P-ISSN: 2709-6254	Journal of Development and Social Sciences	Jul-Sep 2022, Vol. 3, No. 3
O-ISSN:2709-6262	http://dx.doi.org/10.47205/jdss.2022(3-III)81	[867-878]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

Classroom Dynamics in Government Special Education Institutions for Students with Hearing Impairment in Punjab-Pakistan

[1]Asma Kanwal* [2]Rukhsana Bashir

1. PhD Scholar, Institute of Special Education, University of the Punjab, Lahore, Punjab, Pakistan
2. Assistant Professor, Institute of Special Education, University of the Punjab, Lahore, Punjab, Pakistan

***Corresponding Author:** asma.kanwal@ue.edu.pk

ABSTRACT

This qualitative study examined classroom dynamics in government special education institutions for hearing-impaired students in Punjab. The focus was on the CIPP evaluation model's process indicators, including the classroom environment, instructional practices, classroom management, student engagement, and assessment procedures. Simple random sampling selected eight institutions for non-participant observations in primary-level classes. Thematic analysis revealed substandard practices related to congestion, inadequate furniture, cleanliness, outdated instructional methods, limited planning, low student engagement, inconsistent sign language use, and unsatisfactory assessment procedures. Urgent improvements are needed, including addressing overcrowding, providing teacher training, implementing diverse assessments, and improving management practices.

KEYWORDS Classroom Dynamics, Government Special Education, Students with Hearing Impairment

Introduction

Education should recognize and embrace individuals' unique potentials, tailoring learning activities accordingly (Rohman, 2016). Quality classroom instruction is vital, and teachers' ongoing professional development enhances instruction (Sebastian et al., 2017; Greenleaf et al., 2018; Liang et al., 2020).

Effective lesson planning involves considering context, students' needs, and selecting appropriate strategies (John, 2006; Ericsson, 2018). Challenges in lesson planning include limited experience, access to materials, aligning with students' interests, and discrepancies between assessment methods and objectives (Cuñado & Abocejo, 2019). The integration of media in teaching has transformed instructional practices, creating dynamic and engaging learning experiences (Endedijk, 2014). Key principles guide the selection of learning methods and materials, including suitability, accuracy, fluency, and continuity (Rusman, 2011).

Classroom interaction practices are hindered by the absence of learning materials and poor physical conditions, diminishing student engagement and enjoyment of lessons (Ackers & Hardman, 2001). Teacher guidance and interactive activities contribute to students' enjoyment of learning (Wambui, 2005; Katiambo et al., 2019).

Classroom management is essential for establishing an environment conducive to academic and behavioral learning (Evertson & Weinstein, 2006; Marzano et al., 2003). Active participation during lessons significantly impacts learning outcomes (Baker et al., 2008; Greenwood et al., 2002). Recognizing and catering to each child's unique characteristics is crucial for equal opportunities in personal development (MacAllister & Riddell, 2019). Proper classroom lighting and indoor air quality significantly impact students'

concentration and learning efficiency (Liu et al., 2021; Stabile et al., 2017; Bakó-Biró et al., 2012).

Deaf and Hard of Hearing (DHH) students require inclusive education, addressing their diverse needs and communication preferences (Krywko, 2012; Rekkedal, 2012; Knoors & Marschark, 2012). Collaboration among families, educators, and professionals is vital for supporting the educational success of DHH students (Yoshinaga-Itano, 2014).

Integrating a noise monitoring app and optimizing the visual environment help create an inclusive learning environment (Almutlaq et al., 2014; Smith, 2010; Cawthon, 2001). Captioning options and instructional adjustments support accessibility and comprehension in teaching videos (The National Center on Disability and Access to Education, 2018).

Modifying the physical learning environment and employing tailored strategies and technologies enhance engagement and comprehension for hearing-impaired students (Guardino & Antia, 2012; Chen, 2014). Promoting sign language proficiency and valuing sign language create an inclusive learning environment (Lieberman et al., 2000). Integrating audio-visual elements in digital learning materials benefits hearing-impaired students (Pilonieta-Cortés et al., 2019; Gentry et al., 2004; Chang, 2007).

