Assessment of Pre-service Teachers' Creativity in Developing Instructional Materials During Their Professional Practice in Ibadan, Nigeria

Samuel O. Babalola [1], and Ahmed Fakhir [1]

[1] Department of Arts and Social Sciences Education, Faculty of Education, University of Ibadan, Ibadan, Nigeria.
Correspondence: Samuel O. Babalola, Department of Arts and Social Sciences Education, Faculty of Education, University of Ibadan, Ibadan, Nigeria.
Email: so.babalola@ui.edu.ng

DOI: https://doi.org/10.23918/ijsses.v13i2p2

Abstract: This study assessed pre-service teachers' creativity in developing instructional materials during their compulsory professional practice. It stressed the importance of instructional materials in teaching and learning, and the need to equip pre-service teachers with skills required to creatively develop and select relevant instructional materials for facilitating effective teaching. The study adopted a descriptive survey design. A simple random technique was used to select 308 penultimate and final year pre-service teachers in the Faculty of Education, University of Ibadan, Nigeria, as participants in the study. A self-designed 4-point structured Likert scale, questionnaire titled "Assessment of Pre-service Teachers' Creativity in Developing Instructional Materials (APTCDIM) was used to collect data after experts validated it. To determine reliability, pilot testing was conducted using a sample that did not participate in the study, and a reliability coefficient of .87 was obtained using Cronbach Alpha analysis. Data analysis was done using simple frequency count, percentage score, mean, and standard deviation. The decision rule was set at 2.5. Findings showed that pre-service teachers demonstrated creativity in developing instructional materials during their professional practice ($\bar{x}$ = 3.90), even though confronted with systemic limitations of limited infrastructure. Identified constraints limiting pre-service teachers' creativity include funds and time constraints, large class sizes, and limited access to technology $\bar{x}$ = 2.52). It was recommended that teacher education programs should give adequate priority to courses or activities that enhance pre-service teachers' creativity in the curricula to improve their instructional delivery.

Keywords: Pre-service Teachers, Teachers' Creativity, Development of Instructional Materials, Teaching Practice, Professional Practice, Teachers' Use of Instructional Materials.

1. Introduction

The art of teaching and learning is a significant concern in education because it forms the foundation for all educational practices. Teaching is a process that involves explaining concepts, ideas, knowledge, or instruction from the teacher to the learners (Banner & Cannon, 2017; Munna & Kalam, 2021). Although numerous factors determine learners' academic performance, classroom teaching remains crucial. This implies that learning can be significantly enhanced by adequate and resourceful teaching.

Received: 16.06.2025
Accepted: 10.06.2026
Published: 17.06.2026
Babalola, S., & Makinde, B. (2026). Assessment of Pre-service Teachers' Creativity in Developing Instructional Materials During Their Professional Practice in Ibadan, Nigeria. *International Journal of Social Sciences & Educational Studies*, 13(2), 36-52.

When teaching is viewed as an art, it depends on the teacher's creative prowess to effectively accomplish teaching objectives. This implies that even though there are established practices in teaching like the development of lesson plans, the communication of lesson content, assessment, and evaluation amongst others, teachers' creativity in developing and deploying instructional materials for meaningful engagement during classroom instruction delivery constitutes a major aspect of the of every classroom teaching.

Instructional materials are resources that teachers use to promote easy comprehension and application of learning in the classroom; they are concrete items and objects sourced by the teachers and deployed to enhance teaching-learning activities and facilitate active student engagement during instructional delivery. Chisunum & Christiana (2004) categorize graphic images, 3-D materials, videos, songs, flashcards, etc., as instructional materials.

Instructional materials give learners a sensory presentation of lesson concepts. Hence, teachers are likely to exert extra effort in facilitating learning in the absence of relevant instructional aids (Asiegbu & Okpala, 2019). Instructional materials are like hooks; they motivate students to participate and engage in instructional activities actively. Developing relevant instructional materials to aid learning, therefore, requires the teacher's creativity, especially in situations where they are not readily available (Yahaya, 2022).

Olawale & Salami (2024) described creativity as the capacity to approach a task or problem using a fresh or innovative method. Hence, creativity in teaching has to do with the teacher's ability to initiate new things or create innovative ideas or resources that will aid their instructional delivery, leveraging their imaginative capabilities.

On the other hand, developing instructional material is a process where teachers engage their creativity to research, plan, and create resources that could aid effective teaching and learning. The process of developing instructional aids is seen as the solution to the problem of insufficient instructional resources, which are meant to be available in excess (Romero, 2021). However, when the reverse is the case, teachers are usually expected to improvise resources to enhance the learning experiences of their students. Developing instructional resources demands that the teacher identify the needs, interests, learning styles, and psychological level of the learners, the lesson content, and objectives to determine the appropriate resources (Syatriana, 2019). Instructional materials must align with learning objectives, encourage interactivity, and must be contextually relevant to learners. Relevance, reliability, and usability are also other factors to be considered in the development of instructional materials. Learning aids can be developed for learners at any level since the general aim is to optimize learning and improve performance (Onyia, 2013). Jamil (2024) identified some limitations confronting the effective development of instructional materials, including inadequate resources, insufficient time, and lack of creativity, among others.

