



Understanding pedagogical challenges faced by technology teachers in special needs classrooms

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ABSTRACT

Teaching learners with special educational needs requires dynamic and adaptive pedagogical strategies that can lead to social development and academic success. This can be possible if teachers are assisted in mitigating the daily challenges of teaching such learners. This qualitative exploratory case study investigated the pedagogical challenges encountered by two Grade 9 Technology teachers in the Capricorn District of Limpopo Province. This study used Shulman's Content and Pedagogical Knowledge framework to understand teachers' challenges. Data was collected through semi-structured interviews and classroom observations; all collected data were analysed thematically. This study found that teachers experienced various challenges, including the emotional labour of teaching, burnout in the LSEN environment and the enactment of instructional knowledge. The study concluded that the sampled teachers displayed weaknesses in lesson planning, activating learners' prior knowledge, diagnosing errors, achieving curriculum objectives and sustaining engagement. As a result, it was recommended that support through teacher assistants, creative differentiated strategies and enhanced digital-technology literacy to improve outcomes for learners with special needs was imminent.

Keywords: Special Needs, Pedagogical Challenges, Technology Teachers.

INTRODUCTION

Burnout is looming for most Learners with Special Educational Needs (LSEN) schoolteachers as they battle to balance deeper learner-centred instruction and classroom management in under-resourced learning environments. This burnout is motivated by the excessive teaching workload, compromised teaching facilities and administrative tasks that demand teachers' attention each day.¹ LSEN schools are known for their unique stance on providing means for differently abled learners to thrive in socio-economic environments. They are also known as specialized centres for training special needs learners to become competitive in the same light as those in mainstream schooling. What remains to be known is whether teachers in these schools are capacitated enough to fulfil the purposes of LSEN schools with regards to pedagogy and autonomy. This study taps into the pedagogical challenges faced by Technology teachers in special needs classrooms.

¹ David J. Connor, Scot Danforth, and Deborah Gallagher, "An Open Letter to the Field: Contemplating Special Education's Collaborative Role in Developing Inclusive Education," *Exceptional Children* 91, no. 3 (April 18, 2025): 236–59, <https://doi.org/10.1177/00144029241303051>.

What is currently known about LSEN schools is that most of their practising teachers possess inadequate pedagogical capital.² This includes an inability to secure socially and culturally rich contextual teaching. For example, schools in rural areas are considered hubs of indigenous teaching where learners' pre-existing knowledge revolves around indigenous knowledge systems.³ Therefore, how do teachers in rural LSEN schools enact pre-existing knowledge for learners when they have indigenous knowledge limitations? This remains a knowledge gap worth researching. In addition to this, LSEN schooling facilities give no hope for professional development in most rural areas.⁴ This is further exacerbated by the lack of educational resources for such learners.

In terms of parental support, Chemaiyo, Murugami and Otube posit that parents tend to leave all learning challenges to teachers, which adversely affects the learning outcomes.⁵ Kekana et al. discovered that schools are not always forthcoming with the active roles for parents in day-to-day teaching and learning.⁶ In fact, they assume that their role is to ensure that their children are well-behaved and attending classes as expected. Therefore, it is in this assumption that parents perceive that their role is limited to "out-of-classroom" activities. As a result, this study sheds light on the challenges that require parents' involvement in and out of the classroom environment. There is a great need for collaboration between teachers and parents to fulfil all the pedagogical content knowledge strands of a special needs classroom. This is because inclusive education requires that the educational policies and practices worldwide be foregrounded by the great presence of equitable access to meaningful education for the less fortunate, including learners with special needs.⁷

Against this backdrop, the present study explores the pedagogical difficulties encountered by two Grade 9 Technology teachers in the Capricorn District of Limpopo Province. Guided by Shulman's framework of Content and Pedagogical Knowledge (PCK), the study examines how teachers navigate the emotional labour of teaching, which includes lesson planning, teacher burnout in LSEN settings, institutional inequalities, as well as rural education constraints and the intersection of disability.⁸ This study aims to contribute to the growing body of research on inclusive education by providing empirical insights into the realities of teaching in special-needs classrooms and by proposing strategies, such as the integration of teacher assistants, creative instructional practices, and enhanced digital literacy to strengthen pedagogical capacity and improve learning outcomes for LSEN learners.