Material and Methods

CIPP Model and Process Indicator

This study examined the implementation of classroom practices and management techniques in special education institutions for hearing-impaired students, specifically focusing on the process indicator of the CIPP model.

Research Design: Qualitative Approach

A qualitative research design is appropriate for exploring the phenomenon "classroom dynamics".

Sampling

The research randomly selected eight special education institutions in Punjab, with one school and one center from each of the four zones. Twenty observations were conducted in total, including three classes from the school and two classes from the center in each institution. All selected classes were in the primary section and catered exclusively to students with hearing impairment.

Data Collection

The researcher conducted non-participant direct observations in the selected classrooms, taking detailed field notes. Consent was obtained from the participants, and ethical considerations were upheld. Follow-up discussions were held with teachers, students, and administration to gather additional insights and clarification after the observations.

Data Analysis

Thematic analysis was employed to analyze the collected data, including the field notes and additional insights from participants. The data was transcribed, organized, and coded to identify recurring themes and patterns related to classroom dynamics.

Validity and Credibility

To enhance validity, member checking was conducted, allowing participants to review the analysis for accuracy. A second researcher verified the coding and thematic analysis, ensuring study credibility.

Discussion of Findings Derived from Thematic Analysis

Following are the major themes with their subthemes from classroom dynamics.

Theme 1: Classroom Environment

Subtheme 1.1: Lighting and Ventilation in Classrooms

During classroom observations, satisfactory lighting and ventilation conditions were observed, with adequate illumination and a combination of natural and artificial lighting. However, classrooms with multiple simultaneous classes were cramped and lacked space. Some rented educational institutions faced challenges related to inadequate ventilation, lighting, and air circulation. Addressing these concerns is crucial to create an optimal learning environment (Korsavi et al., 2020).

Subtheme 1.2: Condition of the Furniture

The condition of the furniture in the observed classrooms generally matched the number of students. Most classes were equipped with wooden and iron desks, along with benches and tables combined. The overall condition of the furniture was satisfactory. However, some classrooms lacked cupboards, and in certain cases, the whiteboards were not properly hung on the walls, posing potential dangers to children. On the whole, the condition of the furniture was deemed average (Ackers & Hardman, 2001).

Subtheme 1.3: Cleanliness

The observed classrooms exhibited a lack of cleanliness, with inconsistent cleaning practices and dirty floors, walls, and other items. Cobwebs, dust on windows and doors, and waste materials under desks were also observed. It appeared that cleaning was merely performed as a formality. Classrooms with dedicated cleaning staff and regular routines provided a hygienic and pleasant learning environment, while those lacking such practices hindered student focus and created an uninviting atmosphere (Siddiqui, 2007).

Subtheme 1.4: Room Temperature

Suffocating temperatures were frequently experienced in the observed classrooms, particularly during summer. Power outages led to inadequate ventilation and lighting, with no alternative accommodations available. Gas scarcities hindered the usage of heating facilities in urban institutions, and in one center, donated heaters and geysers couldn't be used due to the absence of a gas meter. Poor temperature control in classrooms may impact productivity (Stabile et al., 2017; Bakó-Biró et al., 2012).

Subtheme 1.5: Soundproofing

The classrooms observed in Special Education Institutions catering to students with hearing impairments (SWHI) were found to be lacking soundproofing. Several of these institutes were situated in areas with heavy traffic, leading to a noisy learning environment. The absence of soundproofing posed challenges for students, particularly those with mild to moderate hearing impairments, as well as for teachers in effectively concentrating and communicating. The lack of soundproofing resulted in a disruptive learning environment, with external noise infiltrating the classroom space (Nelson et al., 2020).

Subtheme 1.6: Use of Display Surfaces

In the observed classrooms, walls, windows, cupboards, and doors were painted or whitewashed, and decorative displays adorned the interior spaces. Some teachers effectively used these surfaces to present engaging learning materials, aiming to stimulate the learning of students and reinforce classroom etiquette.

