opportunities, such as budgetary constraints, lack of administrative or program-based awareness as to the value of UDL, or limited access to quality training.
- Exploring the relationship between administrators' UDL knowledge and their prioritization of UDL professional development for teachers, potentially revealing a need for targeted UDL training for those in leadership positions.

Future research should investigate best practices for supporting Indian teachers transitioning into the US educational system, with a focus on successful UDL implementation.

It's also important to explore the specific ways in which administrative support directly influences educators' UDL practices in the classroom and to examine the sustained impact of UDL training on student outcomes and teacher retention. This study highlights the importance of targeted training and systemic support to fully equip teachers to effectively implement UDL within inclusive classrooms. It would benefit the researchers to explore the impact of teachers' prior experience in India and their area of specialization or certification on the current preparedness in the United States. This study recognizes a disconnect between South Carolina's commitment to inclusive education and the lack of a UDL training mandate for all teachers in general including teachers from India.

Conclusion

Findings revealed a positive association between U.S. teaching experience and Indian teachers' preparedness for implementing UDL principles. While initial years are marked by foundational understanding, experience fosters greater confidence and skill. However, results indicate that this growth may plateau over time. This plateau effect emphasizes the need for sustained and targeted professional development. Furthermore, specific areas like supporting multilingual learners necessitate focused and extensive training, regardless of experience level.

The study indicated that teachers with master's degrees or higher exhibited consistently higher knowledge in most UDL areas compared to those with bachelor's degrees. This finding aligns with existing research suggesting that Indian teacher preparation programs may not adequately equip educators with the necessary UDL knowledge for effective implementation. This is particularly evident in our study, where teachers with 0-3 years of U. S. experience, likely coming from the Indian education system, demonstrated lower UDL knowledge. These results suggests that some Indian teacher preparation programs may need to strengthen their emphasis

on inclusive practices and UDL training. The research highlights the importance of supportive school environments, in which administrators and colleagues may play a crucial role in boosting teachers' UDL preparedness and knowledge, along with providing and modeling examples of UDL applications for colleagues within their own K12 classrooms. This aligns with Vygotsky's emphasis on peer support as a key to social learning's importance in acquiring new skills. Schools must foster collaborative learning communities across varied levels of education for teachers, share real-life examples of well-designed UDL application practices, and create a community of learning for K12 teachers that broadens and disseminates knowledge across all teacher characteristics.

Additionally, administrators should offer structured professional development in UDL, including targeted or individualized training options. Future research could build on this work by exploring best practices for supporting Indian teachers transitioning into the U.S. educational system and how administrative support directly influences UDL implementation in the classroom. Data reveals a concerning lack of access to UDL training, with most teachers reporting no training in recent years. Future research should investigate the systemic barriers to UDL professional development and the role of administrator knowledge in prioritizing UDL training for teachers. This study highlights potential gaps in teachers' UDL preparedness and a disconnect between South Carolina's commitment to inclusion and the lack of UDL training mandates for all teachers. To address this, targeted training initiatives are crucial for helping teachers from diverse backgrounds embrace the UDL framework.

To address these findings, a multifaceted approach is crucial, including:

- Pre-service and in-service teacher preparation focused on UDL implementation.

- Fostering collaborative communities in schools, providing both peer and administrative support.
- Professional development for administrators on UDL theory and the organization of effective PD opportunities for teachers.
- Sponsoring agencies bringing international teachers should include training on UDL theory and practice during their orientation programs.
- School district integration of UDL training into induction programs and ongoing professional development.

By taking these steps, we can create truly inclusive learning environments where all students can thrive.

