Challenges and interventions in developing instructional materials: Perspectives of public school teachers in basic education

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Abstract

This study aimed to explore the challenges faced by public school teachers in Bauko District II in developing instructional materials. The researchers used a quantitative method and distributed questionnaires to 150 teachers across the district as their primary means of data collection. This method allowed the researchers to gain insights from a substantial number of teachers, facilitating a comprehensive understanding of the challenges they faced. The results of the study highlighted two primary critical issues faced by teachers: the scarcity of time due to heavy workloads and the difficulty of keeping pace with technological advancements. Additionally, teachers reported significant challenges related to insufficient skills, knowledge and understanding of instructional materials, limited policy support and inadequate administrative assistance. In accordance with these findings, the study demonstrated some significant ways to improve the creation of instructional materials in rural communities with limited resources. The study emphasised the need for computer literacy training as a result of the expanding digitalization of instructional content. A functional instructional material development committee should be established to improve the process as well as organizing training workshops for instructional material development and encouraging partnerships with higher education institutions (HEIs) to gain access to specialized expertise. The study strongly advocates for the implementation of sustainable capacity-building mechanisms by the department of education such as regular workshops and follow-up sessions to provide continuous support to teachers in material development. Moreover, the study proposed fostering collaboration with other institutions and inviting experts as resource persons to seminars and workshops to enhance teachers' proficiency in crafting effective instructional materials.

Keywords: Basic education, Challenges, Development, Instructional materials, Interventions, Public schools.

1. Introduction

Teachers face difficulties in developing educational materials. Teachers are motivated to create and refine instructional materials due to their understanding of the invaluable role these materials play in supporting effective teaching and promoting meaningful learning experiences despite the difficulties they may experience. Kelly [1] argued that teachers can enhance learners' experiences by engaging them with diverse learning resources. Instructional materials are commonly used by teachers as a primary resource including laboratory manuals, workbooks, learning modules, models, audio-visual materials and computer-assisted instructional programs. These materials have demonstrated effectiveness in shaping learners' behavior and facilitating the acquisition of knowledge and skills.

The development of instructional materials is essential because access to educational resources is frequently restricted in rural areas. Rural students can benefit from having access to relevant and relatable educational materials that are customized to their specific needs and environment. Additionally, instructional materials can help address challenges faced by rural schools such as the insufficiency of learning resources. Instructional materials enable students to engage in self-directed learning by providing comprehensive content, clear instructions and interactive elements. These resources can also encourage diversity by using regional languages, cultural references and illustrations that appeal to children in rural areas.

Instructional materials serve as valuable tools for effective instruction and promoting academic success for students. The development and utilization of instructional materials in the educational context have both advantages and disadvantages. One notable advantage is that it plays a crucial role in promoting student academic performance and learning. The engagement, comprehension and information retention of students can be improved by using instructional materials that are carefully developed and implemented [2]. Studies have shown that the use of instructional materials can have a positive impact on student learning outcomes. Additional resources provide students with extra advantages and can serve as a source of motivation in specific subjects by facilitating exploratory or supplementary learning. Teachers can incorporate additional resources to support students who require additional assistance in order to succeed [3]. These resources can improve student participation, engagement and connection to the learning domain's content when used properly. When instructional materials are not easily accessible or lack quantity or quality, it hampers the teaching and learning process. Inadequate instructional materials have adverse effects such as limited engagement, reduced comprehension and an inability to apply knowledge practically. Students may find it difficult to understand concepts successfully without appropriate visual aids, hands-on materials or pertinent resources. Hence, it is crucial to address concerns regarding the availability and adequacy of instructional materials in order to enhance educational outcomes and improve the overall effectiveness of the school system. According to Ezeliora, et al. [4], incorporating instructional materials to support teaching and learning is considered beneficial as it contributes in improving students' academic performance and retention.

In the Philippines, teachers rely on instructional materials to support and facilitate the transmission of knowledge, skills and attitudes to their students. The effectiveness of the instructional materials and their utilization in the classroom are crucial factors that determine the success of the teaching and learning process. It is imperative that instructional materials are relevant to the lesson objectives and easily developed to ensure their maximum utilization and enhance student performance. The use of instructional materials also encourages self-study or independent study among students. However, some teachers may neglect the use of instructional materials due to a lack of resources. The Department of Education has implemented a policy that requires teachers to develop their instructional materials to meet the needs of the teaching and learning process.