LITERATURE REVIEW

Inclusive education and its theoretical foundations

Inclusive education is widely recognized as a global educational priority that seeks to eliminate barriers to learning and ensure equitable participation for all learners, irrespective of ability, disability, or difference. It is underpinned by principles of equity, social justice, and human rights, which view education as a means of fostering participation, dignity, and belonging.⁹ Within this framework, learners with special educational needs (LSEN), including those with autism spectrum disorders, intellectual disabilities, and behavioral disorders, require adaptive teaching practices that respond to

² Shandré Kim Jansen van Rensburg et al., "Navigating Learning for Learners with Special Educational Needs (LSEN) in South Africa: Barriers and Recommendations," *E-Journal of Humanities, Arts and Social Sciences*, March 22, 2024, 328–42, <https://doi.org/10.38159/ehass.20245314>.

³ Princess Blose and Thokozani Isaac Mtshali, "Fostering the Use of Indigenous Knowledge System to Teach Freehand Sketches in Engineering Graphics and Design," *Jurnal Pendidikan Teknologi Dan Kejuruan* 31, no. 2 (2025): 130–46.

⁴ Mathabo Joalane Catherine Lebona, Mohapi Monyane, and Kananga Robert Mukuna, "Fostering an Enabling Environment for Learners with Special Needs in Rural Primary Schools in Lesotho," *International Journal of Studies in Inclusive Education* 1, no. 1 (2024): 40–47.

⁵ Caroline Chemaiyo, Margaret Murugami, and Nelly Otube, "Instructional Strategies And Their Influence On Academic Performance Of Learners With Emotional And Behavioural Disorders In Nandi Central Sub-County, Kenya," *European Journal of Special Education Research* 11, no. 1 (February 14, 2025), <https://doi.org/10.46827/ejse.v11i1.5810>.

⁶ Elizabeth Katane Kekana, Thokozani Isaac Mtshali, and Manto Sylvia Ramaligela, "Inventive Ways of Teaching Mechanical Systems and Control to Grade 9 Learners with Special Learning Needs," *Jurnal Penelitian Dan Pengkajian Ilmu Pendidikan: E-Saintika* 8, no. 1 (March 6, 2024): 40–57, <https://doi.org/10.36312/esaintika.v8i1.1424>.

⁷ Mpho Nthonto and Preeti Naidoo, "Inclusive Education: Bridging Policy and Classroom Practice in South Africa," *African Journal of Special Education* 5, no. 2 (2025): 45–61.

⁸ L. S. Shulman, "Knowledge and Teaching: Foundations of the New Reform," *Harvard Educational Review* 57, no. 1 (1987): 1–22.

⁹ Nthonto and Naidoo, "Inclusive Education: Bridging Policy and Classroom Practice in South Africa."

their individual learning profiles.¹⁰ It is in these profiles that teachers are expected to strive by devising outcome-based pedagogies that ultimately favour LSEN individuals to become knowledgeable and skillful.

Despite the progressive character of Education White Paper 6, the implementation of inclusive education in South Africa has faced numerous challenges. There is still a significant gap between the objectives of policies and the real circumstances in classrooms.¹¹ One of the primary challenges identified is the policy's lack of clarity and precision regarding how inclusion should be practically implemented in schools.

Another challenge is the social division and facilities that remain unchanged from decades ago. This makes teaching even more difficult as more complicated cases of LSEN are emerging in schools. For example, about a decade ago, not much was understood about the variance and spectrum of learners with autism.¹² Now, this varied spectrum is slowly accepted and understood; however, do teachers know how to effectively mitigate the intersection of disabilities in their classrooms? This study answers this question.

