

Enhancing the Performance of the Learners with Learning Difficulties Through Interactive Materials

Carina Dio Escasinas

Master of Arts in Education, Major in Special Education, University of Saint Anthony, Iriga City, Camarines Sur, Philippines

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Email of Corresponding Author: carina.escasinas001@deped.gov.ph

Abstract

This study focused on enhancing the performance of Grade One learners with learning difficulties through Project i-LEARN: Interactive Learning Enhancement and Responsive Navigation for Learners with Learning Difficulties. Anchored on Response to Intervention, Universal Design for Learning, Constructivist Learning Theory, ADDIE, and the Interactive Learning Material Alignment Theory, the study employed a developmental-descriptive research design. It involved 144 Grade One learners with learning difficulties from selected public elementary schools in Gubat North District, Schools Division of Sorsogon, during School Year 2025–2026. The Multi-Factored Assessment Tool was used to determine learners' baseline performance, while the developed interactive learning materials were validated by expert validators using the Learning Resource Management and Development System evaluation tool. Findings revealed that learners initially performed at a low level, with an overall pretest mean of 2.13. After using the interactive learning materials, their performance improved to a very high level, with an overall posttest mean of 4.24. The computed t-value of 28.67 and p-value of 0.000 indicated a significant difference between the pretest and posttest results, leading to the rejection of the null hypothesis. The developed materials also obtained an overall weighted mean of 4.68, interpreted as very highly acceptable. The study concluded that Project i-LEARN effectively improved foundational literacy and numeracy skills, particularly letter recognition, reading readiness, phonemic awareness, writing readiness, and numeracy skills. It recommended the continued use of MFAT-based assessment, differentiated instruction, teacher capacity-building, school support, and community participation. The study supports SDG 4 on quality education, SDG 9 on innovation, and SDG 17 on partnerships. Its sustainability impact lies in strengthening inclusive instruction, interactive learning resources, institutional support, and community-based learning collaboration.

Keywords: Developmental-Descriptive Research, Grade One Learners, Interactive Learning Materials, Learning Difficulties, LRMDs Validation, MFAT, Project i-LEARN, Sustainability Plan

1. Introduction

This study focuses on enhancing the performance of Grade One learners with learning difficulties through interactive learning materials developed from assessment-based evidence. Early grade learners differ in readiness, attention, communication, reading, writing, numeracy, and comprehension skills; therefore, inclusive classrooms require instructional materials that are responsive, engaging, accessible, and aligned with learners' needs. The study uses the Multi-Factored Assessment Tool (MFAT) to identify learning gaps, develops appropriate interactive learning materials, validates them through the Learning Resource Management and Development System (LRMDs) tool, and proposes a sustainability plan based on the findings.

1.1 Inclusive Instruction for Grade One Learners with Learning Difficulties

Grade One is a critical stage where formal reading, writing, and numeracy skills are developed. However, some learners experience difficulties in recognizing letters, following instructions, sustaining attention, expressing understanding, forming letters, decoding words, and participating in classroom tasks. These challenges call for differentiated and engaging instruction through interactive learning materials that make learning more accessible and meaningful. The study is supported by legal and policy foundations for inclusive education. Republic Act No. 11650 requires support systems and inclusive learning environments for all learners, including those with disabilities and learning difficulties (Republic Act No. 11650, 2022). Republic Act No. 7277 protects the right of persons with disability to quality education and educational assistance (Republic Act No. 7277, 1992). Republic Act No. 10533 strengthens learner-centered, inclusive, and developmentally appropriate education (Republic Act No. 10533, 2013). DepEd policies likewise emphasize flexible instruction, relevant learning materials, and support services, with DECS (2019) highlighting the need for instructional responsiveness.