Several challenges have been identified as the factors responsible for teachers' lack of enthusiasm and capability in developing relevant instructional resources to aid their professional practice, and these include the time factor, unavailability of resources, lack of funding, inadequate knowledge due to poor teacher education programme, amongst others (Asiegbu & Okpala, 2019; Sajid et al., 2022). The effective implementation of a quality teacher education framework plays a crucial role in producing sound and well-

rounded teachers who are skillful in creatively developing and utilizing relevant instructional materials for effective instructional delivery in the classroom, for optimizing students' learning experiences and boosting their academic performance (Napanoy et al., 2021). One major component of the teacher education program in Nigeria that seeks to equip pre-service teachers with pedagogical capabilities is the compulsory 3-month or 6-month professional teaching practice exercise, which is made compulsory for all student teachers in faculties of education at a university or a college of education.

Teaching practice has been described as the most significant aspect of the teacher education curriculum, as this period offers the pre-service teacher numerous opportunities to apply their acquired theoretical knowledge. This experience helps to determine the aspiring teacher's readiness as well as competency as a professional (Aglazor, 2017; Valtonen et al., 2021). Olatunde-Aiyedun (2021) emphasized the crucial role of teaching practice in shaping the experiences of aspiring teachers. They highlighted that during this period, pre-service teachers can integrate and apply their knowledge and skills in real-life teaching scenarios, which is essential for their professional development.

Studies have demonstrated that pre-service teachers often face challenges in generating and utilizing innovative teaching materials during their instructional practices. Besa & Parcon (2021) Napanoy et al. (2021) identified a lack of practical teaching resources as one of the major problems facing teachers-in-training during their teaching practice.

A recent study has shown that a lack of appropriate instructional materials can negatively affect learners' performance. For instance, Syatriana (2019) in his study traced the mediocre performance of students in language class to a lack of effective instructional resources. Likewise, Alabere (2017) also emphasized the need for teachers' creativity in developing instructional materials that can aid learners' creativity and critical thinking skills inside and outside of the classroom.

The current teacher training programs in Nigerian Universities may not be sufficiently addressing the development of creativity and resourcefulness in pre-service teachers. While these programs often emphasize theoretical knowledge and pedagogical skills, there may be a lack of focus on the practical application of these skills, particularly in the context of instructional material development. This gap could result in a disconnect between the training provided and the actual demands of the classroom, leaving pre-service teachers ill-prepared to face the challenges of real-world teaching environments. The absence of creativity in teaching may result in repetitive and ineffective instructional methods, leading to reduced student engagement and learning achievements (Deborah et al., 2021; Babalola, 2023).

There is a pressing need for a systematic assessment of the creativity of pre-service teachers during their professional practice. Without such an assessment, it becomes challenging to identify specific areas where these teachers may need additional support or training.

Although there have been several studies on the importance of instructional materials; and pre- service teachers' perception of their creativity in selecting instructional materials, this study showcased the crucial role of creativity in teacher preparation emphasizing the need for teacher education programs to enhance pre-service teachers' creativity in developing effective instructional resources through adequate exposure to the rudiments in the course of their professional training.

It also emphasized that developing instructional aids involves considering students' needs, interests, learning styles, and lesson objectives. Therefore, this study emphasized the need to better equip pre-service teachers with the skills to create instructional materials during their teaching practice, highlighting the need for better teacher education programs and professional development opportunities to foster creativity in instructional delivery. The study was carried out among penultimate and final-year pre-service teacher students selected from the Faculty of Education, University of Ibadan to determine their creativity in developing instructional materials during their first and second professional practice exercise as pre-service teachers.

1.1 Statement of the Problem

The professional practice period is a critical phase of training pre-service teachers, being the bridge between academic knowledge and practical application. The ability of these teachers to develop creative and resourceful instructional materials is a significant reflection of their pedagogical competence and a determinant of their success during this period. The study assessed pre-service teachers' creativity in developing instructional materials during their professional practice to enhance their students' learning. Over the years, pre-service teachers' creativity has been limited because they often use available materials or resources used by their cooperating/mentor teachers, limiting their capability to demonstrate and harness their creative prowess. This, of course, has limited their innovative expression in creating instructional materials, such as images, videos, flashcards, and digital tools, which are very useful in stimulating learners' interest during instructional delivery. Innovative instructional materials make the lesson more comprehensible and engaging for learners. While studies have focused on the importance of instructional materials in the classroom, teachers' selection and use of instructional materials, amongst others, emphasis has not been placed on pre-service teachers' creativity in developing instructional materials during professional practice. Therefore, this study examined pre-service teachers' creativity in developing instructional materials during their professional practice. Creativity in this study refers to teachers' ingenuity or originality in selecting or designing appropriate instructional materials required to effectively engage students in the process of instructional delivery.

1.2 Research Objectives

The study has the following objectives:

1. Show the extent to which pre-service teachers are involved in the process of creative development of instructional materials during professional practice.
2. Discuss the challenges confronting pre-service teachers in the process of creative development of instructional materials during their professional practice.

1.3 Research Questions

1. To what extent are pre-service teachers creative in developing instructional materials?
2. What difficulties are encountered by pre-service teachers in developing instructional materials?

2. Literature Review

2.1 Constructivist Theory

The constructivist theory emphasizes the need for learners to derive meaning from learning activities and learning environments, which can lead to impactful learning. This theory draws heavily from the work of Piaget, who developed stages of cognitive development that emphasize the importance of aligning learning tasks with the developmental capabilities of students (Efgivia et al., 2021). According to the constructivists, teachers cannot transmit knowledge when the learners are passive (Tan & Ng, 2021). Hence, learners are better empowered when they are at the centre of their learning, constructing their knowledge. The implication of the theory of constructivism to teaching and learning cannot be overemphasized. Teachers take the position of facilitators while learners are allowed to actively participate in building their knowledge through diverse activities and dynamic learning environments carefully planned and orchestrated for their learning.