Pedagogical and Curriculum Challenges in LSEN Classrooms

Teachers working in LSEN classrooms face complex pedagogical challenges that differ from those in mainstream contexts. These include difficulties in planning differentiated lessons, assessing learners' prior knowledge, managing behavioural issues, and maintaining learner engagement.¹³ Studies reveal that a rigid curriculum and inflexible teaching methods restrict teachers' ability to adapt lessons to diverse learner abilities.¹⁴ For example, Sepadi found that many teachers lack the pedagogical skills required to modify reading instruction for learners at risk of language delays, while Tshiloane and Sefotho reported that teachers in full-service schools often feel ill-equipped to meet LSEN learners' needs due to insufficient training and inadequate resources.¹⁵ Could this be the cause of emotional labour in teaching?

Research further indicates that teachers experience role strain when balancing curriculum expectations with the realities of diverse classrooms.¹⁶ The tension between inclusive ideals and practical implementation often leads to teacher burnout and reduced instructional quality. Consequently, pedagogical adaptation is hindered not only by curriculum rigidity but also by systemic factors such as large class sizes, inadequate learning materials, and limited access to specialist support. Effective inclusion requires that teachers possess both content knowledge and pedagogical expertise suited to diverse learning environments. Shulman's Pedagogical Content Knowledge (PCK) framework emphasises that teaching competence involves understanding how to transform subject matter into comprehensible and meaningful instruction for different learners.¹⁷ However, research shows that many South African teachers lack confidence in applying inclusive pedagogical strategies.¹⁸ Tshiloane and Sefotho observed that limited professional development opportunities and insufficient mentorship

¹⁰ UNESCO, "Digital Competence Framework for Citizens" 2, no. 2 (2023); Elizabeth Walton and Peter Engelbrecht, "Understanding the Meaning of Inclusive Education: A Human Rights Perspective," *International Journal of Inclusive Education* 27, no. 3 (2023): 311–28.

¹¹ Judith Anaye Afonyaa-Harry and Aniekan Johnny Akpan, "Overcoming Barriers to Educational Policy Implementation in Rural Schools," *International Journal of Strategic Leadership, Education and Social Sciences (IJLESS)*, 2025.

¹² Kaitlyn Avery, Tricia Van Rhijn, and Kimberly Maich, "Understanding the Role of Formal and Informal Support Resources for Parents of Children with Autism Spectrum Disorder," *Canadian Journal of Family and Youth / Le Journal Canadien de Famille et de La Jeunesse* 14, no. 3 (April 11, 2022): 32–51, <https://doi.org/10.29173/cjfy29791>.

¹³ Thomas Mpu and Kwame Adu, "Pedagogical Challenges of Teaching Learners with Special Needs in South Africa," *International Journal of Inclusive Education* 27, no. 6 (2023): 689–703; Johannes Motitswe, "Challenges of Implementing Inclusive Education Policy in South Africa: A Teacher Perspective," *South African Journal of Education* 45, no. 1 (2025): 112–29.

¹⁴ Sipho Zwane, "Teacher Preparedness and Inclusive Education: Curriculum Implementation in South African Schools," *South African Journal of Education* 43, no. 2 (2023): 1–15.

¹⁵ Medwin Sepadi, "Inclusive Education in Resource-Constrained Settings: Exploring Mainstream Teachers' Curriculum Knowledge and Practices for Autistic Learners in South Africa," *Frontiers in Education* 10 (August 20, 2025), <https://doi.org/10.3389/feduc.2025.1641336>; Lebogang Tshiloane and Moeketsi M Sefotho, "Teachers' Experiences of Implementing Inclusive Education in Rural South African Schools," *African Journal of Disability* 14, no. 1 (2025): 1–12.

¹⁶ Tinashe Chiroramhangu, "Inclusive Education and Human Rights in South Africa: Policy and Practice," *South African Journal of Education* 44, no. 1 (2024): 1–14.

¹⁷ Shulman, "Knowledge and Teaching: Foundations of the New Reform."