However, in some cases, excessive visual materials led to overcrowded walls without clear learning objectives. This approach may have hindered students' focus and comprehension, causing potential distractions. It is crucial for teachers to strike a balance between visually appealing displays and ensuring clear, understandable information.

Subtheme 1.7: Class Size

The student-teacher ratios observed in SWHI classrooms frequently surpassed the recommended standards, as multiple grade levels were taught in a single room (Batool & Liaqut, 2013). Managing this situation proved challenging for teachers, resulting in various problems:

Lack of individual attention: The large number of students made it difficult for teachers to provide individual attention, leaving some students feeling neglected and without the necessary support for their success.

Limited interaction: With numerous students in a classroom, teachers had limited opportunities for regular interaction with each student, which restricted students' ability to ask questions, participate in discussions, and receive feedback.

Classroom management: Managing a large classroom became challenging for teachers. They struggled to maintain discipline, organize the class effectively, and monitor student behavior.

Reduced engagement of students: High student-teacher ratios in classrooms led to reduced student engagement and motivation. Insufficient individualized attention and support hindered students' willingness to actively participate in lessons and engage with the material.

Exhaustion: Teachers handling a large number of students often experienced overwhelming feelings and burnout. The demanding workload and challenges in addressing students' needs contributed to lower job satisfaction. Prolonged exposure to high stress levels adversely affected their mental and physical well-being, potentially leading to health issues.

Theme 2: Instructional Practices

Subtheme 2.1: Lesson Plans/Teacher's Diary/Planner

During the classroom observations, it became apparent that a considerable number of teachers did not possess well-defined lesson plans or comprehensive planners on daily, weekly, or monthly basis. While some teachers had syllabi, not all students had access to textbooks, which further compounded the issue. Consequently, many teachers lacked clear objectives or goals for their lessons, led to a lack of consistency in their instructional style. While a few teachers utilized teacher diaries as planners, their planning inside these diaries was insufficient, resulting in a lack of direction in their teaching methods.

Furthermore, only a small percentage of students had access to textbooks, leaving others to rely on copying notes from the board. This approach resulted in exam preparation solely based on these limited notes, potentially affecting the depth of understanding and learning outcomes (John, 2006; Ericsson, 2018).

Subtheme 2.2: Whiteboard Usage

In the observed classrooms, the use of whiteboards was predominant, although a few classrooms still relied on traditional blackboards and chalk. The overall condition of the whiteboards was average, with smudges and unclear surfaces resulting from repeated use. While teachers made use of the whiteboards, it was observed that only a few utilized them effectively. The board division and organization in the observed classrooms were often inadequate. Significant information (date/attendance/objectives/subject/unit name/and headings) were not regularly cited. Limited space on the board was a challenge in classrooms with multiple simultaneous classes. Some teachers lacked proper cleaning materials and different colored markers, affecting visual clarity and organization.

Subtheme 2.3: Instructional Methods & Strategies

Teachers in the observed classrooms predominantly utilized outdated and lecture-style teaching methods, even for practical concepts. These methods did not consider the individual needs of students or the potential benefits of personalized assistance or group instruction. Few teachers incorporated content-related activities specifically designed for students with hearing impairments.

Students copied content from the board while the teacher or senior students checked their classwork and assigned homework. Senior students had excessive responsibility towards lower grades. Neglect of Urdu and English reading comprehension skills was a concern (El-Zraigat, 2011). The lack of engaging activities may have resulted in passive learning, limited participation, and reduced attentiveness and motivation among students (Albertini et al., 2012).

Teachers had managerial responsibilities, distracting from teaching. Staff shortages resulted in overwhelming workloads and compromised efficiency. This affected the quality of education. SWHI students struggled with basic reading, writing, and numeracy skills, impacting higher-level performance (Hamenoo, 2017; Farooq et al., 2011; Umar, 2017).