The records of the Learning Resources Management and Development Center (LRMDC) at the Schools Division Office (SDO) of Mountain Province show that only a limited number of public elementary and secondary school teachers have submitted their developed instructional materials for evaluation. The public school district supervisors stated that some teachers in Bauko District have developed instructional materials but they still require evaluation by the Learning Resources Management and Development Center (LRMDC). The goal of every educational institution is to provide quality education to students. However, the limited availability of instructional materials, lack of technical knowledge in using technology, time constraints, negative teacher attitudes and insufficient training for professional growth are some of the challenges faced by public school teachers that hinder their ability to perform effectively.

Bauko District II which is located in a rural area has major educational disparities compared to surrounding urban school districts. This study provides a valuable opportunity to comprehend the unique challenges encountered by public school teachers in rural contexts, including limited resources, inadequate infrastructure and fewer professional development opportunities. By identifying these challenges, interventions can be developed to bridge the gap and ensure equal access to quality instructional materials for learners in rural areas. Bauko District II possesses distinct cultural, linguistic and socioeconomic characteristics that demand tailored instructional materials suited to its specific context. This study enables the exploration of these localized needs and preferences, thereby facilitating the development of culturally responsive materials. By integrating local knowledge and experiences, instructional materials can become more relatable and engaging for rural students ultimately leading to improved learning outcomes. Specific measures could emphasize educating instructors on how to use resources effectively, integrate technology into their lessons and develop a curriculum that caters to each student's individual requirements. Rural teachers often experience isolation due to geographical constraints. This study highlights the importance of establishing collaborative platforms and networking opportunities for teachers to exchange experiences, share best practices, and distribute instructional materials. These platforms can facilitate the exchange of ideas, foster a sense of community and promote professional growth among rural educators. The study's findings can also help policymakers understand the difficulties faced by rural instructors while developing instructional

materials and allocate adequate resources, funding and support to address these challenges. Policy interventions may involve increased investment in technology infrastructure, the provision of grants for instructional material development or incentives for teachers working in rural areas.

2. Conceptual Framework

The basis of this study is the social and contextual approach where learning is not just confined to the learner but takes place in the larger community and group they belong to. This approach views learning as a shared process that occurs through observation, working together with colleagues and being part of a larger system that includes other people, equipment, technology, procedures and the workplace culture. Social interaction, discussion, observation and sharing are crucial to group and individual learning. The role of the facilitator is to guide the discussion and focus on key learning points rather than allow the group to deviate from the topic. Vygotsky's social development theory emphasizes the importance of support offered by educational providers through scaffolding which may include verbal assistance, questioning and guidance. This support allows learners to expand their activities beyond what they can achieve independently guided by more competent and knowledgeable individuals referred to as the More Knowledgeable Other (MKO). This interaction falls within the learner's zone of proximal development which is the difference between what they can achieve on their own and with the help of others and materials. This interaction encourages and facilitates learning as it leads to increased involvement and higher levels of cognition. The study is also aligned with the Adoption of Basic Education Research Agenda (DepEd Order No. 39 series of 2016) which highlights the importance of instructional materials in achieving K+12 standards.

3. Method

Quantitative research design is a systematic and objective method for investigating phenomena. In this study, a quantitative design was used to gather numerical data about the severity of the challenges faced by the 150 teachers of Bauko District II in developing instructional materials. The respondents' opinions on the suggested interventions to solve the problems they had highlighted were also evaluated using this method.

3.1. Research Context
3.1.1. Participants in the Study

The respondents to this study were the 150 public school teachers of both elementary and secondary schools in the school district of Bauko II (a rural school district in Mountain Province, Philippines).

3.2. Instrumentation

A survey questionnaire was used to collect the data for this study. Its purpose was to learn about the respondents' difficulties as well as their suggestions on how to solve them. The questionnaire contained a table that listed these challenges and the suggested interventions. The objective of the survey was to gather comprehensive data on the existing challenges and identify possible solutions to address them effectively. This information will be useful in formulating strategies that can be implemented to improve the current situation and overcome the challenges of the respondents particularly in developing instructional materials.

3.3. Data Gathering Procedure

The present study was conducted with the approval of the Public School District Supervisor of Bauko District II. Once the necessary permissions were obtained, the researcher conducted preliminary group interviews with the target participants to gather initial insights. The responses collected from these informal interviews were then organized into themes and analyzed to develop a comprehensive survey questionnaire.