¹⁸ Nthonto and Naidoo, "Inclusive Education: Bridging Policy and Classroom Practice in South Africa."

contribute to teachers' uncertainty when teaching LSEN learners.¹⁹ However, implementation challenges persist in many South African schools, where internet access, technical support, and teacher digital literacy remain limited.²⁰ As such, the pedagogical benefits of technology are often constrained by systemic inequities and insufficient teacher training.

There is still an absence of empirical research that focuses on technology education for LSEN learners, despite the growing amount of research on inclusive education. Instead of concentrating on subject-specific technology education, existing research frequently focuses on inclusion, literacy, language acquisition, communication support, or general ICT integration. As a result, little is known about how technology teachers modify real-world exercises, design procedures, problem-solving assignments, and experiential learning opportunities for learners with behavioural issues, autism spectrum disorders, and intellectual impairments.

METHODOLOGY

Research Design

A qualitative research approach was adopted for this study, prioritising conversational and open-ended communication to explore teachers' pedagogical experiences in depth.²¹ Specifically, a case study design was employed, as it enabled an in-depth examination of the pedagogical challenges faced by teachers in special needs classrooms. An exploratory case study approach was selected to obtain detailed and comprehensive data on the phenomenon under investigation. This design was considered appropriate because it allowed the researcher to examine processes, interactions, and experiences within their real-life context. A single-case study design was used, focusing on two special schools that serve learners with autism, intellectual disabilities, and behavioural disorders. These schools were deemed suitable due to their comparable teaching and learning strategies, providing a coherent context for investigating pedagogical challenges. The study was conducted between February and May 2023 in the Capricorn District, Limpopo Province, South Africa.

Participants and Sampling

The study used homogeneous purposive sampling combined with convenience sampling to select participants who could provide rich, relevant insights into teaching LSEN learners. Homogeneous purposive sampling targeted Grade 9 Technology teachers working with learners with autism, intellectual disabilities, and behavioural disorders, ensuring that participants shared relevant experiences.²² Convenience sampling allowed practical access to the limited number of qualified teachers in the Capricorn District. This combination ensured information-rich data on lesson planning, curriculum delivery, and learner engagement, enhancing the credibility and trustworthiness of the study's findings.²³ It is worth noting that the selected district had only two LSEN schools during data collection and that there were only two Grade 9 Technology teachers available in both schools. Participants were assigned pseudonyms, Teacher A and Teacher B, to ensure confidentiality. No age or gender restrictions were imposed; however, both participants were qualified to teach Technology in special needs settings. Purposive sampling was selected to ensure that participants had direct experience teaching LSEN learners, thus providing meaningful insights into the pedagogical challenges under investigation.

Data Collection Instruments and Procedures

Data were collected using semi-structured interviews and classroom observations, enabling triangulation and in-depth exploration of participants' experiences. The interview protocol was

¹⁹ Tshiloane and Sefotho, "Teachers' Experiences of Implementing Inclusive Education in Rural South African Schools."

²⁰ Nzaliseko Dayi, Thokozani Isaac Mtshali, and Ramongwane Daniel Sephokgole, "Evaluating the GET Electrical Technology Syllabus for Transition into FET Specialisations in Gauteng Technical Schools," *Jurnal Inovasi Teknologi Pendidikan* 13, no. 1 (2026): 70–81; Chirowamhangu, "Inclusive Education and Human Rights in South Africa: Policy and Practice."

²¹ R. K Yin, *Case Study Research and Applications: Design and Methods*, 6th ed. (Sage Publications, 2018).

²² J. W. Creswell and C. N. Poth, *Qualitative Inquiry and Research Design: Choosing among Five Approaches*, 4th ed. (Sage, 2018).