APPENDICES

Appendix A: Survey Description Letter

Title: Understanding & Preparedness Survey for K-12 Teachers from India on Inclusion, Diversity, Special Education, and UDL Principles

Please read the following information before deciding to participate:

- **Voluntary Participation:** Participation in this survey is completely voluntary. You are free to decline to participate in this study, and you may withdraw your consent and discontinue participation at any time.
- **Confidentiality:** All responses will be kept strictly confidential. Data collected will be used solely for the purpose of this research and will not be shared publicly in any manner that could identify you.
- **Estimated Time:** The survey is expected to take approximately 30 minutes to complete.
- **Purpose of the Study:** The aim of this survey is to understand the knowledge and preparedness of teachers regarding UDL. Your insights are crucial in helping us gain a comprehensive understanding of UDL implementation in educational settings.
- **No Right or Wrong Answers:** Please answer each question honestly based on your personal experiences and beliefs. There are no 'right' or 'wrong' answers.

Consent: As you proceed with this survey, we kindly request that you provide responses that are both truthful and reflective of your experiences. Your genuine input is essential for ensuring the survey's accuracy and will greatly contribute to our understanding of educators' level of knowledge and preparedness with UDL principles.

Appendix B: Introduction to UDL

Subject: Introduction to Universal Design for Learning (UDL) for Survey Participants

Dear Educator,

Subject: A brief introduction of the UDL framework

Background and Origin of UDL:

Universal Design for Learning (UDL) is an educational framework inspired by universal design principles initially used in architecture. It aims to foster inclusive and accessible learning experiences across all educational settings and levels, encompassing diverse learning formats. UDL is designed to accommodate all students' varied needs and abilities, making education more equitable and effective in general classrooms and every learning environment, from early education to higher education and beyond, including traditional and innovative educational formats.

The three core principles of UDL:

Multiple Means of Representation, Multiple Means of Action and Expression, and Multiple Means of Engagement

Thank you for your dedication to inclusive education and for sharing valuable insights.

Sincerely,

Lakshmi Vishnubhotla, Doctoral Student
College of Education, Coastal Carolina University,
Cell: 843-796-0897
email: LNVishnub@coastal.edu

Dr. Suzanne Horn, Professor
Chair of Teacher Education Department,
Prince Hall 105-J, Coastal Carolina University
843-349-4044, SHorn@coastal.edu

Appendix C: Approval Copy of IRB

January 16, 2024

Lakshmi Surya Narayana Vishnubhotla
Coastal Carolina University
Conway, SC 29528

RE: Examining Teacher Knowledge and Preparedness: Teachers from India in South Carolina and the implementation of UDL principles in general education classrooms

Lakshmi,

It has been determined that your protocol **#2024.101** is approved as **EXEMPT** by the Coastal Carolina University Institutional Review Board (IRB) under the Federal Policy for the Protection of **Human Research Subjects Category #2**,

- Research that only includes interactions involving education test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

This approval is good for one calendar year commencing with the date of approval and concludes on **1/15/2025**. If your work continues beyond this date, it will be necessary to seek a continuation from the IRB. If your work concludes prior to this date, please inform the IRB.

Approval of this protocol does not provide permission or consent for faculty, staff or students to use university communication channels for contacting or obtaining information from research subjects or participants. Faculty, staff and students are responsible for obtaining appropriate permission to use university communications to contact research participants. For use of university email to groups such as all faculty/staff or all students, requests should be made to the Provost's Office after the research protocol has been approved by the IRB. Please allow at least one week to receive approval.

Please note, it is the responsibility of the Principal Investigator to report immediately to the IRB any changes in procedures involving human subjects and any unexpected risks to human subjects, any detrimental effects to the rights or welfare of any human subjects participating in the project, giving names of persons, dates of occurrences, details of harmful effects, and any remedial actions. Such changes may affect the status of your approved research.

Be advised that study materials and documentation, including signed informed consent documents, must be retained for at least three (3) years after termination of the research and shall be accessible for purposes of audit.

If you have any questions concerning this review, please contact Patty Carter, IRB Coordinator, at pcarter@coastal.edu or extension 2978.

Thank you,

Stephanie Cassavaugh
Director, Office of Sponsored Programs and Research Services IRB Administrator
cc: Suzanne Horn

Appendix D: Approval to Use Survey Instrument

From: أ من محمد الس ل <a.alsuwayl@mu.edu.sa>
Sent: Sunday, December 3, 2023 12:46 AM
To: Lakshmi Surya Vishnubhotla <lnvishnub@coastal.edu>
Subject: Re: Request for Permission to Use Survey Items in Research Study

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders. Hello there,

Thank you for your contact. We also thank you for your interest in our research. We are happy to permit you to use the survey items with full credit. Also, we would love to hear back when you finish and give us a copy of your dissertation when you are done.

