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SPEDIR instructional framework as classroom accommodation model for learners with mild-hearing impairment

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ABSTRACT

This study developed an instructional framework useful as a model for teaching mainstreamed learners with mild-hearing impairment. It was designed based on the customary and innovative practices of the teachers handling these learners and, on the provisions, outlined in RA 11650, the so-called beacon of hope among Filipino learners with disabilities. The descriptive survey was utilized as its design and data was gathered from 12 purposively chosen participants using the semi-structured interview guide. Data was analyzed using Saldaña's framework for analyzing qualitative data sets. Findings revealed textual and visual cues as learning aids, tangible instructional tools, and technology-enriched tools as their customary instructional practices, while observational learning, language signing, and parental collaboration as their innovative practices. Overall, it is categorical to claim that these practices are anchored on the sensory integration theory (SIT) that is operationalized through a multisensory teaching model. While commendable, this does not respond to materializing existing provisions in RA 11650. Thus, search, provide, deliver, exhaust, introduce innovative practices, and repeat the entire process (SPEDIR) model was conceptualized to harmonize these practices and the provisions from the legal mandate. The researchers recognize that the model be subjected for field validation.

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1. INTRODUCTION

The World Health Organization (WHO) reported that by the year 2050, nearly 2.5 billion people will be living with various degrees of hearing loss. Among these numbers, a particularly heart-wrenching statistic stands out: 340 million are children, including those school-aged, mainly in low and middle-income countries. The health agency defines hearing impairment as the inability to hear at a threshold of 20 dB and disabling hearing loss as a loss of >35 dB in the better ear. Hearing loss can be categorized according to degrees: mild with minimum sound that can be heard is between 25 dB and 40 dB, moderate with minimum sound that can be heard is between 40 dB and 70 dB, severe with the minimum sound that can be heard is between 70 dB and 95 dB and profound with the minimum sound heard is 95 dB and over. This condition not only hampers educational progress but also leads to unemployment or a lower level of employment, isolation, loneliness, and social stigmatization [1]. Conversely, nations worldwide have since enacted laws intended to address the

overall welfare of their citizens suffering from various disabilities, including their inclusion in mainstream educational settings. These legislations guarantee that education goods and services are inclusive, regardless of gender, color, ethnicity, and disability. For example, the United States of America (USA) has its Individuals with Disabilities Education Act (IDEA), China has a law on the protection of persons with disabilities, and Turkey enacted an act on the welfare of persons with disabilities, to name a few [2].

The Philippines' Department of Education (DepEd) reported that a whopping 1.6 million Filipino children are suffering from various forms of disabilities. Of this number, the agency noted that 323,344 aged two to 17 are enrolled across grade levels nationwide during the academic year 2023-2024. Mainstreamed learners with hearing impairment of varying degrees accounts for the second highest number of those with disabilities attending regular classroom [3]. In a bid to address the education needs of the growing number of Filipinos with disabilities including those with hearing impairment joining the mainstream classroom, the country enacted laws to ensure that they are given access to quality education. The most recent of these laws is the Republic Act (RA) 11650, or instituting a policy of inclusion and services for learners with disabilities in support of the inclusive education act. The law mandates that schools nationwide accommodate and provide educational support for learners with disabilities by ensuring the availability of relevant infrastructures such as assistive devices, resource rooms, and other forms of reasonable accommodation, including an Individualized Education Plan (IEP). In addition, schools are also enjoined to establish an Inclusive Learning Resource Center (ILRC), a physical or virtual center where free support services can be delivered. In addition, the center shall implement the child find system and maintain a team of multidisciplinary professionals coming from the academe and health allied services to optimize service for the mainstreamed learners with disabilities in the educational rooms [4].

Aside from various legal grounds that compel education authorities to enforce mainstreaming for learners suffering from various disabilities, including those with mild-hearing impairment, findings from various studies also suggest its overwhelmingly positive impact. For instance, Basha and Tesfaye [5] reported that mainstreamed learners with disabilities are given authentic opportunities to interact meaningfully with their peers and gain actual academic experience. This helps develop essential life and socialization skills and enables them to function alongside typically developing peers, fostering a sense of inclusion and equality. This positive impact is a testament to the potential of mainstreaming for learners with hearing impairment. According to Uçar *et al.* [6], in the case of learners with hearing impairment, mainstreaming can be best characterized as having them engage in a holistic academic participation which invariably necessitates utmost support, such as allowing them to participate in scholastic activities, creating curriculum modifications, providing audiology services, speech or language therapy, and other communication services. Inarguably, mainstreaming learners with hearing impairment is challenging. Findings from a study conducted by Ntinda *et al.* [7] revealed that teachers handling mainstreamed learners with hearing impairment need to upskill their professional competencies, especially in sign language, curriculum differentiation, and collaboration with other professionals. Similarly, Doğan and Güven [8] reported that Filipino teachers handling mainstreamed hearing-impaired learners and other disabilities have insufficient time for curriculum adaptation and lack the much-needed training, experience, instructional resources, and access to professional development to be able to teach effectively and efficiently.