²³ Lawrence A. Palinkas et al., "Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research," *Administration and Policy in Mental Health and Mental Health Services Research* 42, no. 5 (September 6, 2015): 533–44, <https://doi.org/10.1007/s10488-013-0528-y>.

designed around Shulman's Pedagogical Content Knowledge (PCK) framework, which provided the theoretical lens for investigating teachers' understanding of content, pedagogy, and learner characteristics.²⁴ Semi-structured interviews: Participants were asked open-ended questions regarding lesson planning, eliciting learners' prior knowledge, addressing misconceptions, and achieving curriculum objectives. Interviews were conducted individually, audio-recorded with consent, and transcribed verbatim. Observations: Classroom practices were observed to complement the interview data, focusing on teachers' instructional strategies, engagement techniques, and adaptation to learner needs. Field notes were taken to capture contextual details and classroom dynamics.

Data Analysis

Data were analysed systematically using an inductive thematic approach as guided by Clarke and Braun.²⁵ Key analytical categories included: Lesson planning, which pertained to examining the extent to which teachers prepared lessons and followed through during instruction; Utilisation of learners' prior knowledge, which focused on exploring strategies used to activate and integrate learners' existing knowledge into lessons; and Barriers to fulfilling curriculum objectives, which focused on identifying factors that hinder coverage of prescribed content within a term. This approach enabled the researcher to systematically interpret the data in alignment with the theoretical constructs of content knowledge, pedagogical knowledge, and learner understanding. The study followed a clear sequence: participant recruitment → ethical clearance → data collection via interviews and observations → transcription → thematic analysis → identification of pedagogical challenges.

Ethical Considerations

Ethical approval was obtained from the relevant educational authority affiliated with the authors and school management. Participants provided informed consent and were assured of confidentiality, anonymity, and the right to withdraw at any time. Pseudonyms were used in all reports to protect identities.

Trustworthiness and Rigor

The study employed several strategies to ensure trustworthiness. Triangulation of data sources (interviews and observations) enhanced credibility. The term "credibility" refers to a match between the participants' constructed realities and the researcher's representations of them.²⁶ The researcher made use of a qualitative study to ensure credibility in this study. This was because the accounts of the participants were regarded as credible if they were quickly recognized by people who have had similar experiences. And so, to ensure credibility, the researcher employed the following methods, including prolonged and varied field experience. Furthermore, triangulation was used, which refers to applying three different methods of collecting data. In this case, non-participant observation and semi-structured interviews were employed to collect data. Member checking was conducted by allowing participants to review transcripts for accuracy. Audit trails were maintained to document coding decisions, ensuring transparency and dependability of the analysis.

Table 1: LSEN teachers' school profile

Participant	School Type	Grade	Subject	Learner Profile
Teacher A	Special School 1	9	Technology	Autism, intellectual disabilities, behavioural disorders
Teacher B	Special School 2	9	Technology	Autism, intellectual disabilities, behavioural disorders

²⁴ Shulman, "Knowledge and Teaching: Foundations of the New Reform."

²⁵ Victoria Clarke and Virginia Braun, "Thematic Analysis," *The Journal of Positive Psychology* 12, no. 3 (May 4, 2017): 297–98, <https://doi.org/10.1080/17439760.2016.1262613>.

²⁶ Yvonna S. Lincoln and Egon G. Guba, "Ethics: The Failure of Positivist Science," *The Review of Higher Education* 12, no. 3 (1989): 221–40, <https://doi.org/10.1353/rhe.1989.0017>.

PRESENTATION AND DISCUSSION OF FINDINGS

When studying the pedagogical challenges facing Technology teachers in special needs classrooms, this study discovered that teachers experienced the following challenges:

- Emotional labour of teaching.
- Teacher burnout in LSEN settings.
- Rural education constraints and the intersection of disability

The above-mentioned themes are unpacked succinctly below:

Emotional labour of teaching

More often, teachers are recruited based on their knowledge of a subject matter and, to some extent, their general teaching experience. However, due to the significant amount of multi-tasking (i.e. excessive admin and extra-mural activities), teachers tend to struggle in balance lesson planning and the classroom control needed to express desired emotions.²⁷ And so, teachers indicated challenges in meeting their learners' emotional needs; see the extract below.