Subtheme 2.4: Communication Method

The study found that while some teachers attempted to incorporate sign language alongside speech when teaching students with hearing impairments, there was a lack of consistent use of the total communication method. This method combines speech with sign language, but it was not used appropriately. Many teachers were not fluent in sign language and lacked proper non-manual parameters like facial expressions or body language. Additionally, teachers often used incomplete signs, improper grammar, and varied sign language systems. To address these issues, it is important to provide teachers with comprehensive training in sign language and subject matter knowledge. Training programs should focus on improving fluency, non-manual parameters, and grammar rules in sign language (Zhu et al., 2022; Hassan et al., 2021).

Subtheme 2.5: Instructional Materials

The primary instructional material observed in the classrooms was the whiteboard, which most teachers effectively used to incorporate visual aids such as pictures, shapes, and diagrams alongside text. Line drawings were commonly used for teaching mathematical concepts. However, the use of additional resources like flashcards or projected media was limited. Only one teacher incorporated a video clip on a mobile phone to teach the topic of "Thirsty Crow," highlighting a rare instance of digital media integration (Wijoyo, 2018; Igbo & Omeje, 2014).

Theme 3: Classroom Management Practices

Subtheme 3.1: Seating Arrangement

Teachers in the observed classrooms predominantly used a traditional line-wise seating arrangement, with only a few adopting student-centered configurations like semi-circular or U-shaped seating. The line-wise arrangement limited student interaction, collaboration, and engagement in the learning process. In classrooms with multiple grade levels, the seating arrangements often became crowded, disregarding individual student needs. Students with vision or hearing impairments were sometimes placed in unfavorable positions, resulting in discomfort, difficulties in focusing, and compromised learning experiences (Guardino & Antia, 2012).

Subtheme 3.2: Personality of Teachers

Most teachers maintained a professional appearance, dressing neatly and adhering to teaching decorum, which contributed to a respectful learning environment. However, two teachers deviated from the dress code, wearing casual or inappropriate attire, undermining their professionalism. One teacher exhibited excessive makeup and jewelry, while another appeared disheveled.

While most teachers displayed a positive and respectful demeanor, fostering inclusivity, a small number exhibited negativity and impatience towards students with hearing impairment, negatively affecting the teaching environment. (Khalilzade & Khodi, 2021).

Subtheme 3.3: Managing Assistive Technology Devices used by Students

Teachers lacked consistency in checking if students using assistive listening devices were wearing them, potentially depriving them of necessary support. The volume of these devices was often not adjusted to individual needs, hindering students' ability to hear and participate. In one instance, a student's hearing aid produced an annoying sound, but the teacher didn't address the issue and instructed the student to remove it instead. There was a lack of effort to inform parents or provide proper instructions and guidance on device maintenance. Seating arrangements didn't consider the needs of students with hearing impairments and their assistive devices, hindering equal access to learning opportunities. Considering these specific needs can create a more inclusive and supportive learning environment (Peters et al., 2019).

Subtheme 3.4: Classroom Discipline Maintenance

Most teachers were able to maintain good class control by assigning class monitors and effectively managing multiple classes. However, some teachers relied too heavily on certain students, creating an imbalance. A few teachers had an authoritarian demeanor, limiting student participation. Inadequate strategies for discipline maintenance were observed in some classrooms, leading to off-task behaviors. Students themselves contributed to classroom disruption with noise and disturbances. Balancing authority, employing effective discipline strategies, and addressing disruptive behaviors can create a positive learning environment (Stage & Quiroz, 1997).

Theme 4: Students' Engagement Practices

Subtheme 4.1: Lack of Effective Participation Methods

During the observations of teachers' practices, it was evident that specific or effective approaches for encouraging pupil involvement in the schoolroom. The utilization of question and answer sessions was limited, with only a small number of teachers incorporating this approach to assess students' prior knowledge for formative or summative assessments. Similarly, the use of worksheets for comprehension assessment was infrequent, with only one class implementing this strategy. Moreover, peer teaching strategies, which have been found to enhance student engagement, were adopted by merely two teachers (Lieberman et al., 2000). The overall lack of diverse participation methods

limited students' active involvement in the learning process (Baker et al., 2008; Greenwood et al., 2002).