1.2 MFAT-Based Assessment, Interactive Learning Materials, and Learner Performance Enhancement

The literature shows that learners with special educational needs benefit from structured, accessible, and responsive instructional support. Maaruf et al (2021) emphasized that technology and assistive tools can simplify learning and improve learner engagement, while Maaruf et al., (2025) connected education for learners with special needs to UNESCO goals, the Education 2030 Framework for Action, and the Sustainable Development Goals (UNESCO). Yuliana and Sukinah (2025) similarly emphasized inclusive classroom management, teacher support, and strategies that promote learner engagement. Evidence-based and targeted interventions are also necessary in inclusive classrooms. Tribushinina et al (2023) stressed the importance of identifying effective practices, actual implementation, and barriers to evidence-based support. Van Herwegen et al (2024) described tiered interventions for learners who do not progress through general classroom support. Damyanov (2024) emphasized differentiated instruction, individualized education plans, and assistive technologies, while Yang et al. (2025) linked inclusive education to the Salamanca Statement and Sustainable Development Goal 4. Several studies support MFAT as a tool for identifying learning needs. Aviles (2022) found that MFAT identified Grade I learning difficulties and guided effective interventions across cognitive, communication, and social domains. Sabuga-a (2025) showed that MFAT-based assessment helps explain students' contextual reading abilities and improve teaching strategies. Luisen and Deloy (2022) found that teachers considered MFAT valuable but faced problems related to training, time, parents, and materials. Dagdag (2022) also described MFAT as a screening tool covering cognitive, communication, socio-emotional, psycho-motor, and daily living skills. Teacher readiness, resources, and institutional support remain important concerns. Multidisciplinary Journey (2025) and Sabanal et al. (2025) emphasized that teacher competence, preparedness, motivation, training, and institutional support affect the effective implementation of MFAT and inclusive practices. Other studies also identified barriers such as workload, limited materials, inadequate training, weak parent involvement, and limited support systems, as discussed by Siton (2025) and Pombo et al (2025). The value of interactive learning materials is also supported in the literature. Saldares (2025) emphasized assessment-led instruction but noted the need for instructional materials to address learning gaps. Pavithra and Vimala (2025) reported improvement in reading fluency and comprehension after structured literacy interventions. Talapiu et al. (2025) found that interactive learning media met validation and practicality criteria. Wilcox and Lawson (2022) showed that structured data systems strengthen instruction and equity. Clark (2022) highlighted the importance of positive interaction, multisensory learning, ICT competence, and visual, hands-on materials in improving learner participation and comprehension.

1.3 Inclusive Education Policies and the Gubat North District Context

Globally, inclusive education supports equitable learning opportunities for learners with diverse needs. Yang et al. (2025) emphasized that inclusive education requires evidence-based teaching, assistive technologies, family engagement, and policy support, while UNESCO (2020) stressed the need for sustained capacity building and adequate resources. In the Philippine context, inclusive education is supported by Republic Act No. 11650 (Republic Act No. 11650, 2022), Republic Act No. 7277 (Republic Act No. 7277, 1992), and Republic Act No. 10533 (Republic Act No. 10533, 2013). DepEd policies also promote responsive instruction and quality-assured learning resources through the LRMDs (Department of Education, 2019). Locally, this study focuses on one hundred forty-four (144) Grade One learners with learning difficulties in selected public elementary schools of Gubat North District, Schools Division Office of Sorsogon, for School Year 2025-2026.