“Some of our learners have attention disorder, while others need empathy from us whenever they have not done their classwork and homework. It is impossible for me to always pay attention to their needs as I need to finish the pacesetter”. (Teacher Interview)

Another teacher offered a buttressing view to this, stating that

“The department is not always concerned with the kind of learners we are teaching. They need us to finish the curriculum and assess on given dates. This is straining us, as some of these learners take some extra time to understand the technology concepts”. (Teacher Interview)

It is evident from the above extract that teachers are compelled by circumstances to numb their emotional attachments to their learners and focus on the work schedules that seem unfriendly towards learners with special needs. When it comes to planning for teaching, both teachers encountered challenges in lesson planning, despite recognising its importance; see the passage below:

“I do my lesson plans at home because there is not enough time to do that here. Even during break times, we are tasked with ground duty activities, making it hard to focus on the content”
Teacher Interview.

The second teacher also indicated that she does not plan lessons when she has free periods.

“Because every morning in our school we have morning briefing, I use that time to also prepare for my lessons, although it is not what I do every time.” Teacher Interview

This finding aligns with previous studies highlighting that special needs teachers often struggle to translate curriculum requirements into structured, actionable plans because of the emotional labour of teaching, among other things.²⁸ Shulman's PCK framework stresses that effective lesson planning requires integration of content knowledge with pedagogical strategies tailored to learners' characteristics.²⁹ However, in the case of these teachers, it seemed they had no chance to design lesson plans tailored for learners with special needs. The observed difficulties suggest gaps in pedagogical knowledge, particularly in adapting lesson flow to accommodate diverse learner needs and potential classroom disruptions. This underscores the necessity for targeted professional development focused on adaptive lesson design in LSEN contexts.

²⁷ Anna Kariou et al., “Emotional Labor and Burnout among Teachers: A Systematic Review,” *International Journal of Environmental Research and Public Health* 18, no. 23 (December 3, 2021): 12760, <https://doi.org/10.3390/ijerph182312760>.

²⁸ Tyrone O. Gil Jr., “Curriculum Models in Gifted Education: A Comparative Study for 21st-Century Schools,” *Journal of Education Research* 6, no. 4 (September 19, 2025): 945–60, <https://doi.org/10.37985/jer.v6i4.2885>; Diocelle O Taghap and Asuncion P Pabalan, “Understanding Challenges in The Implementation of Inclusive Education Through The Lens of Educational Management,” *Ignatian International Journal for Multidisciplinary Research* 3 (2025).

²⁹ Shulman, “Knowledge and Teaching: Foundations of the New Reform.”

Teacher burnout in LSEN setting

Contrary to the general belief that teachers have it easy in LSEN schools because they have relatively smaller learner enrolment than ordinary schools. Teachers tend to leave these schools at the first chance they get to ordinary schools;³⁰ see the supporting excerpts below.

“Some of our colleagues could not stay even a year in this school because they could not cope with some of the learners' special needs. Before joining this school, my friends used to say that they could go to an LSEN school for promotional positions”. (Teacher Interview)

Another teacher brought a different view that causes burnout in LSEN schools; see below:

“Parents are not always present to assist us in the teaching and learning journey of their children. We often get unpleasant feedback from them during book viewing season, and some do not give constructive criticism on how we teach and how we conduct enrichment classes.” (Teacher Interview)

From the above passage, it can be inferred that most teachers are experiencing burnout for various reasons, including lack of parental support and habitual resignation of teachers. This is supported by Jala, along with Van Rensburg et al., that most teachers in LSEN settings do not have adequate teacher training for the LSEN and often make mistakes in the pedagogies they ought to enact in their classroom lives.³¹ As a consequence, it is likely that teachers would constantly experience this burnout.