Subtheme 4.2: Student Reliance on Teacher's Notes and Explanations

Throughout the observations, it became apparent that students heavily relied on the notes and explanations provided by their teachers. Rather than actively seeking clarification through their own questions, students passively absorbed the information presented to them. This reliance on teacher-provided materials hindered students' ability to develop critical thinking and problem-solving skills. It also limited their autonomy in exploring and comprehending the subject matter independently.

Subtheme 4.3: Teachers' Limited Awareness of Student Confusion

Despite some students displaying signs of perplexity or confusion, their teachers appeared oblivious to their needs. Teachers failed to notice and address the confusion exhibited by certain students, resulting in a lack of support and guidance. This oversight hindered the students' ability to fully grasp the concepts being taught and impeded their overall engagement in the learning process.

Subtheme 4.4: Insufficient Alignment of Questions with Learning Objectives

An observation made during the study was that most teachers did not pose purposeful questions that aligned with the learning objectives. Instead, they would often ask generic questions such as "Do you understand?" without delving into the specific content being taught. This lack of alignment prevented students from actively thinking and reflecting on the subject matter, as they could simply respond with a vague "yes" without truly comprehending the material. The absence of targeted and thought-provoking questions limited students' deeper engagement with the curriculum (Cuñado & Abocejo, 2019).

Subtheme 4.5: Lack of Individual and Group Activities

Another notable finding was the absence of individual and group activities designed to promote active learning and student participation. Observations indicated that teachers did not implement such activities in the classroom, focusing primarily on traditional lecture-style teaching. The lack of opportunities for students to engage in hands-on tasks, collaborative projects, or discussions hindered their active involvement and restricted the development of their critical thinking and problem-solving skills (Nkhwalume, 2005).

Theme 5: Assessment, Feedback & Reinforcement

Subtheme 5.1: Types of Assessments

It was found that teachers primarily relied on question and answer sessions and checks of copied classwork for assessments. Board-solving activities and peer assessments were used sparingly.

Subtheme 5.2: Feedback Methods

Teachers employed various feedback methods, including verbal feedback, signs of appreciation, star rewards, and peer feedback.

Subtheme 5.3: Lack of Constructive Feedback

Unfortunately, there was a lack of constructive feedback for students who performed poorly. Instead of providing guidance for improvement, some teachers resorted to negative feedback, leading to student humiliation (Kluger & DeNisi, 1998).

Subtheme 5.4: Role of Senior Students

Senior students were involved in checking homework and providing feedback, but teachers did not consistently supervise their work or provide their own feedback.

Subtheme 5.5: Absence of Performance Display

No notice boards or display surfaces were present in any classroom to showcase students' performance, feedback, appreciation, or motivation.

Subtheme 5.6: Homework Practices

Teachers checked homework along with classwork, often assigning new homework on the next page of the notebook. Senior students were involved in checking homework, but teachers did not always supervise or provide feedback. Only a few teachers mentioned homework in student diaries for parental guidance (Cosden et al., 2001).

Subtheme 5.7: Impact on Learning Outcomes: The assessment, feedback, and reinforcement practices had a negative impact on students' learning outcomes and academic performance, as the methods used were insufficient to gauge comprehension and provide targeted support (Maller et al., 2003).

Conclusion

The study revealed significant deficiencies in the teaching and learning process at primary level for SWHI, potentially impacting their academic performance. The findings underscored the criticality to address these findings for enhancing the educational experience, fostering a supportive environment, and ensuring high-quality learning outcomes for hearing-impaired students.

Recommendations

Based on the following recommendations were made to enhance the educational experience and outcomes for students with hearing impairment:

1. Teachers in special education institutions for students with hearing impairments should receive specialized training in effective teaching strategies, including the use of assistive technology and visual aids.