1.4 RTI, UDL, Constructivist, ADDIE, and ILMAT Foundations of the Study

The study is anchored on Response to Intervention (RTI) Framework by Fuchs & Fuchs (2006); Burns, Appleton, & Stehouwer (2020 updates), Universal Design for Learning (UDL) Framework by Meyer, Rose, & Gordon (2014); CAST, 2018–2023 updates, the constructivist learning theory of Vygotsky (1978); 2020–2023 application, the instructional materials development theory of Dick, Carey & Carey (2015); Branch, 2018) and the researcher's Interactive Learning Material Alignment Theory (ILMAT, 2026). RTI supports the use of baseline data to identify learning gaps, making MFAT appropriate as the diagnostic basis of the study. UDL supports flexible and inclusive materials that allow learners to engage, understand, and express learning in different ways. Constructivist Learning Theory explains the importance of scaffolded interaction within the Zone of Proximal Development. The ADDIE model guides the systematic development, implementation, assessment, and refinement of materials, while LRMDs validation ensures quality, relevance, usability, and curriculum alignment. The study also follows a systems approach involving input, process, output, and feedback. The input includes MFAT pretest results and the developed interactive materials. The process includes MFAT administration, analysis of results, material development, testing of pretest and posttest differences, and curricular validation through the LRMDs tool. The output is an enhanced and validated set of interactive learning materials. The feedback loop supports continuous refinement and sustainability of the intervention.

1.5 Research Gaps in Assessment-Based Interactive Material Development

Although studies have discussed inclusive education, MFAT implementation, teacher readiness, intervention strategies, and interactive materials, gaps remain in integrating MFAT-based diagnosis, interactive material development, LRMDs validation, expert-based enhancement, and sustainability planning in one localized study. Many existing studies focus on general inclusive practices or broad special education contexts, but fewer studies address Grade One learners with learning

difficulties in a specific Philippine district. This study addresses that gap by developing interactive learning materials based on MFAT pretest results, measuring learner performance after using the materials, testing the difference between pretest and posttest results, validating the materials through experts using the LRMDs tool, and proposing a sustainability plan. The null hypothesis states that there is no significant difference between the pretest and posttest results of Grade One learners after exposure to the developed interactive learning materials.

1.6 Alignment with SDG 4, SDG 9, and SDG 17

The study aligns most directly with SDG 4 – Quality Education because it promotes inclusive, equitable, and responsive learning for Grade One learners with learning difficulties. Through MFAT-based diagnosis and LRMDs-validated interactive materials, the study supports access to appropriate instruction and improved learner participation. The study also supports SDG 9 – Industry, Innovation and Infrastructure by encouraging the development of interactive and ICT-supported learning resources that respond to barriers in traditional instruction. It further supports SDG 17 – Partnerships for the Goals because effective inclusive education requires collaboration among teachers, school heads, DepEd officials, parents, learning resource evaluators, and other stakeholders.

1.7 Educational, Technological, Institutional, and Community Sustainability of the Study

The study contributes to educational sustainability by helping teachers identify learning gaps and provide differentiated instruction for Grade One learners with learning difficulties. It supports technological and innovation sustainability by promoting interactive, visual, hands-on, and multisensory resources that improve engagement and comprehension. It also strengthens institutional and policy sustainability by aligning instructional material development with DepEd policies and LRMDs quality assurance. Finally, it contributes to community and socio-educational sustainability by encouraging collaboration among learners, teachers, parents, school leaders, and education stakeholders. Overall, the study provides a localized, evidence-based, curriculum-aligned, and sustainable intervention for improving the learning experiences of Grade One learners with learning difficulties.

2. Material and methods

2.1 Research Design

The study employed a developmental-descriptive research design. The developmental component was used to design and produce interactive learning materials based on the MFAT results of Grade One learners with learning difficulties, while the descriptive component was used to determine learners' pretest results, evaluate the curricular validity of the developed materials through the LRMDs tool, and identify needed enhancements based on expert evaluation. Developmental research is suitable for studies that design, develop, and evaluate instructional materials or programs. It involves needs assessment, material development, validation, and revision. In this study, MFAT data were used to identify learners' needs and guide the development of interactive learning materials. The descriptive method also allowed the researcher to analyze quantitative data such as pretest scores and validation ratings. Creswell and Creswell (2018) notes that descriptive research systematically describes a phenomenon as it exists, making it useful for evaluating instructional materials and learner performance.

2.2 Locale of the Study

The study was conducted in selected public elementary schools in Gubat North District, Schools Division of Sorsogon, during the School Year 2025-2026. These schools served as the setting for identifying Grade One learners with learning difficulties, administering the MFAT, and developing interactive learning materials based on the learners' identified needs.