- **Rural education constraints and the intersection of disability**

The expanded version of PCK in 1987 covered the need for teachers to demonstrate knowledge of learners and their characteristics as well as educational ends, purpose and values. Together, these concepts sought to equip teachers with tacit, cultural and strategic knowledge that can invoke coping mechanisms when teaching learners with special needs in rural communities. It is worth noting that, during prolonged engagements with the teachers, they both indicated that they were born and grew up in other provinces and that they went to multicultural and racially diverse schools which were mainly in urban areas. This is important as it provides the context for their response to the challenges they encounter in the LSEN schools; see below:

“One of the issues I experience in class is my learners' pre-existing knowledge, which I struggle to connect with. You must understand that some of these learners, if not all, grew up in isolation because of their condition. And so, when you try to find out what they already know about Technology concepts, you get shocked that we live in a different world.” Teacher Interview

Another teacher said

“Most of our learners are not exposed to many things, and that always delays our pace of teaching. I use charts to demonstrate some concepts, but you can see how difficult it is for them to understand what you are saying.” Teacher Interview

The above sentiments illustrate the challenge of connecting with learners in rural areas, let alone with learners who are not as social as those in ordinary schools. Teachers reported difficulties in covering the full curriculum scope due to learners' varied (dis)abilities, enactment of prior knowledge, and retention challenges. Teacher A highlighted that some learners require more time to grasp concepts, while Teacher B noted the need to recap lessons frequently, limiting content coverage. These findings echo research indicating that learners with intellectual disabilities may experience memory and

³⁰ Kekana, Mtshali, and Ramaligela, “Inventive Ways of Teaching Mechanical Systems and Control to Grade 9 Learners with Special Learning Needs.”

³¹ Chibert L Jala, “A Narrative Inquiry of Special Needs Teachers in Educating Learners with Special Educational Needs and Disabilities,” *Ignatian International Journal for Multidisciplinary Research* 3, no. 7 (2025); van Rensburg et al., “Navigating Learning for Learners with Special Educational Needs (LSEN) in South Africa: Barriers and Recommendations.”

retention limitations, which can impede curriculum completion.³² The results highlight a tension between curriculum mandates and the practical realities of inclusive classrooms. Shulman's framework suggests that content knowledge must be complemented by pedagogical strategies that consider learner readiness and prior knowledge.³³ These findings reinforce the need for flexible curriculum adaptation, differentiated instruction, and ongoing formative assessment to support both learner progress and curriculum coverage.

The findings reveal that teachers attempted to elicit prior knowledge through verbal questioning and visual prompts, yet struggled to consistently identify learners' pre-existing understanding. Teacher A reported using verbal questioning, while Teacher B used images from the charts and the internet to engage learners. These strategies align with best practices emphasizing the importance of activating prior knowledge to scaffold new learning.³⁴ However, the inconsistency in implementation indicates a need for further development of diagnostic pedagogical strategies that can accurately gauge learners' prior understanding and inform lesson delivery. Nambiar and Jaya stress that teachers must identify essential and nonessential prior knowledge to tailor instruction effectively.³⁵ This finding illustrates a gap in PCK, particularly in adapting content to learners' cognitive and experiential backgrounds, which is critical in special needs education.

Collectively, the findings reveal persistent gaps in pedagogical preparedness and curriculum knowledge, knowledge of learners and their characteristics, as well as autonomous critical pedagogy among teachers in LSEN classrooms. Challenges in lesson planning, curriculum coverage, and eliciting prior knowledge highlight the complex interplay between content knowledge, pedagogical knowledge, and learner characteristics as conceptualized by Shulman.