The principle of Constructivism, according to, Jumaah (2024) includes active learning, social context and learning, knowledge construction, amongst others. Active learning in constructivism states that the process through which learners acquire knowledge is as important as the content or body of knowledge that learners are exposed to (Efgivia et al., 2021). Therefore, teachers need to be more intentional, not just about the lesson content, but also focus on how they would support their learners (Tan & Ng, 2021), in terms of lesson content, selection of learning activities and resources, as well as their organization. The theory, therefore, places a great demand on educators' creativity with the expectation that they can critically develop strategies as well as resources that can promote learners' active participation and mastery of concepts.

Another implication of this theory for this study is the emphasis on a learner-centered approach, necessitating resourcefulness in identifying all the important learning variables that are relevant to learners' contextual environments and diverse learners' needs. The concept of scaffolding in constructivism entails building on learners' existing knowledge and withdrawing support as they progress in their learning (Efgivia et al., 2021). In developing instructional materials, teachers must engage relevant resources that can aid learners' construction of meaning, using such resources to optimize their learning. It makes teachers specific in terms of what they want the students to learn, with what and how they learn, and how to assess what they have learnt (Tan & Ng, 2021). The implication is that there must be sufficient planned strategies, activities, and even resources to achieve these in a constructivist classroom.

Creativity and critical thinking are major components of constructivist theory. It is believed that when learners actively construct meaning during the learning process, they are engaging and stretching their creativity and critical thinking skills. The process of unpacking knowledge, ideas, and strategies usually leads to problem-solving. Hence, the product of active learning and scaffolding in constructivism is problem-solving through critical thinking. Therefore, teachers need to perceive their roles beyond assisting their learners to memorize facts, but as coaches helping them to acquire essential 21st-century skills and capacities. This understanding will enable teachers to become more conscious of demonstrating creativity in their everyday teaching-learning activities and interaction with the learners, starting with their lesson objectives development, lesson planning, classroom management, formative assessment skills,

instructional materials development, and deployment. Andika et al. (2023) demonstrated that instructional materials developed using constructivist principles significantly increased student engagement and comprehension levels in middle school settings, highlighting the effectiveness of this approach in educational contexts.

2.2 Creativity and Resourcefulness

Creativity is the ability to produce valuable and novel ideas. A creative person is, therefore, an individual who possesses the capability to approach an issue, idea, or problem uniquely to achieve a novel result. Olawale & Salami (2024) corroborate the idea that imagination is the strength of creativity. Hence, creativity starts with the mind's ability to process a thought in a new way. Innovation, Originality, expertise, motivation, etc., are major components of creativity. Deborah et al. (2021) identified teachers' ability to make learning interesting and effective as true creativity in teaching.

As noted in Glaveanu et al. (2020), creative outcomes increase an individual's motivation to embrace new challenges and explore more opportunities. It leads to discovery in any human endeavor.

2.3 Concept of Creativity in Teaching

Creativity is a great professional skill that assists teachers in designing effective strategies and resources through which complex concepts can be made easy for learners to learn. No individual loves to encounter difficulties. However, creativity helps both the teacher and learners to develop a cheerful outlook towards difficulty and challenges in teaching and learning. Creativity in teaching is a process where teachers use imaginative approaches to present lessons to learners in an exciting and motivating manner. Creativity enables pre-service teachers to design engaging instructional materials, like integrating multimedia or creating interactive charts to communicate instructions to learners, as against depending on the conventional textbooks available to them.

It is a major platform through which student teachers build their creativity (Chen et al., 2022). Creativity is a core competency in teaching, and it is critical for 21st-century education. Deborah et al. (2021) see it as an influencing force in transforming human society and the driver of development and consistent societal progress. Creativity is an innate ability of every individual; however, when creativity does not meet action, it becomes dormant. The socio-economic demands of education in this century are enormous. As a result, diverse societal problems are on the rise, such as economic, cultural, political, environmental and health challenges, which call for effective and creative teaching solutions by the teachers (Kumar, 2021; Marouli, 2021; Babalola and Kolawole, 2021).

2.4 Teaching Practice/Professional Practice for Pre-service Teachers

Teaching Practice is a significant component of the teacher education programme globally. The process of becoming a professional teacher in Nigeria, just like in any other country, can be a staggering task with several demands, which include a compulsory 6-week or a three-month teaching practice exercise in Nigerian faculties of education or colleges of education, or a whole year in some countries (Olatunde-Aiyedun, 2021). Aglazor (2017) describes this exercise as the most important component of the teacher education programme and Omodan (2022) explains that, beyond having it as a compulsory course in the

teacher education programme, the relevance and the professional exposure it gives pre-service teachers cannot be overemphasized.

Since pre-service teachers are usually exposed to the real classroom setting during this time, it is safe to conclude that the exercise aims to empower teachers-in-training with the professional capacity required to deliver quality instruction for effective learning (Omodan, 2022).