The pressing need to act on the legal mandate to afford mainstreamed learners with disabilities, such as those with mild-hearing impairment, quality instruction through various forms of accommodations such as instructional delivery alongside the dire need to address the challenges that teachers have to overcome in handling learners with disabilities enrolled in the regular classroom as reported in the cited studies, necessitate immediate action. Conversely, in the pedagogic landscape of special education, one of the mechanisms that teachers could employ to address cognition needs of mainstreamed learners suffering from various forms of disabilities including those with mild-hearing impairment is by adopting contextualized accommodations tailored to the unique instructional needs of their learners. As explained by Abdella [9], instructional accommodations are scaffolds designed to help students gain optimum access to lesson content and instruction and, in turn, ensure accurate demonstration of their understanding. Within this principle is a guaranteed assurance that learners with disabilities learning alongside their peers without disabilities meet learning standards.

Several existing frameworks are available that serve as instructional models for accommodating learners with mild-hearing impairments. However, none is focused on the immediate needs of those mainstreamed in the locale of the study. Thus, may not be responsive to the learners' actual needs in the locality where this study is conducted. As such, this study developed a framework that may serve as an instructional accommodation model for teaching mainstreamed learners with mild-hearing impairment. This framework is anchored on the customary and innovative instructional practices of teachers handling these learners based on the locale of this academic undertaking. It is hoped that the framework may guide them accordingly to ensure that they benefit from instruction alongside their peers without disabilities. In this way, the existing legal mandate on special needs education in the Philippines is materialized.

2. METHOD

The descriptive survey served as the study's design. According to Creswell [10], this design provides a wealth of information relative to characteristics, actions, or opinions to be able to assess and examine critical impacts of the given information pertaining to a large group of population. The study was conducted in different special education elementary schools in Eastern Visayas, Philippines, during the academic year 2023-2024 and utilized 12 purposively chosen special needs education teachers as participants. These participants met the single criterion: teachers handling mainstreamed learners with mild-hearing impairment. As explained by Babbie [11], non-probability sampling method like purposive sampling technique has the ability to yield the most useful information about one's study. The interview guide served as the main instrument of the study that was validated through content expert validation. Revisions were made based on the experts' recommendations, and the level of agreement was treated statistically through Cohen's kappa coefficient. Inputted data yielded a 1.0 or a perfect level of agreement. Ethical issues were addressed by asking the participants to consent on the informed consent form. They were also assured of utmost data confidentiality and anonymity of their identities. Saldaña's framework for qualitative data analysis: transcribing, coding, categorizing, formulating themes, and data verification was the fundamental guide in analyzing the data [12]. This framework was utilized to ascertain the customary and innovative instructional practices of teachers handling mainstreamed learners with mild-hearing impairment.

3. RESULTS AND DISCUSSION

This part of the paper shows the results of the analysis based on the instructional and innovative practices of special needs education teachers handling mainstreamed learners with mild-hearing impairment. Table 1 shows the results of the analysis. Five significant statements pertinent to the instructional practices of special needs education teachers handling learners with mild-hearing impairment, which, in turn, were grouped into three themes: textual and visual cues, tangible instructional tools, and technology enriched tools. In relation to innovations, seven significant statements were derived from the participants that created four themes: observational learning, language signing, and parental collaboration.