Discussion summary

This study's findings demonstrate that Technology teachers experienced various challenges in sustaining a positive learning environment in their classrooms because of excessive administrative and co-curricular activities that added to their emotional labour of teaching. Most teachers indicated that parents were not as supportive in aiding better performance of their children in school life. The findings further reveal that teachers who experienced burnout in LSEN settings moved to ordinary schools at the first chance they got. This was shared by one teacher who indicated that because of institutional inequalities, most teachers only considered LSEN schools when there are promotional positions. This view was buttressed by the fact that both teachers came from urban areas and had challenges in connecting with learners' pre-existing knowledge, which challenged their creative pedagogy. The study's findings corroborate existing literature emphasizing the challenges of inclusive education in under-resourced contexts. Tshiloane and Sefotho expressed the need for additional support and training to implement inclusive strategies effectively.³⁶ However, how does training of teachers alleviate the excessive administration they carry every day? The teachers indicated that they either plan lessons in the morning or at home; this illustrates the burnout tendencies in a schooling environment. Motitswe paints a vivid picture of the consequences of a teacher who cannot enact their PCK effectively.³⁷ This includes poor management and facilitation of prior knowledge and achievement of curriculum objectives. Learners in LSEN schools demand a lot of attention from the time they sit in the morning, how they interact with their peers and ultimately create a connection between their world and new concepts. In the case of the sampled teachers, the PCK challenges were driven by emotional

³² Esie Zandile Msimango and Thokozani Isaac Mtshali, "The Role of Practical Activities in Teaching Mechanical Systems and Control," *Jurnal EDUCATIO: Jurnal Pendidikan Indonesia* 11, no. 2 (December 27, 2025): 67–72, <https://doi.org/10.29210/1202526099>; Sally Bailey, Richard Hastings, and Vasiliki Totsika, "Teaching Learners with Intellectual Disabilities: Curriculum Challenges and Strategies," *Journal of Special Education Practice* 22, no. 3 (2021): 145–62.

³³ Shulman, "Knowledge and Teaching: Foundations of the New Reform."

³⁴ Ping Dong, Jen Jong, and Frances King, "Activating Learners' Prior Knowledge for Effective Learning in Inclusive Classrooms," *Journal of Special Needs Education* 35, no. 2 (2020): 89–102.

³⁵ Jaya Kumari Kumaraswamy Indira Kumari Nambiar, "Combining Symbolic Reasoning with Neural Networks: Toward Hybrid AI Systems," 2024.

³⁶ Tshiloane and Sefotho, "Teachers' Experiences of Implementing Inclusive Education in Rural South African Schools."

³⁷ Motitswe, "Challenges of Implementing Inclusive Education Policy in South Africa: A Teacher Perspective."

detachment, excessive labour of teaching and understanding the rural context in which the schools were surrounded.

RECOMMENDATIONS

Based on the findings and discussion, it is recommended that the sampled teachers be capacitated with educational technologies to assist in facilitating lessons. Most importantly, help them learn the rural and social context of the LSEN environment. This will enable good flow and activation of pre-existing knowledge, diagnose conceptual errors and save lesson preparation time. This study also recommends support through teacher assistants who will bear the extracurricular and administrative duties of these LSEN teachers.

CONCLUSION

The purpose of this study was to explore and understand the pedagogical challenges faced by Technology teachers in special needs classrooms. The findings demonstrate that while teachers in LSEN classrooms possess awareness of pedagogical strategies, systemic challenges such as the emotional labour of teaching, teacher burnout in LSEN settings, institutional inequalities, as well as rural education constraints and the intersection of disability are key constraints on their effective teaching. As it pertains to classroom practice, the study discovered that teachers could not effectively engage with Technology content because of curriculum rigidity, learner diversity, and limited support in dealing with the LSEN environment. By linking these findings to Shulman's PCK framework, the study concludes that teachers need to improve their knowledge of learners and their characteristics, curriculum knowledge and knowledge of the educational context. The contribution of this study in inclusive education is that it has proven the glaring gaps pertaining to the professional development of teachers and their level of pedagogy as it relates to the LSEN environment. This study calls for re-evaluation of policy-aligned guidelines existing in LSEN schools to consider retention strategies for teachers and increase learners' outcome attainment.

Limitations

The opinions shared by the participants in the study do not accurately reflect those of the broader status of LSEN teachers in rural schools.

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The authors would like to acknowledge all respondents who participated in this study. Overall, the findings show that gaps across these three PCK components hinder effective teaching in LSEN classrooms. Addressing these gaps through professional development, targeted strategies, and learner-focused interventions is essential for improving teaching and learning outcomes.

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