I only know Prof. Turki Alquraini email. You may see his contact info at the end of the following page:

h ps://faculty.ksu.edu.sa/ar/talquraini/cv

From: Lakshmi Surya Vishnubhotla <lnvishnub@coastal.edu>
Sent: Sunday, December 3, 2023 12:00 AM
To: أ من محمد الس ل <a.alsuwayl@mu.edu.sa>
Subject: Request for Permission to Use Survey Items in Research Study

Respected Prof. Ayman Alsuwayl and Prof. Nouf Almutairi,
I hope you are doing well. My name is Lakshmi Vishnubhotla, and I am conducting a research study titled "Examining Teacher Knowledge and Preparedness: Teachers from India in South Carolina and the Implementation of UDL Principles in General Educa on Classrooms." This study is part of my doctoral dissertation at Coastal Carolina University, SC, USA.

Your article titled "Assessing the Knowledge of Elementary School Teachers on Universal Design for Learning in Saudi Arabia," published in Cogent Educa on (2023), 10:2270295, h ps://doi.org/10.1080/2331186X.2023.2270295, has captured my attention and interest, particularly the survey items you developed to assess the level of the knowledge of universal design for learning among elementary teachers. These items align closely with my research objectives, which aim to explore the self-reported knowledge and preparedness of teachers from India teaching in the United States regarding the Universal Design for Learning (UDL) framework and its principles.

I request permission to utilize the survey items in your study for my research. Additionally, I noticed that these items were adapted and extended from a study by Alquraini and Shila (2018). I need help locating their contact information and would greatly appreciate any assistance or guidance you could provide in contacting them for similar permission.

My research is focused on assessing educators' self-perceived knowledge and preparedness in applying Universal Design for Learning (UDL) strategies in diverse educational settings. The survey items from your study and those from Alquraini and Shila (2018) are particularly relevant and would significantly contribute to a comprehensive understanding of these essential aspects.

I assure you that full credit will be given to you for using these survey items, with proper citation and acknowledgment in my research documentation. Your assistance in this ma er is greatly appreciated, and I look forward to incorporating your valuable work into my research. Additionally, I am happy to share the findings of my study with you upon its completion, which could contribute to the body of knowledge in this critical area of education.

I appreciate your consideration of this request and look forward to incorporating your valuable work into my research. Please let me know if any formal procedures or documentation are required for this permission.

Thank you for your me and consideration. I look forward to hearing back from you.

Sincerely,

Lakshmi SN Vishnubhotla

Doctoral Student, Coastal Carolina University, Conway, SC, USA 29526

Email: LNVISHNUB@COASTAL.EDU ; VLSURYANRAYANA@GMAIL.COM

CELL: +1-843-796-0897

Appendix E: Survey

Demographic Section

In this section, we would like to gather some basic demographic information.

1. Please select the highest level of education you have completed:
    - Bachelor's Degree
    - Master's Degree
    - Above master’s degree

2. Please indicate your area of specialization:
    - General Education
    - Special Education
    - Dual Certified (General and Special Education)

3. How many courses related to special education or inclusive practices have you taken in India?
    - 0-2
    - 2-5
    - More than 5

4. Please indicate your gender:
    - Male
    - Female
    - I prefer not to say

5. How many years of teaching experience do you have in India?

- 0-3 years
- 4-6 years
- More than 6 years

6. How many years of teaching experience do you have in the United States?

- 0-3 years
- 4-6 years
- More than 6 years

7. Please indicate your current visa status:

- J-1 Visa
- J-2 Visa
- H-1 Visa
- H-4 Visa
- Permanent Resident
- I prefer not to say