A questionnaire based on these themes was developed, and respondents were asked to assess each statement using the provided scales. The responses to the questionnaire were then analyzed using frequency count and weighted mean to provide a comprehensive understanding of the participants' perceptions of the challenges they experience in developing instructional materials and suggested interventions to address the problems. The questionnaire was an essential component of the data collection process as it provided structured and quantifiable data to complement the insights gathered from the group interviews. The results of the survey played a crucial role in informing the development of strategies aimed at addressing the challenges faced by the respondents.

3.4. Treatment of Data

The researcher used a weighted mean calculation to analyze the responses collected from the survey questionnaires distributed to the respondents. This approach enabled the researcher to summarize the data and understand the participants' perceptions regarding the issues, challenges and interventions in developing instructional materials. Additionally, a four-point Likert scale was used to measure the seriousness of the challenges faced by the teachers in developing instructional materials as well as the extent of the need for the suggested interventions to address the challenges. Table 1 presents the details of the scale used in this study.

Table 1.
Description of the Likert scale used.

Degree of seriousn	Point distribution scale	Descriptive equivalent
4	3.26 - 4.00	Very serious
3	2.51 - 3.25	Serious
2	1.76 - 2.5	Moderately serious
1	1.00 - 1.75	Not serious
Extent of need	Point distribution scale	Descriptive equivalent
4	3.26 - 4.00	Very much needed
3	2.51 - 3.25	Much needed
2	1.76 - 2.5	Moderately needed
1	1.00 - 1.75	Not needed

4. Results

4.1. Challenges in Instructional Materials Development

The results of the study indicated that the majority of the identified issues and challenges in the development of instructional materials were considered serious by the respondents. The two most critical issues were lack of time for instructional material development due to a heavy workload, with a weighted mean of 3.38 and the inability to keep up with the technology used in instructional material development, with a weighted mean of 3.03. Other challenges, such as the lack of skills, knowledge and understanding of different types of instructional materials, insufficient policy support and inadequate administrative support were also rated as serious with weighted means of 2.95, 2.26, 2.53 and 2.39 respectively. Table 2 presents the challenges faced by the respondents in developing instructional materials.

Table 2.
Degree of seriousness of challenges in developing instructional materials.

	Issues in developing instructional materials (IMs)	Weighted mean	Degree of seriousness
1	Lack of knowledge and understanding of the different types of instructional materials.	2.76	Serious
2	Lack of skills in developing instructional materials.	2.95	Serious
3	Inability to keep up with technology used in developing instructional materials.	3.03	Serious
4	Lack of time to develop instructional materials due to work overload.	3.38	Very serious
5	Lack of administrative support.	2.39	Serious
6	Lack of policy support.	2.53	Serious

Basic education teachers in public schools frequently stress the difficulties of developing instructional materials particularly in rural areas where information accessibility is still an issue. Table 3 presents the extent of the need for the suggested interventions as perceived by the respondents.

Table 3.
The extent of need for the suggested interventions to address the challenges faced in developing instructional materials.

	Suggested intervention	Weighted mean	Extent of need
1	Training-workshop on instructional materials.	3.64	Very much needed
2	Computer literacy training (e.g., word processing, photo editing, layout, etc.)	3.76	Very much needed
3	Tapping resource persons or experts from other learning institutions.	3.59	Very much needed
4	Linkages or partnerships with Higher Education Institutions (HEIs).	3.45	Very much needed
5	Organization of a school-based or district wide instructional development committee.	3.45	Very much needed

4.2. Interventions to Address the Challenges

The survey results showed that all of the proposed interventions were deemed important by the participants. Due to the digitalization of educational resources which necessitates that teachers possess strong skills in fields like text encoding, layout design, photo editing, and others, computer literacy training was recognised as the most crucial in terms of importance.

The training session on teaching materials comes next. Most respondents believed that this intervention was desperately needed because it gives them the chance to learn more about creating instruction-based materials that are suited to student needs, such as strategic intervention materials to address the least-learned competencies among learners. The third intervention was about using resource people or experts from other learning institutions. The participants acknowledged the value of learning from others especially experts in other educational institutions. They considered this

intervention important in addressing the shortcomings of the mechanisms put in place by the Department of Education. A few of the respondents expressed disappointment that the Department of Education's widespread training does not appear to have a long-lasting effect. Thus, they suggested that training workshops be held in small groups to allow for maximum participation and learning opportunities. Linkages or partnerships with Higher Education Institutions (HEIs) were also deemed crucial by the participants. HEIs can provide technical expertise in various fields. The participants also believed that it was important to establish a functional school-based or district-wide instructional material development committee to assist them in the early stages of developing instructional materials.