The teaching practice period for students in the faculties of education in Nigerian universities usually lasts for 12 weeks because it is assumed that most of the students have attended the colleges of education, where the teaching practice lasts for an extended period of six months. The teaching practice period is a time when pre-service teachers are expected to apply gathered theoretical knowledge in delivering engaging instruction to their learners. They are expected to be under the mentoring of a cooperating teacher who will put them through difficult challenges they might encounter during this period (Humphreys et al., 2020). From time to time, faculty members from their universities come around to inspect their on-site classroom instructional delivery. Including other issues on the writing of lesson plans, instructional strategies, classroom management, assessment techniques, and their creativity in developing or selecting relevant instructional materials that help their learners to learn effectively (Omodan, 2022).

2.5 What are Instructional Materials?

Instructional Materials (IM) are diverse teaching resources that teachers adopt to simplify lesson content for their learners, they are sometimes called teaching aids. According to (Onyia (2013), access to instructional materials can determine the quality of learning available and accessible to learners. In his words, they help to make learning effective and relatable. In the work of Alabere (2017), instructional materials are the visual or audio-visual aids, concrete, or non-concrete materials that educators use during teaching and learning exercises to improve the quality of learning. Syatriana (2019) emphasized the need to align instructional materials with the curriculum and with the learners' needs, explaining that only such instructional materials can improve students' learning capacity and attain the goal of the school curriculum. Instructional materials usually appeal to learners' sense organs such as sight, emotions, hearing, nasal perception, and taste.

However, Chigbu & Akor (2023) identified some of the challenges associated with the use of instructional materials as unavailability of adequate resources, poorly designed but available resources, and obsolete and irrelevant resources, which make teaching ineffective and hinder the academic achievement of the students. Several researchers have explored effective strategies for creating instructional materials that enhance learners' engagement, including studies by Alabere, (2017); Syatriana, (2019); Yahaya, (2022). Visual aids include various materials such as physical objects, models, mock-ups, photographs, chalkboards, transparencies, textbooks, slides, opaque projectors, as well as audio-visual equipment like record players, magnetic tape recorders, telephones, and speakers. This category also encompasses videotape recording and playback devices, sound film projectors, synchronized tape/slide presentations, television, and 16mm film projectors amongst others (Asiegbu & Okpala, 2019; Babalola, 2024).

3. Methods

This study was conducted to assess pre-service teachers' creativity in developing instructional materials using the cross-sectional survey method to obtain more comprehensive, valid, reliable, and objective data. A simple random sampling technique was employed to select 308 penultimate and final-year pre-service teachers from nine academic departments, namely: Science and Technology, Early Childhood, Special, Adult, Management, Health, Human Kinetics, Guidance and Human Development, and Arts and Social Sciences Education, within the Faculty of Education at the University of Ibadan, Ibadan, Nigeria.

One research instrument titled "Assessment of Pre-service Teachers' Creativity in Developing Instructional Materials (APTCDIM) was used to gather data. The instrument had three (3) sub-scales: Section A collected respondents' data; Section B had ten (10) items, and this section was used to elicit information about pre-service teachers' creativity in selecting and developing instructional materials during their professional practice from the respondents. Section C had ten (10) items. This section was used to identify the challenges faced by pre-service teachers in selecting and developing instructional materials during their compulsory professional practice. Section B was structured on a 4-point scale (4-Often, 3-Sometimes, 2-Rarely, 1-Never. Section C also had a 4-point scale had 4-Strongly agree, 3-Agree, 2-Disagree, and 1-Strongly Disagree). The validity of the instrument was determined by curriculum and instruction, the teaching practice coordinator, and education experts from the Faculty of Education at the University of Ibadan. The reliability was determined through a pilot test with a separate sample of fifty

(50) respondents who did not participate in the main study. Data collected through the pilot testing were analysed using Cronbach Alpha, which yielded a reliability coefficient of .87.

Data collection, which was carried out by the researchers, lasted for 8 weeks. Before participants were given the instrument to fill out, a consent form was given detailing the purpose of the study and requesting their consent to participate in the study. Only participants who gave their consent by signing the consent form were allowed to take part in the study. Data collected were descriptively analysed using simple frequency count, percentage score, mean, and standard deviation. The decision rule was set at 2.50.

4. Results

Research Question 1: To what extent are pre-service teachers creative in developing instructional materials during their professional practice?

Table 1: Pre-service Teachers' Creativity in Developing Instructional Materials During their Professional Practice

S/N	Items	Often (F) (%)	Sometimes (F) (%)	Rarely (F) (%)	Never (F) (%)	Mean	SD
1	During your last professional practice, how often did you adapt lesson plans to address the unique needs and interests of your students?	95.8% (295)	3.9% (12)	0.3% (1)	0% (0)	3.95	0.22
2	How frequently did you incorporate new or unconventional teaching methods (e.g., role-playing, games) in your lessons?	88.1% (271)	9.6% (30)	1.3% (4)	1.0% (3)	3.85	0.46
3	How often did you design or create your own instructional materials to enhance learning in the classroom?	91.0% (280)	6.4% (20)	1.9% (6)	0.6% (2)	3.87	0.46
4	How often did you collaborate with other teachers to develop engaging lesson plans or instructional strategies?	88.7% (273)	6.4% (20)	4.2% (13)	0.6% (2)	3.83	0.51
5	How often did you design engaging assessments (e.g., projects, presentations) to evaluate students' comprehension?	85.5% (263)	9.3% (29)	3.9% (12)	1.3% (4)	3.79	0.57
6	How frequently did you encourage students to express their ideas during classroom activities?	95.5% (294)	4.5% (14)	0% (0)	0% (0)	3.95	0.21
7	How often did you reflect on your teaching methods and try to find more approaches for future lessons?	92.3% (281)	6.8% (21)	1.0% (3)	0% (0)	3.91	0.31
8	How frequently did you encourage students to come up with constructive solutions during lessons?	87.1% (265)	10.9% (33)	1.9% (6)	0% (0)	3.83	0.53
9	How frequently did you integrate technology creatively to enhance teaching and learning outcomes?	87.1% (265)	9.0% (27)	2.9% (9)	1.0% (3)	3.82	0.51
10	How often did you incorporate real-world examples and applications into lessons?	92.0% (280)	6.4% (19)	1.3% (4)	0.3% (1)	3.90	0.37
11	Did you always think about how to upgrade an existing practice/resource or content during your professional practice?	90.4% (274)	8.4% (25)	1.0% (3)	0.3% (1)	3.89	0.37