2.3 Respondents of the Study

The respondents were one hundred forty-four (144) Grade One learners with learning difficulties from selected public elementary schools in Gubat North District, Schools Division of Sorsogon. They were the primary recipients of the instruction and the main focus of the development of the interactive learning materials. Their MFAT results were used to identify learning needs and guide the design of appropriate instructional materials. The developed interactive learning materials were also assessed by expert validators composed of master teachers, reading coordinators, and curriculum specialists using the LRMDs evaluation tool. Their assessment ensured the validity, quality, and curriculum alignment of the developed materials.

2.4 Sample and Sampling Procedure

The study used purposive sampling. Grade One learners were selected from those identified as having learning difficulties based on school records and teacher recommendations. The MFAT was then administered to these learners to determine their specific learning needs. The expert validators were also purposively selected based on their expertise in curriculum, instructional material evaluation, and early grades teaching. Their participation helped ensure the reliability and validity of the evaluation process.

2.5 Research Instrument

Instruments of research must be valid, reliable and sufficiently aligned with the objectives of the study. The current study involved the selection of suitable instruments to generate data for ascertaining the learning needs of pupils with learning difficulties, developing interactive learning materials and their curricular validation. The main instruments used were the Multi-Factored Assessment Tool (MFAT), the researcher-developed interactive learning materials, and the LRMDS evaluation tool. The MFAT was used to assess the pretest performance of Grade One learners with learning difficulties in literacy, numeracy, and basic cognitive skills. The results identified specific learning gaps that served as the basis for developing interactive learning materials. The interactive learning materials were developed from MFAT data and were designed to support Grade One learners with identified learning deficits through engaging and age-appropriate activities. The LRMDS evaluation tool was used by expert validators to assess the quality, accuracy, instructional design, and curricular alignment of the developed materials using a five-point rating scale. The study also used library technique, interview, and document analysis. The library technique involved reviewing books, journals, published studies, policy documents, and electronic resources on inclusive education, learning difficulties, instructional design, MFAT-based assessment, and LRMDS validation. Interviews were used to gather additional insights on learners' needs and the usability of the materials. Interviews are useful for research because they allow us to look more closely at the perspectives of participants and clarify anything uncovered in quantitative research. Document analysis was used to review school-based records such as teacher anecdotal reports, class records, intervention logs, learner progress records, and learner assessment records. According to Bowen (2009), document analysis is a systematic procedure for reviewing and evaluating documents to elicit meaning, gain understanding, and develop empirical knowledge.

2.6 Data Gathering Procedure

The data gathering procedure began with the identification of Grade One learners with learning difficulties through school records and teacher recommendations. The MFAT was administered to determine their baseline performance and learning gaps. The results were organized, analyzed, and interpreted to identify priority learning needs and to guide the development of interactive learning materials. After the materials were developed, they were submitted to expert validators composed of master teachers, reading coordinators, and curriculum specialists for evaluation using the LRMDS tool. Their ratings and feedback were used to determine the validity, acceptability, and areas for improvement of the materials. Interviews and document analysis were also conducted to supplement and validate the MFAT results and LRMDS evaluation findings. These procedures ensured that the development and enhancement of the materials were based on assessment data, classroom experience, expert judgment, and authentic school records.