Table 1. Codes, sample verbatim responses, and clustering of themes

Codes and sample verbatim responses	Subthemes	Main themes	Description of themes
- I provide written materials to supplement lectures like giving directions and quizzes, all are written in the board for reference for the HI learners (Respondent 1) - I use visual instructional aterails to aid the lesson because it helps them understand the lesson better (Respondent 3) - I make use of picture exchange communication system (PECS) when communicating with the learners with HI especially when it comes to their emotions (Respondent 5)	Textual and visual cues as learning aids	Theme 1: instructional practices of special needs education teachers handling learners with mild-hearing impairment	Teaching mainstreamed learners with hearing impairment necessitate empirical knowledge and instructional aids that would serve as support tools to activate the learners' senses, and, in turn, ensure learning.
- I make use of concrete objects in instruction, when teaching colors, I use objects that has the same color, example: color blue, I present a blue book and blue ballpen (Respondent 4)	Tangible instructional tools		
- I make use of captioned videos when showing kwentong pambata [stories for children] and songs with the use of the newly acquired television through the program support fund in Special Education (Respondent 7)	Technology enriched tools		
- I model the specific instructions for the learners with HI (Respondent 1) - I model on how to do things, for example the proper washing of hands, I do the task first while the students observe and then they do it independently (Respondent 2) - I make use of lip-reading in giving short instructions and phrases example- the basic greeting words like hello/hi, good morning, good afternoon and good evening (Respondent 4) - I execute the skill first and then let them do it afterwards, this is to provide opportunities for them to have skills and computer literacy. Strengthening of parents' knowledge in using sign languag (Respondent 3)	Observational learning	Theme 2: innovative practices in teaching the mainstreamed hearing-impaired	Innovations among teachers handling learners with mild-hearing impairment are usually initiated by themselves which are carried out by through observational learning, sign language and parental collaboration.
- I make use of sign language when giving simple commands and request, example, please arrange your seats (Respondent 5)	Language signing		
- I make use of sign language in the classroom during delivery of instruction (Respondent 7) - Organizations like the general parents and teachers' association for the learners in the special education center (Respondent 4)	Parental collaboration		

3.1. Customary instructional practices of teachers handling learners with mild-hearing impairment

Teaching mainstreamed learners with mild-hearing impairment necessitates not only empirical knowledge, but also instructional aids. These aids serve as crucial support tools to activate the learners' senses and ensure learning, mirroring their customary manners in dealing with learners with hearing impairment mainstreamed in the regular classroom setting. Analyses of the data gathered yielded the following themes:

3.1.1. Utilization of textual and visual cues as aids in learning

Using textual and visual cues is a customary pedagogic practice for teachers teaching learners with mild-hearing impairment. In the context of this study, this means that they provide ready-made written materials to supplement lectures with these instructional tools to help students understand the lesson better and use the PECS as a mechanism to develop communication skills of these learners. Indeed, the role of instructional materials in ensuring learning success among learners with hearing impairment mainstreamed in regular classrooms cannot be undermined. Inevitably, one of the common options for teachers handling these learners is using ready-made materials, often teacher-made. As a mechanism to entice these learners, teachers usually utilize colored texts and pictures in various sizes. This initiative is undertaken due to a lack of instructional materials and its hefty price whenever available. Meanwhile, according to Bailey and Montgomery [13], PECS is a multidisciplinary approach developed by psychologists and speech pathologists that is focused on essential and meaningful communication initiated by the learner rather than being dependent on questions or prompts from another person.

3.1.2. Utilization of tangible instructional tools as aids in learning

This theme means that teachers handling learners with mild-hearing impairment use concrete objects that are tangible enough for their learners to visualize the concept being conveyed. According to Ojating and Ojating [14], tangible instructional resources are seen, touched, or manipulated by the learners during lesson recitals, which afford them concrete and specific learning experiences. Examples of these tools are manipulatives, flashcards, and storybooks. For these to be effective, teachers must set the tone of active learning, be present to guide the learners while using these tools and elaborate and detail them in the lesson blueprint. These resources are necessary because they simplify abstract ideas into accurate or clear concepts, promote discovery learning, make instruction easier, keep learners' attention sustained, and help slow learners to cope with learning tasks.

3.1.3. Utilization of technology-enriched instructional tools as aids in learning

This theme advances the idea that teachers handling learners with mild-hearing impairment utilize technology-enriched materials as support in teaching this group of learners. Technology in this context means utilizing television sets and educational video content. According to Baglama *et al.* [15], providing proper and appropriate education for learners with mild-hearing impairment is essential, which can be basically done by utilizing modern technologies as learning enablers. This contention is supported by findings of studies conducted, for example, by Nasir *et al.* [16], who reported that mobile technologies, specifically Google translate and dictionary applications, are potential tools to help learners with hearing impairment learn English as a second language (ESL) independently. The researcher then recommended that ESL teachers introduce multiple interesting language learning methods with these technologies.