2. They should also learn sign language or other communication methods to facilitate inclusive communication.

3. Leveraging technology tools and providing regular professional development opportunities are crucial for enhancing learning experiences and supporting these students.

4. School administration should allocate essential resources, including assistive technology, visual aids, and specialized teaching materials, while fostering a collaborative and supportive environment.

5. A system should be developed for monitoring and evaluating the implementation of quality teaching learning process for students with HI.

References

Ackers, J., & Hardman, F. (2001). Classroom interaction in Kenyan primary schools. *Compare: a journal of comparative and international education*, *31*(2), 245-261.

Albertini, J. A., Kelly, R. R., & Matchett, M. K. (2012). Personal factors that influence deaf college students' academic success. *Journal of deaf studies and deaf education*, *17*(1), 85-101.

Almutlaq, S., Kanjo, E., & Alsafadi, L. (2014, November). Zone-based indoor mobile noise monitoring. In *6th International Conference on Mobile Computing, Applications and Services* (pp. 164-165). IEEE.

Baker, J. A., Clark, T. P., Maier, K. S., & Viger, S. (2008). The differential influence of instructional context on the academic engagement of students with behavior problems. *Teaching and Teacher Education*, *24*(7), 1876-1883.

Bakó-Biró, Z., Clements-Croome, D. J., Kochhar, N., Awbi, H. B., & Williams, M. J. (2012). Ventilation rates in schools and pupils' performance. *Building and environment*, *48*, 215-223.

Batool, S. & Liaqut, S. (2013). *Opinions of experienced teachers about the teaching of students with hearing impairment* (Unpublished master's thesis). Department of Special Education, University of the Punjab, Lahore.

Cawthon, S. W. (2001). Teaching strategies in inclusive classrooms with deaf students. *Journal of deaf studies and deaf education*, *6*(3), 212-225.

Chang, H. (2007). Visual feedback training to promote mandarin disyllabic tone perception and production in hearing-impaired children. *Bulletin of Special Education*, *32*(4), 47-64.

Chen, Y. T. (2014). A study to explore the effects of self-regulated learning environment for hearing-impaired students. *Journal of computer assisted learning*, *30*(2), 97-109.

Cosden, M., Morrison, G., Albanese, A. L., & Macias, S. (2001). When homework is not home work: After-school programs for homework assistance. *Educational psychologist*, *36*(3), 211-221.

Cuñado, A. G., & Abocejo, F. T. (2019). Lesson planning competency of English major university sophomore students. *European Journal of Education Studies, 5*(8), 395-409. Open Access Publishing Group.

El-Zraigat, I. (2011). Assessing reading skills among hearing-impaired students in Jordan and its relation to some variables. *Dirasat: Educational Sciences*, *38*(4), 1276-1292.

Endedijk, M. D., Donche, V., & Oosterheert, I. (2013). Student teachers' learning patterns in school-based teacher education programmes: the influence of person, context and time. In *Learning patterns in higher education* (pp. 118-138). Routledge.

Ericsson, K. A. (2018). The differential influence of experience, practice, and deliberate practice on the development of superior individual performance of experts. Cambridge University Press.

Evertson, C. M., & Weinstein, C. S. (2006). Classroom management as a field of inquiry. *Handbook of classroom management: Research, practice, and contemporary issues*, *3*(1), 16.

Farooq, M. S., Chaudhry, A. H., Shafiq, M., & Berhanu, G. (2011). Factors affecting students' quality of academic performance: A case of secondary school level. *Journal of quality and technology management*, *7*(2), 1-14.

Gentry, M. M., Chinn, K. M., & Moulton, R. D. (2004). Effectiveness of multimedia reading materials when used with children who are deaf. *American Annals of the Deaf*, *149*(5), 394-403.

Greenleaf, C., Litman, C., & Marple, S. (2018). The impact of inquiry-based professional development on teachers' capacity to integrate literacy instruction in secondary subject areas. *Teaching and Teacher Education*, *71*, 226-240.