2.7 Data Analysis Techniques

The data gathered were arranged, tabulated, and analyzed using appropriate statistical tools. Frequency distribution and percentage were used to describe the profile and performance distribution of Grade One learners with learning difficulties based on MFAT results, particularly across learning domains such as literacy and numeracy. Weighted mean was used to determine learners' MFAT performance and the validity and acceptability of the interactive learning materials based on LRMDS evaluation. A five-point rating scale was used to interpret the weighted mean values for MFAT results, pretest and posttest performance, and LRMDS validation. Mean and standard deviation were used to determine the average MFAT performance of learners, the overall evaluation rating of the instructional materials, and the consistency of learner performance and validator ratings. Ranking was used to identify the most and least difficult learning areas based on MFAT results and to determine the areas needing enhancement in the interactive learning materials based on LRMDS validation. A t-test or comparative analysis was used to determine whether there was a significant difference between the pretest and posttest results after the use or enhancement of the instructional materials. The computed t-value was compared with the critical t-value at the 0.05 level of significance and the appropriate degrees of freedom. If the computed t-value exceeded the critical value or if the p-value was less than 0.05, the null hypothesis was rejected; if the p-value was greater than 0.05, the null hypothesis was not rejected.

3. Results and Discussion

3.1 MFAT-Based Performance of Grade One Learners

3.1.1 Pretest Performance Across Learning Domains

The MFAT pretest results showed that Grade One learners with learning difficulties generally performed at a low level, with an overall mean score of 2.13 and a standard deviation of 0.54. Numeracy skills obtained the highest mean score of 2.45, interpreted as Low Performance, followed by reading readiness with a mean of 2.31 and letter recognition with a mean of 2.15, both interpreted as Low Performance. Phonemic awareness obtained a mean of 1.98, while writing readiness received the lowest mean of 1.76; both were interpreted as Very Low Performance. These findings indicate that the learners had difficulty in number recognition, counting, letter identification, sound manipulation, reading readiness, fine motor coordination, tracing, and writing. The findings suggest that the learners had significant gaps in foundational literacy and numeracy skills. The relatively higher score in numeracy indicates some basic mathematical understanding, but the result still showed difficulty in number recognition and counting. This supports Aunio and Niemivirta (2020) and the Department

of Education (2021), which emphasized that learners with weak early numeracy need hands-on and developmentally appropriate learning experiences. The low reading readiness result supports Clay (2016) and Snow and Juel (2020), who noted that weak readiness skills may lead to persistent reading difficulty. The letter recognition result is consistent with Ehri (2020) who explained that poor alphabet knowledge affects reading fluency and phonics learning. The very low phonemic awareness result supports Birsh (2018) and Fuchs and Fuchs (2006), while the very low writing readiness result supports Piaget's (1972) view that writing develops through sensory-motor experience and repeated practice. According to Clark and Mayer (2023), learners with learning difficulties need planned and guided interactive activities that build motor coordination and writing confidence. Overall, the results show the need for learner-centered, multisensory, engaging, and developmentally appropriate materials, as Mayer (2021) emphasized.

3.1.2 Distribution of Learners According to MFAT Performance Level

The distribution of learners according to MFAT performance level showed that most respondents were in the Low and Very Low categories. Fifty-six learners, or 39 percent, were classified under Low Performance and interpreted as Below Average, while 33 learners, or 23 percent, were classified under Very Low Performance and interpreted as Poor. Thirty-two learners, or 22 percent, were at the Average level, 18 learners, or 13 percent, were at the High level, and only 5 learners, or 3 percent, were at the Very High level. These results show that most learners needed immediate instructional support. The high proportion of learners in the Low and Very Low categories indicates that many Grade One learners had gaps in reading readiness, phonemic awareness, writing readiness, and basic numeracy. This supports Department of Education Region V (2021), which found that many early-grade learners performed poorly in literacy and numeracy diagnostic tests due to weak foundational skills and insufficient instructional support. Fuchs and Fuchs (2006) also emphasized that learners with low academic performance in the early grades may continue to experience learning difficulties without early intervention. Snow and Juel (2020) similarly stressed that early identification and intervention help prevent academic difficulties. The findings also align with Universal Design of Learning (CAST, 2018), which emphasizes varied and responsive instructional approaches. According to Mayer (2021), interactive and multimedia materials enhance engagement, understanding, and retention, while Birsh (2018) showed that multisensory teaching is effective in improving literacy and language skills.