12	Did you always feel confident experimenting with new or novel teaching ideas during your practice?	90.6% (275)	8.7% (26)	0.6% (2)	0% (0)	3.90	0.32
13	How often did you use diverse approaches to adapt your lessons based on real-time feedback from students?	86.2% (261)	10.3% (31)	3.2% (10)	0.3% (1)	3.82	0.48
14	How frequently did you assess the effectiveness of your resources after a lesson?	90.3% (273)	7.7% (23)	1.6% (5)	0.3% (1)	3.88	0.40
15	How often did you use innovative teaching strategies like active learning, formative assessment, collaboration, etc., to facilitate learning during your professional practice?	90.0% (272)	8.7% (26)	1.0% (3)	0.3% (1)	3.88	0.38
Threshold: 2.5		**Weighted Average: 3.9**					

*Descriptive analysis *Often = 4, Sometimes = 3, Rarely = 2 and Never = 1

Table 1 presents pre-service teachers' creativity in developing instructional materials during their professional practice. It shows that items 1 and 6 had a higher meaning value (x3.95). These items showed that pre-service teachers often put the learning needs and interests of their learners into perspective while selecting or developing instructional materials, and that they also encourage students to air their opinions in the process of instructional delivery. Item 5 had the lowest mean score (3.79). Overall, the weighted mean score of 3.9 was greater than the decision rule of 2.5. This result highlights pre-service teachers' strong commitment to creativity in developing instructional materials to facilitate instruction during their professional practice. This could be a reflection of many factors, such as their enthusiasm to turn their theoretical knowledge into practical experience, and another factor could be their drive to earn excellent scores during supervision, knowing that the professional practice course carries a significant grade, which might affect their overall academic performance at the end of their programme.

2. What are the Challenges faced by Pre-service Teachers in Developing Instructional Materials During their Professional Practice?

Table 2: Challenges Faced by Pre-service Teachers in Developing Instructional Materials

S/N	Statement	SA (%) (F)	A (%) (F)	D (%) (F)	SD (%) (F)	Mean (x)	STD
1	Lack of access to resources made it difficult for me to create instructional materials.	82 (26.4%)	146 (47.1%)	65 (21.0%)	17 (5.5%)	2.94	0.84
2	Time constraints during teaching practice limit the preparation of adequate materials.	102 (33.0%)	121 (39.1%)	68 (22.1%)	18 (5.8%)	2.99	0.90

3	Financial limitations prevented the purchase of required materials.	122 (39.5%)	160 (51.8%)	20 (6.5%)	7 (2.1%)	3.28	0.71
4	I find it challenging to generate creative ideas for instructional materials.	82 (26.4%)	63 (20.3%)	110 (35.5%)	55 (17.7%)	2.55	1.08
5	The school environment did not provide adequate support for developing instructional materials.	97 (31.5%)	104 (33.7%)	73 (23.6%)	34 (11.2%)	2.78	1.16
6	Limited access to technology in classrooms affected my ability to deploy materials.	105 (34.1%)	110 (35.9%)	79 (25.7%)	14 (4.4%)	2.99	0.89
7	Class size impacted the effective use of instructional materials.	106 (34.4%)	121 (39.1%)	67 (21.7%)	15 (4.7%)	3.02	0.91
8	My mentor/cooperating teacher rarely provides guidance on how to use materials in class.	110 (35.6%)	91 (29.5%)	76 (24.7%)	31 (10.2%)	2.90	1.01
9	Students showed little interest in lessons involving instructional materials.	48 (15.6%)	45 (14.5%)	114 (37.1%)	101 (32.8%)	2.13	1.05
10	I struggled to align my materials with the subject curriculum.	42 (13.8%)	43 (14.2%)	105 (34.5%)	114 (37.5%)	2.04	1.04
11	I lack confidence in designing innovative instructional materials.	51 (16.7%)	53 (17.5%)	87 (28.7%)	113 (37.1%)	2.13	1.01
12	Limited prior training affected my ability to use materials effectively.	59 (19.3%)	41 (13.5%)	53 (17.5%)	152 (49.9%)	2.02	1.19
13	I found it difficult to adapt materials for students with diverse needs.	46 (14.9%)	55 (17.8%)	62 (20.0%)	146 (47.2%)	2.00	1.13
14	Feedback from supervising teachers regarding my materials was insufficient.	54 (17.5%)	49 (16.0%)	63 (20.4%)	143 (46.2%)	2.04	1.16
15	My knowledge of instructional design techniques is inadequate for practical use.	50 (16.3%)	49 (15.9%)	53 (17.4%)	153 (50.3%)	1.97	1.16
Threshold: 2.5	**Weighted Average: 2.52**						

*Descriptive analysis *Strongly Agree = 4, Agree = 3, Disagree = 2 and Strongly Disagree = 1

Table 2 shows that pre-service teachers encountered several challenges when developing instructional materials during their professional practice. Item 3 had the highest mean contribution (x = 3.28). This item identified funding as the strongest limitation confronting pre-service teachers' creativity during their professional practice. Item 15, with a mean contribution of x = 1.97, had the lowest contribution. Showing that pre-service teachers do not judge their knowledge of designing instructional materials as inadequate.