8. Which part of India are you initially from?

- East
- Northeast
- North
- West
- Central
- South
- I prefer not to say

9. How frequently have you attended training or workshops related to UDL in the past year?

- Not at all
- Once a year
- A couple of times a year
- Several times a year (e.g. Quarterly)
- Regularly throughout the year

10. How frequently have you attended training or workshops related to UDL in the three years?

- Not at all
- Once a year
- A couple of times a year
- Several times a year (e.g. Quarterly)
- Regularly throughout the year

Section 2: Preparedness for Implementing Universal Design for Learning (UDL)

This section contains 17 questions. Each question has five options

1. Not at all prepared
2. Slightly prepared
3. Moderately prepared
4. Very prepared
5. Extremely prepared

Please select the option that best reflects your current level of preparedness for each statement.

	Not at all prepared	Slightly prepared	Moderately prepared	Very prepared	Extremely prepared
1. How prepared are you to customize the presentation of information in your teaching? (e.g., using visual aids, interactive media, or providing written summaries)	1	2	3	4	5
2.How prepared are you to support multiple language options in your teaching materials?	1	2	3	4	5
3.How prepared are you to support multiple levels of content understanding (e.g., novice, intermediate, expert) in your teaching?	1	2	3	4	5
4.How prepared are you to clarify content-specific vocabulary, symbols, and jargon in your teaching?	1	2	3	4	5
5.How prepared are you to clarify content-based syntax and structure in your teaching materials? (e.g., using simplified language, visual sentence diagrams, or providing clear, step-by-step instructions)	1	2	3	4	5
6.How prepared are you to allow learners to express their understanding in various ways? (e.g., through written assignments, oral presentations, creative projects, or multimedia)	1	2	3	4	5
7.How prepared are you to provide access to a variety of tools and technologies for students to express their understanding?	1	2	3	4	5

8.How prepared are you to build competencies using multiple options for expressing understanding?	1	2	3	4	5
9.How prepared are you to provide support for students' problem-solving and critical-thinking abilities?	1	2	3	4	5
10.How prepared are you to provide options that guide students to plan, develop strategies, and set goals in expressing their understanding?	1	2	3	4	5
11.How prepared are you to promote learner choice and self-determination in engaging with content? (e.g., offering topic choices for assignments, self-paced learning options, or choice in project formats)	1	2	3	4	5
12.To what extent do you feel prepared to promote sustained effort and focus among your students? (e.g., using engaging activities, setting clear goals, providing regular feedback, or incorporating gamification elements)	1	2	3	4	5
13. How prepared are you to facilitate student self-monitoring of progress? (e.g., using learning journals, self-assessment checklists, or digital progress tracking tools)	1	2	3	4	5
14.How prepared are you to encourage collaboration and communication among learners?	1	2	3	4	5
15.To what extent are you prepared to support multiple levels of challenge in your teaching?	1	2	3	4	5

16.How prepared are you to provide opportunities for self-reflection and self-assessment?	1	2	3	4	5
17.How prepared are you to provide formative progress monitoring and content checks?	1	2	3	4	5

Section 3: Knowledge of Universal Design for Learning (UDL) Principles

This section contains 17 questions. Each question has five options

1. Strongly Disagree
2. Disagree
3. Not Sure
4. Agree
5. Strongly Agree

Please select the option that best reflects your current level of preparedness for each statement.

	Not at all prepared	Slightly prepared	Moderately prepared	Very prepared	Extremely prepared
1. UDL principles follow a hierarchy; one principle being more important than the others.	1	2	3	4	5
2. UDL can be used only with students with disabilities.	1	2	3	4	5
3. UDL is a research-based framework to design and deliver instruction.	1	2	3	4	5
4. UDL can provide students with psychological support to improve self-confidence.	1	2	3	4	5
5. UDL can be used to differentiate instruction.	1	2	3	4	5