3.2 Development of Project i-LEARN Interactive Learning Materials

The MFAT results and classroom observations showed that many Grade One learners had low to very low performance in letter recognition, phonemic awareness, reading readiness, writing readiness, and numeracy skills. Learners also showed short attention spans, low participation, and limited interest during lessons. In response, the researcher developed Project i-LEARN: Interactive Learning Enhancement and Responsive Navigation for Learners with Learning Difficulties, a set of interactive learning materials designed to improve foundational skills through differentiated instruction, multisensory learning, Universal Design for Learning (UDL), and activity-based teaching. The development of Project i-LEARN was based on the need for innovative, learner-centered, and engaging instructional resources. Traditional methods often required teachers to repeat instructions and provide individualized support, but large class sizes and limited resources made sustained intervention difficult. The project therefore aimed to support teachers and learners by providing enjoyable, interactive, and developmentally appropriate activities that improve learner engagement, understanding, and academic performance.

3.3 Posttest Performance After Using the Interactive Learning Materials

After using the interactive learning materials, the learners obtained an overall mean score of 4.24, interpreted as Very High Performance. Letter recognition recorded the highest mean score of 4.40, followed by reading readiness with 4.32 and numeracy skills with 4.28, all interpreted as Very High Performance. Phonemic awareness obtained a mean score of 4.15, while writing readiness obtained 4.05, both interpreted as High Performance. These results show substantial improvement from the pretest overall mean of 2.13, which was interpreted as Low Performance. The improvement suggests that the interactive materials helped address the learners' identified difficulties. The high performance in letter recognition was linked to the use of Interactive Alphabet Flashcards with colorful visuals, matching activities, and repeated exposure to uppercase and lowercase letters. Reading readiness improved through the Interactive Reading Wheel, while numeracy improved through the Counting and Number Manipulative Kit. Although phonemic awareness and writing readiness received slightly lower means, both still showed high performance, indicating meaningful progress. Richard E. Mayer (2021) stated that interactive and multimedia-based teaching materials help learners understand lesson concepts, while Carol Ann Tomlinson (2014) pointed out that materials designed around learner needs can address learning gaps and improve achievement. The findings also support Piaget's (1972) Cognitive Development Theory, which emphasizes active and hands-on learning, and the Social Constructivist Theory by Lev Vygotsky (1978), which views learning as a result of meaningful engagement with learning tools and social support. The results further agree with Reyes and Dela Cruz (2022), Clark and Mayer (2023), Smith and Brown (2020), Higgins, Xiao and Katsipataki (2020), and Fuchs and Fuchs (2006), who emphasized the value of interactive, multimedia, scaffolded, and customized instructional interventions in improving learner performance.

3.4 Significant Difference Between Pretest and Posttest Results

The comparison between the pretest and posttest results showed a clear increase in learner performance. The learners' pretest mean was 2.13, interpreted as Low Performance, while the posttest mean was 4.24, interpreted as Very High Performance. The mean difference was 2.11. The computed t-value was 28.67, and the p-value was 0.000, which was lower than the 0.05 level of significance. Based on this result, the null hypothesis was rejected, indicating a significant difference between the pretest and posttest results. The significant improvement shows that the developed interactive learning materials were effective in enhancing the performance of Grade One learners with learning difficulties. The findings indicate that the improvement was not due to chance but to the intervention provided through Project i-LEARN. These results are in line with Mayer (2021), who stated that multimedia and interactive instructional materials enhance learners' understanding. Similarly, Tomlinson (2014) emphasized that differentiated instructional resources centered on learners' needs improve academic achievement. The findings also support Reyes and Dela Cruz (2022), Flores and Medina (2022), and Smith and Brown (2020), who found that interactive instructional materials significantly improve the literacy and numeracy skills of primary-grade learners.