Similarly, Yaman *et al.* [17] claimed that mobile devices could elicit learning motivation among learners with hearing impairment, specifically in learning fundamental literacy skills, especially in an integrative approach. Meanwhile, Elashry *et al.* [18] developed an instructional guideline that resulted in improved knowledge and reported practice of mothers having children with cochlear implantation, which, in turn, enabled them to learn basic life skills. In the same vein, Hussein and Jabbar [19] developed an e-learning module for a specific topic in a content learning area using the integrative and systematic approach, which intends to make the lesson accessible to learners with hearing impairment, while Hussein [20] reported that drill & practice (D&P) e-learning modules (eLMs) was effective in learning fundamentals of mathematics as this technology-enriched learning approach allowed them to continuously practice and repeat the lessons as well as further exercises the skills they have learned.

3.2. Innovative instructional practices of teachers handling learners with mild-hearing impairment

This part of the article presents the themes based on the results of the analyses of the data relative to the innovations introduced by the teachers handling mainstreamed learners with mild-hearing impairment. Each theme is provided with meaning and discussed in detail through cited literature.

3.2.1. Observational learning as an innovative instructional practice

This theme means innovative practice in teaching and learning introduced by the teachers as a result of their experiences in handling learners with mild-hearing impairment. This initiative comes in the form of

modelling in performing tasks such as handwashing, lip-reading, and following instruction. As explained by Phan [21], observational learning, also known as shaping and modeling, is a concept developed by psychologist Albert Bandura. It is an observational form of learning materialized through observation, memorization, and replication. This learning style is rampant among children with the adult showing the behavior considered as model. Typically, we imitate people who possess super qualities over the imitators. A study conducted by Esparrago-Kalidas *et al.* [22], proved that verbal instructional modeling using verbal and visual examples effectively enhances self-confidence, which helps students accomplish specific learning tasks and develop higher-order thinking skills while Kim [23] found out that the interdisciplinary multimodal modeling activities, they have developed for learners with special learning needs have had a profound impact. These activities, which use digital and multimodal resources, have not only promoted multiliteracies development but also significantly enhanced the emotional and social experiences of learners. By infusing learners' everyday experiences with scientific astronomical understanding, these activities have fostered the development of higher cognitive functions.

3.2.2. Language Signing as an innovative instructional practice

Sign language is a special visual language utilize in communicating to people with hearing impairment. In the context of his study, this means utilizing both American sign language and Filipino sign language as mechanism for lesson recitals. The World Federation of the Deaf estimates that over 300 sign language exist worldwide, and 70 million deaf people use them. Sign language, far from being a simple set of hand gestures, is a complex structural form involving visual motions and signs. Signing requires skill and effort and patience to learn that is commonly gauged with five main parameters: shape of the hand, orientation of the palm, movement, location, and expression. To ensure an accurate sign word, all of these five parameters must be performed correctly [24], [25]. In like vein Marzo [26], averred that sign language as a visual-gestural-spatial language of deaf people is of great importance as a symbol of identity and cultural heritage of deaf people because it allows them to communicate without restrictions and also favors their linguistic and cognitive development.

3.2.3. Parental collaboration as an innovative instructional practice

This theme involves parents as stakeholders in educating learners with mild-hearing impairment. Collaboration, in this context, refers to the joint effort exerted by both parties to ensure that learning extends beyond the classroom setting. According to Epstein and Sanders [27] and Sangalla *et al.* [28], parental involvement strongly correlates with learners' academic achievement across disciplines. Two theories are linked to involving parents in the education of their children. These theories are about the level of parental involvement: school-based involvement and home-based involvement. In the Philippine school setting, the former manifests through parent-teacher conferences like portfolio day, volunteering in school activities like *brigada eskwela*, and joining school governance. The latter, on the other hand, includes activities like assistance in school extra-curricular activities, facilitating reviews and homework-making for their children, and even extending support to other stakeholders, especially among other parents. Meanwhile, Magno [29] distinguished the nature of parental involvement based on parenting styles. Factors related to parenting characteristics were grouped using multidimensional scaling, delineating parental involvement from parenting styles. For instance, in the context of learners with mild-hearing impairment, communication can be enhanced through sign language or visual aids, support can be provided through specialized learning materials, and bonding can be strengthened through shared learning experiences.