Overall, the weighted mean value of 2.52 is greater than the decision rule, shows that the challenges confronting pre-service teachers' creativity during their professional practice include a lack of access to resources, which makes it difficult to create instructional materials; time constraints during teaching practice limiting the preparation of adequate materials, and financial limitations, amongst others. These responses suggest that even though pre-service teachers are potentially creative during their professional practice, especially in developing instructional materials, they encounter some challenges that limit their ability to effectively demonstrate their creativity in developing instructional materials.

4.1 Discussion of Findings

4.1.1 Pre-service Teachers' Creativity in Developing Instructional Materials

The findings revealed that pre-service teachers demonstrated a notable degree of creativity and resourcefulness during their teaching practice. Pre-service teachers' consistent responses, predominantly leaning towards "often," highlight their efforts to adapt instructional strategies to meet students' diverse needs, reflecting a commitment to modern and innovative teaching methodologies. This aligns with the constructivist theory adopted in this study, as pre-service teachers saw themselves as facilitators who should concretise their students' learning by using relevant instructional materials that can aid their learning process and outcome. The findings also corroborate earlier submissions by (Alabere, 2017; Beghetto & Vasquez, 2023; and Valtonen et al., 2021), that pre-service teachers need to possess strong creativity for effective instructional delivery in their classrooms. In addition, the findings highlighted pre-service teachers' confidence in experimenting with novel ideas and motivating students to actively participate in problem-solving, as emphasized by Süer & Karagül (2023), who in their work explained that pre-service teachers are expected to demonstrate creativity in managing diverse learners, identifying their learning styles, and skillfully adapting resources, strategies and methodologies to meet their learning needs.

Furthermore, the study also showed that pre-service teachers were aware of the impact of collaboration in educational practices, especially in developing engaging lesson plans and instructional resources, as their responses revealed that they often engage in such collaborations. Valtonen et al. (2021) emphatically identified collaboration as one of the three important 21st-century skills that pre-service teachers must possess to facilitate collaborative learning in the classroom, stating that their disposition towards collaboration is more important because the knowledge of collaboration might sufficiently aid the skill development as much as the willingness to contribute to group work. Such practices are essential for fostering critical thinking, which is a key skill in the 21st-century learning framework, and this strengthens Tan & Ng (2021) submission that innovative teachers deploy such practices, and it helps them develop their learners' creativity and innovative skills.

While Vilarinho-Pereira et al. (2024) study on pre-service teachers' creativity, focused on the technological fluency of pre-service teachers in facilitating instruction from the developed countries' perspective due to the widespread of technological infrastructure, this study showed that pre-service teachers in Ibadan demonstrated creativity in developing instructional materials despite a lack of technological infrastructure, utilising collaborations, improvisation, and personal ingenuity. This shows that for Nigerian pre-service teachers, their demonstration of creativity in this study is borne out of necessity, driven by their quest to

earn excellent grades during their compulsory professional exercise, or better still, their readiness to improve the learning outcomes of their students or the sheer response to systemic resource limitations.

Although the study showed that pre-service teachers could create instructional resources that can engage the students and enhance their learning, teacher education programmes across the country still need to be structured in a way that creativity in developing instructional materials is given prominence in the curricula. To achieve this, the teacher education system must be restructured to include consistent co-design activities, workshops on capacity development, co-ideation groups, creativity and innovation exhibitions, on instructional material development, amongst others. This would further strengthen pre-service teachers' creativity in developing novel instructional resources for effective teaching and learning (Chen et al., 2022).

4.1.2 Challenges Faced by Pre-service Teachers in Developing Instructional Materials During their Professional Practice

Findings in the study showed that pre-service teachers encountered and articulated different challenges confronting their inability to develop instructional materials during their professional practice, arising from several factors. Significantly, the fact that pre-service teachers in this study understood the challenges confronting their capacity to develop instructional materials to support their students' learning outcomes showed that they possess a deep understanding of their roles as facilitators, guides, and coaches whose duty is to help their learners acquire knowledge, which is the core of the constructivist theory used in this study. One major challenge identified by the pre-service teachers in the study, which was also the highest ranked, was financial limitation. Lack of access to funds was acknowledged as a major difficulty pre service teachers face in acquiring the materials or resources necessary for the development of instructional materials during their professional practice. This finding aligns with studies emphasizing that financial limitations are a major hindrance to quality instructional delivery, particularly in resource-constrained environments, (Alabere, 2017; Humphreys et al. (2020).