3.5 Curricular Validation of the Developed Interactive Learning Materials

3.5.1 LRMDs-Based Curricular Validation Results

The developed interactive learning materials were validated using the LRMDs Evaluation Tool and obtained an overall weighted mean of 4.68, interpreted as Very Highly Acceptable. Content accuracy and alignment with learning competencies received the highest weighted mean of 4.82, followed by relevance to the needs of pupils with learning difficulties with 4.78, clarity and appropriateness of instructions with 4.74, organization and presentation of activities with 4.70, usefulness of visuals and interactive elements with 4.69, suitability to Grade One learners' developmental level with 4.66, creativity and attractiveness with 4.63, promotion of learner engagement and participation with 4.60, language appropriateness and readability with 4.58, and durability and usability with 4.55. All indicators were interpreted as Very Highly Acceptable. The validation results show that the materials were curriculum-based, relevant, clear, organized, developmentally appropriate, engaging, and usable for Grade One learners with learning difficulties. According to Dick, Carey, and Carey (2015), instructional materials are effective when learning objectives, activities, and assessments are aligned with curriculum standards. Sanchez and Navarro (2022) also emphasized that curriculum alignment improves consistency among objectives, content, and assessment. The relevance of the materials supports the UDL suggested by CAST (2018), while Florian (2024) emphasized that inclusive resources provide differentiated learning opportunities. The clarity of instructions supports Mayer (2021) and Clark and Mayer (2023), who explained that simple and structured instructions improve understanding and task performance. The organization of activities supports Sweller's (2011) Cognitive Load Theory and Tomlinson (2014), while the usefulness of visuals and interactive elements is supported by Paivio's Dual Coding Theory (1986) and (Mayer, 2021). The suitability of the materials also supports Piaget (1972), while their attractiveness and engagement are supported by Higgins, Xiao and Katsipataki (2020) and Vygotsky, learners work best with social interaction and collaboration (1978).

3.5.2 Expert Validators' Ratings on the Interactive Learning Materials

The expert validation involved five validators composed of curriculum specialists, school administrators, master teachers, and learning resource evaluators. The materials obtained a grand weighted mean of 4.68, interpreted as Very Highly Acceptable. The highest-rated indicator was content accuracy and alignment with learning competencies with a weighted mean of 4.82, followed by relevance to the needs of pupils with learning difficulties with 4.78, clarity and appropriateness of instructions with 4.74, organization and presentation of activities with 4.70, usefulness of visuals and interactive elements with 4.69, creativity and attractiveness with 4.63, suitability to Grade One pupils' developmental level and promotion of learner engagement and participation with 4.60, language appropriateness and readability with 4.58, and durability and usability with 4.55. The validators' ratings confirm that the interactive learning materials were acceptable, curriculum-aligned, relevant, clear, organized, developmentally appropriate, attractive, readable, and usable. The high overall rating suggests that the materials can be used as intervention tools for improving the performance of Grade One learners with learning difficulties. According to Dick, Carey, and Carey (2015), instructional materials should be developed and evaluated systematically to meet learning objectives. Mayer (2021) also showed that well-designed multimedia and interactive materials improve learning outcomes. Sanchez and Navarro (2022) emphasized that materials subjected to curricular evaluation are more effective and usable in the classroom. Furthermore, Garcia and Santos (2022), mentioned that resources designed for learners experiencing difficulty are highly valued by specialists when they align with curriculum standards and learner profiles.

3.6 Sustainability Plan for Project i-LEARN

The proposed sustainability plan for Project i-LEARN was designed to ensure that the activities, benefits, and impact of the interactive learning materials continue beyond the initial implementation. The plan focused on institutional ownership, financial mechanisms, teacher capacity building, technical maintenance, and community engagement. It aimed to transform Project i-LEARN from a short-term research initiative into a self-reliant and institutionally integrated support system for inclusive education. The sustainability plan is important because assistive and interactive technologies may fail when there