5. Discussion

5.1. Challenges in Instructional Materials Development

Previous research has identified various challenges faced by teachers in creating effective materials with a significant issue being the scarcity of time and resources. For instance, Armidor, et al. [5] discovered that elementary school teachers experience exceptionally high levels of role overload indicating that they are burdened with heavier workloads than anticipated. Role overload is a prevalent issue worldwide. Although the teaching profession is sometimes viewed as simple and low-stress, instructors themselves are aware of several difficulties related to their job. Empirical evidence suggests that teaching is relatively more stressful which leads to exhaustion. Multiple studies have investigated this phenomenon revealing elevated levels of emotional exhaustion among school teachers [6-8]. Furthermore, Perwita, et al. [9] discovered that role overload, family support, work-family and teacher certification have a positive impact on teachers' performance. The organization task plays a vital role in the intrinsic relevance of role overload [10]. This finding holds true among the respondents who had appended duties such as being an ICT coordinator, adviser of student organizations, coach in curricular and co-curricular activities and other similar designations. Holding these designations without corresponding deloading subsequently affects their teaching preparation including the development of instructional material.

The failure to stay updated with the technology used in the development of educational materials is another problem. Integration of ICT into the curriculum has the potential to significantly improve both teaching and learning. This encompasses various aspects such as developing multimedia instructional resources and implementing ICT-supported assessments. There are relevant trainings accorded to teachers on using technology in IM development, the opportunity is primarily given to the ICT coordinator of the school. Thus, the rest of the teachers are not essentially equipped with emerging trends in technology-mediated instructional material development. Teachers who will participate in these trainings may occasionally be chosen based on the preferences of the school administration restricting the participation of other teachers who are not favored by their respective school administrators. Mula and Bucar [11] found that teachers who received proper ICT training and possessed graduate or postgraduate qualifications were successful in using the program equipment. These results emphasize the crucial role of adequate teacher preparation and training along with personal familiarity with technology in determining the effectiveness of technology-focused initiatives. The study conducted by ElSayary [12] revealed that the upskilling training program successfully improved teachers' digital competence by equipping them with the necessary knowledge and skills. Consequently, teachers exhibited a positive inclination towards using technology to enhance collaboration, learning and productivity, thereby further developing their digital competence. According to the study conducted by Wahyuningsih, et al. [13], it was found that a significant number of teachers in the sample experience challenges in the development of learning resources. These difficulties can be primarily attributed to two factors. Firstly, a considerable proportion of teachers lack the necessary technical skills to effectively use tools and devices essential for creating digital learning resources. Secondly, there is a notable deficiency in the proficiency of managing learning materials to integrate them into digital learning resources. Jimenez [14] discovered that a lack of ICT skills and knowledge was the main barrier preventing teachers from developing supplementary learning materials (SLMs).

Lack of knowledge and understanding of the different types of instructional materials is also a challenge among the respondents in this study. They claimed that the training conducted by the Department of Education was unproductive. The current educational system requires teachers to be digitally proficient, integrating new technologies into their lesson plans and encouraging high-quality instruction that meets the needs of today's proficient technology students. Consequently, there is a need to prioritize continuous teacher training, enabling them to stay updated on current educational trends, challenges and instructional opportunities presented by ICT [15].

Another challenge is insufficient support from school administrators. Some survey participants reported that they often bear the expenses required for preparing their teaching materials. The Maintenance and Other Operating Expenses (MOOE) per school are insufficient to cover the costs of developing and reproducing learning materials for their students. Additionally, respondents expressed a lack of persistent encouragement from their school administrators. However, the Quidasol [16] study provided evidence that school administrators fulfill their responsibilities competently, offering support, demonstrating strong management skills and overseeing operations. The research indicates that administrators' proficiency in computer literacy can contribute to their ability to organize and run schools efficiently. Raman and Thannimalai [17] study suggested that administrators who inspire a clear school vision, promote effective technology integration and provide ongoing professional development have the greatest influence in motivating teachers to incorporate and use technology. Jimenez [14] found that lack of support is one of the hindrances that teachers face in developing supplementary learning materials.