Furthermore, in a study conducted by Napanoy et al., (2021) about the difficulties that pre-service teachers in the Philippines encountered during their professional practice, the inability to effectively and efficiently integrate technology into teaching, lack of support from cooperating teachers, as well as language barriers stood out as the most significant challenges. However, other challenges that stood out from this study include time constraints, limited access to technology, lack of support from the mentor teachers, limited training, poor feedback from supervisors, and inadequate knowledge of instructional materials development, among others. Similarly, Sajid et al. (2022) categorised the challenges pre-service teachers face in developing instructional materials during professional practice to include: student-related, self-related, and supervisor-related challenges. Also, Cayabas Jr & Sumeg-ang (2023) identified limited access to technology, insufficient knowledge and competency to design and utilise instructional materials, lack of support from school administration, lack of adequate timing, among others.

Hence, the alignment of the findings in this study with Sajid et al. (2022) and Cayabas jr & Sumeg-ang (2023) shows that the identified challenges listed by the pre-service teachers significantly inhibit their capacity to develop instructional materials during their professional practice and thus require an urgent solution. To solve this problem, it has been proposed that when teachers are confronted with challenges

of funds in developing of purchasing relevant instructional materials, they can make use of locally made materials in the form of improvisation or adaptation.

Locally made instructional materials involve repurposing readily available resources, such as recycled materials, natural elements, and household items, to create engaging teaching aids. For instance, Yahaya (2022) in a study titled "Early Childhood Care and Education Pre-service Teachers' Skills in Producing Developmentally and Culturally Appropriate Instructional Materials in Adamawa State, Nigeria" explained that although pre-service teachers in Nigeria demonstrated creativity in creating and improvising instructional materials using local resources such as waste products, the locally made instructional materials faced the challenge of suitability in terms of the age, needs, and stimulating the interests of the learners. While improvising may be a cheap alternative, it might not be an effective alternative. Therefore, there is need for educational authorities to provide adequate funding and expose pre-service teachers to adequate training on instructional materials development to improve their creativity in developing instructional materials be it by using locally improvised materials or adapting existing materials for effective instructional delivery.

5. Conclusion

This study evaluated the creativity of pre-service teachers in developing instructional materials during their professional practice. Findings showed that, despite challenges such as financial constraints and limited resources, the pre-service teachers exhibited innovation and collaboration to promote student engagement.

The study showed that pre-service teachers overly rely on traditional instructional materials such as cardboards, charts, textbooks, etc mostly given to them by their cooperating teacher in facilitating teaching and learning during their teaching practice.

Limitations like financial constraints, lack of mentorship and support, large class, etc hinder pre-service teachers' ability to develop instructional materials that can make lessons effective and engaging. In addition, the present teacher education program does not strictly prepare pre-service teachers to creatively develop instructional materials, and this may limit the creative attitude of pre-service teachers in developing instructional materials. The study advocates for enhancing teacher education curricula with creativity, collaboration, and technological skills to prepare educators to meet the educational demands of this century. Integrating courses, programs or activities that enhance pre-service teachers' creativity into the teacher education program will significantly improve their pre-service and in-service delivery. Ultimately, the findings reinforce the need for sustainable reforms in teacher education to meet global standards.

5.1 Recommendations

This research offers key recommendations to enhance pre-service teachers' creativity in instructional material development. It emphasizes innovation, the use of diverse resources beyond conventional materials, and targeted training. Implementing these strategies can improve teacher education and overall teaching quality.

1. Teacher education programs should include structured creativity training, with workshops on designing instructional materials from local resources to promote innovation.
2. Teacher training curricula should prioritize adapting resources to local contexts, including modules on creating low-cost instructional materials for resource-limited settings since one of the challenges encountered by the pre-service teachers during their professional practice is financial constraints.
3. Teaching practice should assess and reward pre-service teachers' creativity in instructional materials development while training mentors to support innovative teaching.
4. Teacher training institutions and local authorities should set up resource centers with locally made instructional materials, including recycled teaching aids and guides for effective classroom use.
5. Ongoing professional development should equip teachers with skills to create innovative instructional materials, fostering a culture of creativity in schools.

Conflict of interest: The researchers are not aware of any conflict of interest for this study.

Acknowledgement: This study was not funded by any organization.

References

Aglazor, G. (2017). The role of teaching practice in teacher education programmes: Designing framework for best practice. Global Journal of Educational Research, 16(2), 101. https://doi.org/10.4314/gjedr.v16i2.4

Alabere, R. (2017). The Importance of Instructional Materials in Teaching of English as a Second Language.

Andika, A., Tahrun, T., & Firdaus, M. (2023). Developing English Grammar Instructional Materials Oriented to Constructivism Theory. Journal of Languages and Language Teaching, 11(2), 286. https://doi.org/10.33394/jollt.v11i2.6838

Asiegbu, F. N., & Okpala, J. U. (2019). Teacher Resourcefulness as a Key to Improving the use of Instructional Materials in Teaching and Learning of Mathematics in Primary Schools in Anambra State. Research and Development.

Babalola, S. O., & Kolawole, C. O. (2021). Higher education institutions and post-Covid in-demand employability skills: responding through curriculum that works. International Journal of Social Learning (IJSL), 2(1), 69-83.

Babalola, S. O. (2023). Achieving Sustainability: Students Perception of Institutional Sustainable Development Practices among Universities in Southwest Nigeria. African Journal of Educational Management, 24(2), 290–304. Retrieved from https://journals.ui.edu.ng/index.php/ajem/article/view/1297

Babalola, S. O. (2024). Students-staff classroom co-creation as model of employability skills development in a Nigerian university. Journal of Applied Research in Higher Education, 16(4), 1289-1300.