Inarguably, the customary and innovative instructional practices adhered to by teachers handling learners with mild-hearing impairment are commendable. Findings showed that unconsciously they utilize the principles of sensory integration theory (SIT) advanced by Anna Jean Ayres. As explained by Roley *et al.* [30], SIT, as a theory and practice, targets a person's ability to process and internally integrate sensory information, which may come in visual, auditory, tactile, proprioceptive, and vestibular from their body and environment. Sensory information explains behaviors, plans interventions and predicts behavioral change through intervention, which could be utilized to design specific intervention strategies that are practical for remedying all sensory-related issues that affect functional performance. The main feature of SIT is that it is conducted in a conducive place where children play, and these activities are seen as rewards on their part. Accordingly, the researchers are convinced that these practices are operationalized by the multisensory teaching technique. As an instructional model, Sayson [31], explained that since each learner is unique and learns best when information is appropriately presented, there is a need to adopt a multisensory teaching technique. This instructional approach can be best explained as learning novel ideas and lessons using multiple senses. Such learning delivery must be explicit, direct, cumulative, intensive, and focused, commonly involving visual, auditory, and kinesthetic-tactile pathways to enable learning and memory retention. Therefore, this instructional approach cuts across visual, auditory, and kinesthetic pedagogic domains.

The implementation of RA 11650 compels schools to have assistive devices, facilities, and infrastructure in the admission process, and other forms of reasonable accommodation including an Individualized IEP which shall contain an outline of support and related services commensurate to the specific disability of the identified learners. In addition, schools are also mandated to establish an ILRC, a physical or virtual center that serves as an avenue for realizing inclusive education. The center may be established in collaboration with the local government units (LGUs) and shall form part of every school's school improvement plan (SIP). Among the key functions of the ILRC is the implementation of the child find system, which identifies, locates, and evaluates children who are not receiving early intervention pertinent to basic education services. The body is also expected to maintain a team of multidisciplinary professionals like from both the academe and the medicine. Given the gravity of the tasks and the novelty of this law, the researchers argue that a model be made available to teachers who may serve as their guide in the implementation of the provisions of the law and address correspondingly the academic needs of the learners with disabilities such as those with mild-hearing impairment mainstreamed in the regular classroom.

3.3. Proposed model based on the harmonized customary and innovative practices of teachers handling mainstreamed learners with mild-hearing impairment and the provisions of RA 11650

This section presents the proposed model which is a product of harmonized customary and innovative practices of teachers handling mainstreamed learners with mild-hearing impairment and the provisions of RA 11650. Figure 1 in the next page shows the schematic presentation of the proposed model. The proposed instructional model is called; search provide deliver introduce innovative practices repeat the entire process search, provide, deliver, exhaust, introduce innovative practices, and repeat the entire process (SPEDIR).

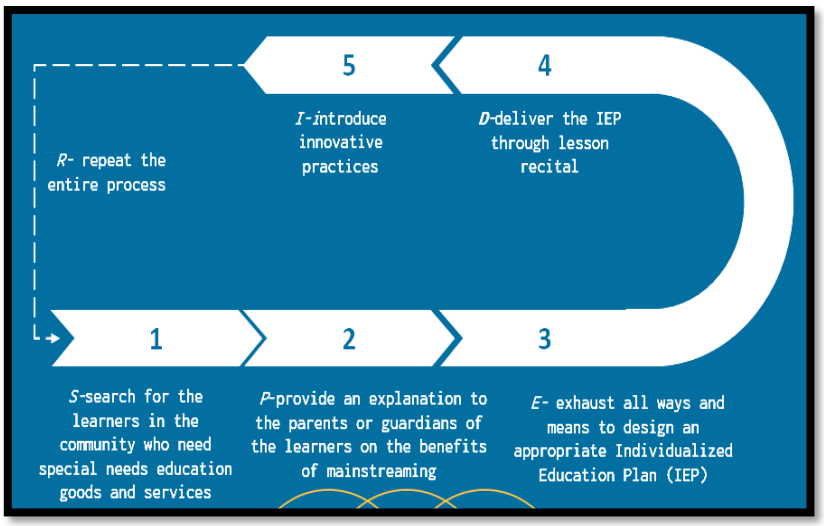

Figure 1. The SPEDIR model for teaching mainstreamed learners with disabilities such as those with mild-hearing impairment