6. Implementing UDL requires the use of different individual strategies.	1	2	3	4	5
7. UDL increases academic collaboration among students with and without disabilities.	1	2	3	4	5
8. UDL cannot be used without technology	1	2	3	4	5
9. UDL helps to improve completion of work by all students	1	2	3	4	5
10. To use UDL successfully, a teacher needs to plan proactively.	1	2	3	4	5
11. UDL reduces barriers in inclusive settings for all learners.	1	2	3	4	5
12. UDL principles require multiple means of representation, expression, and engagement.	1	2	3	4	5
13. UDL can be used to provide student-specific support.	1	2	3	4	5
14. UDL provides teachers with a logical method to design instruction and assessment to meet the needs of all students, not just students with disabilities.	1	2	3	4	5
15. UDL principles can be used simultaneously throughout the lesson delivery	1	2	3	4	5
16. UDL helps provide instruction, minimizing the need for individual accommodation.	1	2	3	4	5

Section 4: Professional Development and Training

This section contains 5 questions. Please choose the best option.

1. How satisfied are you with the training and professional development opportunities available to you in implementing UDL?

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very satisfied
- Extremely satisfied

2. To what extent do you feel that the current training and professional development opportunities adequately prepare you for implementing UDL in your classroom?

- Not at all
- Slightly
- Moderately
- Very much
- Extremely

3. How effective do you find the training and professional development opportunities offered by your school in supporting the implementation of UDL?

- Not at all effective
- Slightly effective
- Moderately effective
- Very effective

- Extremely effective

4. For this question, please rank each of the following issues from 1 to 5 with 1 being “highly supportive” and 5 being “least supportive”.

What type of professional development opportunities related to UDL can be improved to better support effective implementation in the classroom?

- ❑ By increasing the frequency of training and development opportunities
- ❑ By providing more hands-on practice and coaching
- ❑ By offering more personalized and tailored support
- ❑ By incorporating more real-world examples and case studies
- ❑ Other (please specify)

Section 5: Challenges in UDL Implementation

This section contains 5 questions. Please choose the best option.

1. What are the challenges you face in implementing UDL in your classroom? Please rank the following from 1 to 5 with 1 being the most challenging and 5 being the least challenging.

- ❑ Resource limitations
- ❑ Cultural differences
- ❑ Time
- ❑ Ongoing professional development and training
- ❑ Knowledge and preparedness

2. To what extent do “resource limitations” pose a challenge in implementing UDL effectively?

- Not at all
- Slightly

- Moderately
- Greatly
- Extremely

3. How much do “cultural differences” affect your ability to implement UDL strategies?

- Not at all
- Slightly
- Moderately
- Greatly
- Extremely

4. To what extent does “ongoing professional development and training” impact your ability to implement UDL strategies?

- Not at all
- Slightly
- Moderately
- Greatly
- Extremely

5. To what extent does “Knowledge and preparedness” of UDL pose a challenge in implementing UDL effectively?

- Not at all
- Slightly
- Moderately
- Greatly

- Extremely

6. What support would be most helpful in overcoming the challenges you face in implementing UDL in your classroom? Please rank the following from 1 to 5 with 1 being the most helpful and 5 being the least helpful.

- ❑ More resources
- ❑ More training and professional development opportunities
- ❑ Better support from colleagues and school administration
- ❑ Other (please specify)
- ❑ No support needed

Section 6: Perceptions and Beliefs about UDL:

1. To what extent do you believe that UDL is an effective approach to meeting the needs of diverse learners?

- Not at all
- Slightly
- Moderately
- Greatly
- Extremely

2. How important do you think it is to incorporate UDL principles into your teaching practice?

- Not at all
- Slightly
- Moderately
- Greatly

- Extremely

3. How positive are your attitudes towards implementing UDL in your classroom?
    - Not at all
    - Slightly
    - Moderately
    - Greatly
    - Extremely

4. To what extent do you believe that UDL can lead to improved student outcomes?
    - Not at all
    - Slightly
    - Moderately
    - Greatly
    - Extremely

5. How much support do you receive from your colleagues regarding the implementation of UDL in your classroom?
    - Not at all
    - Slightly
    - Moderately
    - Greatly
    - Extremely

6. How much support do you receive from your school administration regarding the implementation of UDL in your classroom?

- Not at all
- Slightly
- Moderately
- Greatly
- Extremely

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