Banner, J. M., & Cannon, H. C. (2017). The elements of teaching (Second edition). Yale University Press.

Beghetto, R. A., & Vasquez, A. M. (27). The Routledge International Handbook of Creative Cognition (L. J. Ball & F. Vallée-Tourangeau, Eds.). Routledge.

Besa, L. M., & Parcon, R. E. (2021). On Instructional Materials: The Pre-Service Teachers Preferences in Time of Pandemic. Basic and Applied Education Research Journal, 2(1), 23–28. https://doi.org/10.11594/baerj.02.01.04

Cayabas Jr, J. P., & Sumeg-ang, D. A. (2023). Challenges and interventions in developing instructional materials: Perspectives of public school teachers in basic education. International Journal of Innovative Research and Scientific Studies, 6(4), 849–855. https://doi.org/10.53894/ijirss.v6i4.2059

Chen, W., Pi, Z., Tan, J. S. H., & Lyu, Q. (2022). Preparing pre-service teachers for instructional innovation with ICT via co-design practice. Australasian Journal of Educational Technology. https://doi.org/10.14742/ajet.7743

Chisunum, J. I., & Christiana n., (2024). Enhancing Student Engagement through Practical Production and Utilization of Instructional Materials in an Educational Technology Class: A Multifaceted Approach. NIU Journal of Educational Research, 10(2). https://doi.org/10.58709/niujed.v10i2.2002

Deborah, T., Leticia, N. C., & The University of Newcastle. (2021). The Creativity Revolution and 21st Century Learning. https://www.ijicc.net/images/Vol_15/Iss_8/15800_Trevallion_2021_E_R.pdf

Efgivia, M. G., Adora Rinanda, R. Y., Suriyani, Hidayat, A., Maulana, I., & Budiarjo, A. (2021).

Analysis of Constructivism Learning Theory: 1st UMGESHIC International Seminar on Health, Social Science and Humanities (UMGESHIC-ISHSSH 2020), Gresik, Indonesia. https://doi.org/10.2991/assehr.k.211020.032

Glaveanu, V. P., Hanchett Hanson, M., Baer, J., Barbot, B., Clapp, E. P., Corazza, G. E., Hennessey, B., Kaufman, J. C., Lebuda, I., Lubart, T., Montuori, A., Ness, I. J., Plucker, J., Reiter-Palmon, R., Sierra, Z., Simonton, D. K., Neves-Pereira, M. S., & Sternberg, R. J. (2020). Advancing

Creativity Theory and Research: A Socio-cultural Manifesto. The Journal of Creative Behavior, 54(3), 741–745. https://doi.org/10.1002/jocb.395

Humphreys, S., Dunne, M., Durrani, N., Sankey, S., & Kaibo, J. (2020). Becoming a teacher: Experiences of female trainees in initial teacher education in Nigeria. Teaching and Teacher Education, 87, 102957. https://doi.org/10.1016/j.tate.2019.102957

Jamil, H. (2024). Exploring Innovation in the Development of Teaching Aids among Prospective Teachers for the Implementation of Assessment of Reading Skills. Journal of Public Administration and Governance, 13(4), 110. https://doi.org/10.5296/jpag.v13i4.2160.

Jumaah, F. M. (2024). Exploring Constructivist Learning Theory and Applications in Teaching English.

The American Journal of Social Science and Education Innovations, 6(8), 7–19 https://doi.org/10.37547/tajssei/Volume06Issue08-02

Kumar, A. (2021). Advances in Global Education and Research: Volume 4. Anahei Publishing. https://doi.org/10.5038/9781955833042

Marouli, C. (2021). Sustainability Education for the Future? Challenges and Implications for Education and Pedagogy in the 21st Century. Sustainability, 13(5), 2901. https://doi.org/10.3390/su13052901

Munna, A. S., & Kalam, M. A. (2021). Teaching and learning process to enhance teaching effectiveness: Literature review. International Journal of Humanities and Innovation (IJHI), 4(1), 1–4. https://doi.org/10.33750/ijhi.v4i1.102

Napanoy, J. B., Gayagay, G. C., & Tuazon, J. R. C. (2021). Difficulties Encountered by Pre-service Teachers: Basis of a Pre-service Training Program. Universal Journal of Educational Research, 9(2), 342–349. https://doi.org/10.13189/ujer.2021.090210

Olatunde-Aiyedun, T. G. (2021). Student Teachers' Attitude towards Teaching Practice. https://ijcm.academicjournal.io/index.php/ijcm

Olawale, S. G., & Salami, A. R. (2024). CREATIVITY ORIENTATION AS DETERMINANT OF RESOURCEFUL BEHAVIOUR AMONG LECTURERS IN TERTIARY INSTITUTIONS IN OYO STATE, NIGERIA. INTERNATIONAL JOURNAL, 04(8).

Omodan, B. I. (2022). Challenges of Pre-service Teachers in Rural Places of Teaching Practice: A Decolonial Perspectives. International Journal of Learning, Teaching and Educational Research, 21(3), 127–142. https://doi.org/10.26803/ijlter.21.3.8

Onyia, M. N. (2013). Instructional Materials and Design: Issues and Challenges. Academic Journal of Interdisciplinary Studies. https://doi.org/10.5901/ajis.2013.v2n6p153