Greenwood, C. R., Horton, B. T., & Utley, C. A. (2002). Academic engagement: Current perspectives on research and practice. *School Psychology Review*, *31*(3), 328-349.

Guardino, C., & Antia, S. D. (2012). Modifying the classroom environment to increase engagement and decrease disruption with students who are deaf or hard of hearing. *Journal of Deaf Studies and Deaf Education*, *17*(4), 518-533.

Hamenoo, E. S. (2017). Academic Challenges of Students with Hearing Impairment (SHIs) in Ghana. Stichting Liliane Fonds.

Hassan, A., Elgabry, A., & Hemayed, E. (2021, December). Enhanced dynamic sign language recognition using slowfast networks. In *2021 17th International Computer Engineering Conference (ICENCO)* (pp. 124-128). IEEE.

Igbo, J. N., & Omeje, J. C. (2014). Perceived efficacy of teacher-made instructional materials in promoting learning among mathematics-disabled children. *Sage Open*, *4*(2), 2-6. 2158244014538431.

John, P. D. (2006). Lesson planning and the student teacher: re-thinking the dominant model. *Journal of Curriculum Studies*, *38*(4), 483-498.

Katiambo, D., Mutsotso, S. N., & Wasike, D. W. (2019). Classroom interaction patterns and students' learning outcomes in secondary school mathematics in Kenya. *International Journal of Science and Research*, *8*(9), 1405-1409.

Khalilzadeh, S., & Khodi, A. (2021). Teachers' personality traits and students' motivation: A structural equation modeling analysis. *Current Psychology*, *40*(4), 1635-1650.

Kluger, A. N., & DeNisi, A. (1998). Feedback interventions: Toward the understanding of a double-edged sword. *Current directions in psychological science*, *7*(3), 67-72.

Knoors, H., & Marschark, M. (2012). Language planning for the 21st century: Revisiting bilingual language policy for deaf children. *The Journal of Deaf Studies and Deaf Education*, *17*(3), 291-305.

Korsavi, S. S., Montazami, A., & Mumovic, D. (2020). Indoor air quality (IAQ) in naturally-ventilated primary schools in the UK: Occupant-related factors. *Building and Environment*, *180*, 106992.

Krywko, K. (2012). The changing landscape of deaf education. *Volta Voices*, *19*(6), 8.

Liang, X., Collins, L. J., Lenhart, L., & Ressa, V. (2020). Instructional change following formative instructional practices professional development. *Teacher Development*, *24*(1), 108-125.

Lieberman, L. J., Dunn, J. M., Van der Mars, H., & McCubbin, J. (2000). Peer tutors' effects on activity levels of deaf students in inclusive elementary physical education. *Adapted Physical Activity Quarterly*, *17*(1), 20-39.

Liu, Y., Zhang, S., Wu, Y., & Yang, D. (2021). Studies on visual health features of luminous environment in college classrooms. *Building and Environment*, *205*, 108184.

Macallister, J., & Riddell, S. (2019). Realising the educational rights of children with special and additional support needs: Paradigm change or more of the same?. *International Journal of Inclusive Education*, *23*(5), 469-472.

Maller, S. J., Marshark, M., & Spencer, P. E. (2003). Intellectual assessment of deaf people: A critical review of core concepts and issues. In M. Marschark & P. E. Spencer (Eds.), *Handbook of deaf studies and deaf education* (pp. 451-463). Oxford, New York: Oxford University Press.

Marzano, R. J., Marzano, J. S., & Pickering, D. (2003). *Classroom management that works: Research-based strategies for every teacher*. ASCD.

Nelson, L. H., Anderson, K., Whicker, J., Barrett, T., Muñoz, K., & White, K. (2020). Classroom listening experiences of students who are deaf or hard of hearing using listening inventory for education–Revised. *Language, Speech, and Hearing Services in Schools*, *51*(3), 720-733.

Nkhwalume, A. A. (2005). *A study of the motivational orientations of six girls towards mathematics as directed by their social context: a sociological and critical dimension of gender differentials in mathematics education in Botswana* (Doctoral dissertation, University of Nottingham).