is no maintenance, funding, staff training, or long-term support. For learners with learning difficulties, the loss of interactive support may disrupt their learning routines, reduce confidence, and increase frustration. For teachers, the absence of a structured plan may create additional workload and dependence on a few technically skilled individuals. The plan therefore emphasized responsive navigation, three-year technical upgrades, a phased Professional Development Framework, and a Train-the-Trainer model. Through this approach, Project i-LEARN may remain pedagogically viable, technologically sound, financially supported, and useful as a permanent instructional resource for Grade One learners with learning difficulties. Overall, the results of the study show that Grade One learners with learning difficulties initially performed at low to very low levels in several foundational learning domains, but their performance improved to very high after using the developed interactive learning materials. The significant difference between the pretest and posttest results confirms the effectiveness of the intervention. The LRMDs validation and expert ratings further establish that the materials are very highly acceptable, curriculum-aligned, relevant, and appropriate for classroom use. The proposed sustainability plan strengthens the long-term value of Project i-LEARN by supporting continuous use, teacher readiness, technical stability, and inclusive learning improvement.

4. Conclusion & Recommendations

The study concluded that Grade One learners with learning difficulties initially demonstrated low to very low performance in foundational literacy and numeracy skills, particularly in phonemic awareness and writing readiness, as shown by the MFAT pretest results. In response, Project i-LEARN was developed as an assessment-based, interactive, multisensory, and learner-centered intervention designed to strengthen letter recognition, phonemic awareness, reading readiness, writing readiness, numeracy skills, and learner engagement. The posttest results showed a marked improvement from low performance to very high performance, and the significant difference between the pretest and posttest scores confirmed the effectiveness of the developed interactive learning materials. The LRMDs expert validation further showed that the materials were very highly acceptable, curriculum-aligned, developmentally appropriate, responsive to learners' needs, and suitable for classroom use. The validators' recommendations improved the quality, usability, attractiveness, and instructional effectiveness of the materials, while the sustainability plan was intended to support their continued use and long-term implementation.

Based on the findings and conclusions, teachers may use MFAT results as a basis for planning differentiated and targeted instructional interventions, with emphasis on phonemic awareness, writing readiness, letter recognition, reading readiness, and numeracy skills through interactive and learner-centered strategies. Grade One teachers and learning support teachers are encouraged to integrate Project i-LEARN into daily classroom instruction to address the specific needs of learners with learning difficulties. School heads may support the reproduction, use, monitoring, and continuous improvement of the materials, while curriculum planners, learning resource coordinators, and district supervisors may consider validating, adopting, and disseminating the materials across other elementary schools. The Schools Division Office may provide capability-building programs on differentiated instruction, intervention strategies, and interactive material development, while parents and community partners may reinforce literacy and numeracy skills through extended learning activities. Schools may also institutionalize assessment-based intervention programs by regularly administering diagnostic assessments such as the MFAT and using the results to develop evidence-based instructional materials and learning recovery initiatives.

The study was limited to one hundred forty-four Grade One learners with learning difficulties from selected public elementary schools in Gubat North District, Sorsogon Division, and focused only on the use of MFAT results, Project i-LEARN interactive learning materials, and LRMDs expert validation. The intervention addressed selected foundational learning domains, specifically reading readiness, letter recognition, phonemic awareness, numeracy skills, and writing readiness. Since the study was conducted within a specific district and grade level, its findings may be further strengthened through future studies involving larger populations, other grade levels, different subject areas, comparisons with traditional instruction, technology-based interactive materials, multisensory strategies, and long-term retention of skills among learners exposed to interactive learning materials.

Compliance with ethical standards

The study involved Grade One learners with learning difficulties from selected public elementary schools in Gubat North District, Schools Division of Sorsogon, and used MFAT results, interactive learning materials, LRMDs expert validation, classroom observations, informal interviews, and document analysis as part of the research process. The manuscript describes the study procedures, respondents, instruments, and validation process but does not provide a separate statement on ethical clearance, informed consent, conflict of interest, or acknowledgements.

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