S-search for the learners in the community who need special needs education goods and services. In RA 11650, special education schools in the Philippines and its teachers are compelled to find learners with various disabilities, such as those with hearing impairment, for them to avail early instructional interventions and, in turn, bolster academic success and social functionality. This initiative is also in compliance with the country's adoption of the principles of inclusive education, which the country adopted in compliance with its commitments to different international pacts such as the EFA and SDGs, and ensures that all Filipino school-aged learners, regardless of socio-economic standings and status, are given quality education. In addition, this initiative is in support to the Philippines' education department child find program policy [32] which directs school heads to bring to school premises and enroll all learners living with disabilities and those victims of various circumstances like those displaced by natural calamities, victims of war, and those living in geographically isolated areas.

P-provide an explanation to the parents or guardians of the learners recruited to attend special education needs services as to why their attendance and mainstreaming are essential to their overall welfare. This process will enlighten them on their right to access educational goods and services provided by the

government and offer them the idea that their disabilities cannot deter learning alongside their counterparts in the mainstream instructional setting.

Meanwhile, after having recruited and provided an explanation to the parents of the need for their children to be mainstreamed to regular classrooms, special education teachers could now E-exhaust all ways and means to design an appropriate Individualized IEP for the recruited learners with various degree of hearing loss. In this phase, multidisciplinary professionals like the developmental pediatrician, occupational therapist, guidance counselor, and psychologist must be involved to ensure that the IEP is responsive to the needs of the specific group of learners diagnosed with a specific disability, such as those with mild-hearing impairment.

Then, special education teachers should D-deliver the IEP through lesson recital. As it is, special education teachers' commitment to really helping mainstreamed learners with disabilities, such as those with mild-hearing impairment, matters. This is the phase of the model where professionalism and deliberate disposal of duties and responsibilities will come into action. Similarly, teachers may consider anchoring the delivery of the lessons on the principles of SIT, which could be operationalized through multisensory teaching techniques.

I-introduce innovative practices given the diversity of the learners, it is then apparent that the special education teachers should initiate innovative practices like utilizing assistive devices, seeking help from other professionals, modeling, and designing contextualized multisensory tools helpful for the holistic cognitive and skills development of mainstreamed learners with disabilities, such as those with mild-hearing impairment. Collaboration with the parents and other stakeholders may also be enforced. In this phase, the teachers' customary and innovative practices in handling mainstreamed learners with mild-hearing impairment as mentioned in the thematic analysis made may be incorporated in the teaching and learning episodes. These may include utilization of textual and visual cues as learning aids, tangible instructional tools, and technology enriched tools. Other innovations may include observational learning, language signing, and parental collaboration.

Finally, R-repeat the entire process. This may include assessing the viability and effectiveness of the IEP, introducing innovative practices, conducting collaboration and engagement, and implementing the IEP as a whole. The results could then serve as a framework to further improve the process. Figure 1 presents a graphical scheme of the SPEDIR model.

Among the salient features of SPEDIR as a model for teaching learners with disabilities, such as those with mild-hearing impairment, is that it complies with the provisions outlined in RA 11650, or Instituting a Policy of Inclusion and Services for Learners with Disabilities in Support of Inclusive Education Act, the so-called beacon of hope for Filipino learners with disabilities and customary and innovative practices adhered to by special education teachers handling learners with mild-hearing impairment. The model also encourages teachers teaching mainstreamed learners with mild-hearing impairment to anchor their pedagogic practices on the SIT of Anna Jean Ayres, which can be best operationalized through a multisensory teaching model. The researcher fervently hopes that the model may serve as one of the frameworks that policymakers of the DepEd could recommend to utilize by the special education teachers handling mainstreamed learners with mild-hearing impairment and beyond.

4. CONCLUSION

This study unraveled teachers' customary and innovative practices in handling mainstreamed learners with mild-hearing impairment. Results of the findings showed that these pedagogic practices are anchored on the principles of SIT by Anna Jean Ayres that are operationalized through a multisensory teaching model. However, while commendable, this seems to exclude some of the salient features outlined in RA 11650. Thus, the researchers argue that a model is needed to harmonize these practices with the provisions outlined in the law. The SPEDIR model, if implemented, could significantly improve the educational experience and outcomes for learners with disabilities. However, the researchers stress the urgent need for field validation of the model. Further studies should be conducted along this dimension by widening the scope of the empirical investigation and increasing the number of participants.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [RAL], upon reasonable request.

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