Peters, K., & Anderson, K. (2019). Hearing Aid and Hearing Assistive Technology Non-Use in Classrooms: A Survey of Teachers of the Deaf, Audiologists, and Speech-Language Pathologists. *Journal of Educational, Pediatric & (Re) Habilitative Audiology*, *24 (*p1-21. 21p.).

Pilonieta-Cortés, L., Martínez-Lozano, J. J., & Ortega, M. V. (2019, November). Rules for teaching to deaf students: A creative action that overpass the inclusive education. In *Journal of Physics: Conference Series* (Vol. 1408, No. 1, p. 012011). IOP Publishing.

Rekkedal, A. M. (2012). Assistive hearing technologies among students with hearing impairment: Factors that promote satisfaction. *Journal of deaf studies and deaf education*, *17*(4), 499-517.

Resnick, L. B., Asterhan, C. S., Clarke, S. N., & Schantz, F. (2018). Next generation research in dialogic learning. *Wiley handbook of teaching and learning*, 323-338.

Rohman, K. (2016). Optimalisasi Pendidikan Humanistik Di Sekolah Dasar: Studi Multisitus di SD Insan Mulia Surabaya dan SDS Wahidiyah Tulungagung. *Dinamika Penelitian: Media Komunikasi Penelitian Sosial Keagamaan*, *16*(1), 79-105.

Rowland, C. (2004). National Center on Disability and Access to Education. In *EdMedia+ Innovate Learning* (pp. 5218-5220). Association for the Advancement of Computing in Education (AACE).

Rusman. (2011). *Model-model pembelajaran: Mengembangkan profesionalisme guru*. Rajawali Pers/PT Raja Grafindo Persada.

Sebastian, J., Huang, H., & Allensworth, E. (2017). Examining integrated leadership systems in high schools: Connecting principal and teacher leadership to organizational processes and student outcomes. *School Effectiveness and School Improvement*, *28*(3), 463-488.

Siddiqui, S. (2007). *Rethinking education in Pakistan: Perceptions, practices, and possibilities*. Paramount Publishing Enterprise.

Smith, M. B. (2010). Opening our eyes: The complexity of competing visual demands in interpreted classrooms. *Ethical considerations in educating children who are deaf or hard of hearing, 63* (2), 154-191.

Stabile, L., Dell'Isola, M., Russi, A., Massimo, A., & Buonanno, G. (2017). The effect of natural ventilation strategy on indoor air quality in schools. *Science of the Total Environment*, *595*, 894-902.

Stage, S. A., & Quiroz, D. R. (1997). A meta-analysis of interventions to decrease disruptive classroom behavior in public education settings. *School Psychology Review*, *26*(3), 333-368.

Umar, A. A. (2017). The effect of classroom environment on achievement in English as a Foreign Language (EFL): A case study of secondary school students in Gezira State: Sudan. *World Journal of English Language*, *7*(4), 1-10.

Wambui, N. N. (2005). Study on mathematical achievement using the climbing learning method in Kenyan secondary school. *Mathematics Education into the 21st Century Project Universiti Teknologi Malaysia Reform, Revolution and Paradigm Shifts in Mathematics Education. Malaysia: Johor Bahru*.

Wijoyo, A. (2018). Pengaruh Hasil Belajar Siswa dengan Menggunakan Multi Media Pembelajaran Interaktif untuk Sekolah Menengah Pertama dan Sekolah Menengah Atas. *Jurnal Informatika Universitas Pamulang*, *3*(1), 46-55.

Yoshinaga-Itano, C. (2014). Principles and guidelines for early intervention after confirmation that a child is deaf or hard of hearing. *Journal of deaf studies and deaf education*, *19*(2), 143-175.

Zhu, Y., Zhang, J., Zhang, Z., Clepper, G., Jia, J., & Liu, W. (2022). Designing an Interactive Communication Assistance System for Hearing-Impaired College Students Based on Gesture Recognition and Representation. *Future Internet*, *14*(7), 198.