5.2. Interventions to Address the Challenges

The survey findings revealed that all of the suggested interventions were overwhelmingly supported by the participants. However, when it came to ranking the importance of these interventions, participants consistently identified

computer literacy instruction as the most important. The increasing digitization of instructional materials has created a demand for computer literacy training because it requires teachers to be skilled in a range of disciplines including text encoding, layout design, photo editing and others. This need is also attributed to the fact that this study was conducted in areas where computer literacy is still a pressing need. Teachers who are endowed with computer skills are better able to navigate the digital tools and resources required for productive teaching and learning experiences. Mendoza [18] found that teachers in Junior High School (JHS) face challenges regarding the availability of ICT resources for integrating technology into their teaching. They have not reached the desired level of ICT competence necessary for effectively incorporating ICT programs into their teaching practices. Teachers require ICT training and professional development seminars to enhance their competency in integrating ICT into their teaching. Jimenez [14] discovered that the main challenge encountered by teachers in developing supplementary learning materials (SLMs) was their lack of proficiency in ICT skills and knowledge. As a result, teachers must participate in ICT workshops and trainings to improve their technological proficiency in developing supplemental learning materials.

The potential of academic linkages and partnerships in supporting teachers' professional development particularly in curriculum and instruction remains an underexplored area in the context of the study. Active participation in academic linkages allows teachers to enhance their knowledge, refine their instructional design skills and stay updated with innovative approaches. As a result, these opportunities contribute to the professional growth of teachers, enhance their instructional practices and ultimately benefit student learning outcomes. It is worth noting that the district of Bauko where this study was conducted already has an existing partnership with a higher education institution in the province. However, the full potential of this partnership has not been maximized despite its functionality over the past few years.

Introducing the institutionalization of a school-based instructional material committee is an important intervention to address the challenges faced by teachers in developing instructional materials. A dedicated school-based instructional material committee is crucial for overseeing the development of instructional materials within the educational institution. The committee's primary role is to ensure quality control by evaluating and refining the instructional materials. They also work to align the materials with educational objectives and tailor them to the specific needs of the students and the institution. Resource management is another key responsibility of the committee ensuring that the materials are cost-effective and well-utilized. Continuous improvement is fostered through the committee's efforts to gather feedback from teachers and stakeholders enabling the refinement and enhancement of the instructional materials over time. Collaboration among educators is also facilitated by the committee which provides a platform for the sharing of ideas, best practices and innovative teaching strategies. As a result, the school-based instructional material committee plays a crucial role in providing teachers with effective and relevant materials that positively impact student learning outcomes. They assist in enhancing teaching and learning across the institution by supervising the creation, adaptation and quality control of instructional materials.

Developing instructional materials poses challenges for teachers but they recognize the importance of these resources for learner development. Teachers themselves require adequate training and support to create effective materials. Access to relevant resources and guidance on copyright issues is essential. Time constraints and heavy workloads can also hinder material development. Professional development programs should prioritize capacity building in instructional material design, covering areas such as instructional design, content organization, and assessment integration to address these challenges. Collaborative platforms and communities of practice can facilitate the sharing of best practices and resources among teachers. Investing in teacher capacity building, resource access and dedicated time for material development will empower teachers to create high-quality instructional materials that enhance learning outcomes.

6. Conclusion

The study highlights the challenges faced by teachers in Bauko District II in developing instructional materials. These difficulties include time constraints, insufficient technical skills, limited post-training opportunities and a lack of support. Although the teachers possess academic and professional qualifications, they still require additional support to enhance their abilities in creating instructional materials. The suggested interventions, such as establishing school-based or district-wide instructional committees, collaborating with higher education institutions and offering training and workshops can provide the necessary support and capacity-building opportunities to enable teachers to develop effective instructional materials.

The research findings on challenges faced by teachers in Bauko District II in developing instructional materials have important policy implications. There is a need for policy interventions considering the difficulties that have been highlighted including time limits, a lack of technical proficiency, restricted post-training options and a lack of administrative support. These interventions include: strengthening teacher training programs in instructional material development, forming partnerships with higher education institutions to provide additional training and professional development opportunities, establishing school-based or district-wide instructional committees to foster collaboration, support and feedback providing resources and technological infrastructure to overcome limitations and enable more engaging learning experiences, facilitating policy support and administrative backing by creating explicit policies and offering guidance, resources and incentives and encouraging knowledge sharing and collaboration through platforms or networks where teachers can share experiences and best practices. These policy interventions can support teachers in addressing the challenges they face, enhance their skills and improve the development of instructional materials in Bauko District II. The study on challenges and interventions in developing instructional materials in the rural context of Bauko District II provides valuable insights but it has limitations. These include the limited sample size and representativeness, contextual specificity, self-report bias, limited scope of challenges and interventions and temporal limitations. This study

adds important knowledge and provides a foundation for understanding the difficulties experienced by instructors in rural settings despite these limitations. Future research should aim to address these limitations and further enhance our understanding of this important topic.

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