

Assessment of preservice teachers' creativity in developing instructional materials in Ibadan, Nigeria

Samuel Babalola, Bukola Makinde

Department of Arts and Social Sciences Education,
University of Ibadan, Nigeria

Abstract

This paper assessed preservice teachers' creativity in developing instructional materials during their compulsory professional practice. It identified some challenges faced by preservice teachers in creating instructional materials. The paper aimed to stress the importance of instructional materials in teaching and learning, and the necessity to equip preservice teachers with skills required to creatively develop and select relevant instructional materials for facilitating effective teaching and learning. The study looked at the constructivist theory of learning to ascertain the impact of facilitating learning through diverse instructional resources that can meet the different learning styles of learners.

The study adopted a descriptive survey design. A total of 308 penultimate and final year preservice teachers in the Faculty of Education at the University of Ibadan, Nigeria, participated in the study. A structured questionnaire was used to collect data after it had been validated by experts. The reliability was ascertained using Cronbach Alpha after a pilot testing had been carried out with a limited sample who did not participate in the main data study. The reliability coefficient of .87 was obtained. Data analysis was done using simple frequency count, percentage score, mean, and standard deviation. The decision rule was set at 2.5. Findings from the study showed that even though most preservice teachers agreed to be potentially creative in developing instructional materials during their professional practice, they had limitations in practically demonstrating this because of several factors, which led them to adopt conventional resources such as cardboard drawings, charts, textbooks, etc. The study also identified limited resources, financial and time constraints, and large class size as challenges confronting preservice teachers' creativity in developing instructional materials.

Keywords: Preservice Teachers', Assessment of Creativity, Development of Instructional Materials, and Teaching/Professional Practice.

1. Introduction

The art of teaching and learning is a major concern in education because it is the foundation for any educational practice. Banner & Cannon (2017) and Munna & Kalam (2021), explained teaching as a process that involves explaining concepts, ideas, knowledge, or instruction from the teacher to the learners. Gupta Pooja (2017) submits that although numerous factors determine learners' academic performance, classroom teaching remains crucial. This implies that learning can be significantly enhanced by adequate and resourceful teaching. 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. Amadioha (2009)) categorizes 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; Osokoya et al., 2010). 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 made compulsory for all student teachers in faculties of education in a university or a college of education.

Teaching practice has been said to be the most significant aspect of the teacher education curriculum as this period offers the preservice teacher many 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). Cairns & Almeida (2005), emphasized the crucial role of teaching practice in shaping the experiences of aspiring teachers. They highlighted that during this period, preservice 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 preservice 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, Syatiana (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 (Olaniran, 2012).

There is a pressing need for a systematic assessment of the creativity of preservice teachers during their professional practice. Without such 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 preservice 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 preservice 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 a pre-service teacher.

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 preservice teachers' creativity in developing instructional materials during their professional practice to enhance their students' learning.

Over the years, preservice teachers' creativity has been limited because they most of the time use available resources or resources used by their cooperating 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 videos, flashcards, and digital tools, which are very useful in stimulating learners' interest during instructional delivery. Innovative instructional materials make the lesson to be 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 have not been placed on preservice teachers' creativity in developing instructional materials during professional practice. Therefore, this study examined preservice teachers' creativity in developing instructional materials during their professional practice.

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.

Research Questions

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

Literature review

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 (1952), who developed stages of cognitive development that emphasize the importance of aligning learning tasks with the developmental capabilities of students. According to the constructivists, teachers cannot transmit knowledge when the learners are passive (Steve & Bada, 2015), hence learners are better empowered when they are at the center 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 Harris & Graham (1994), 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 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-centred 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 teaching materials development, 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, how they should 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 the constructivist theory. It is believed that when learners actively construct meaning during learning process, they are engaging and stretching their creativity and critical thinking skills. The process of unpacking knowledge, ideas, strategies usually lead 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 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. Daniels (2001) 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.

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. Wilson (2009) 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.

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. Wilson (2009) defines creativity in teaching as a process where teachers use imaginative approaches to present lessons to learners in an exciting and motivating manner. Creativity enables preservice 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 calls for effective and creative teaching solutions by the teachers ((Kumar, 2021; Marouli, 2021).

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 3-month or 6-month teaching practice exercise in Nigerian colleges of education or faculties of education (Osokoya et al., 2010), or a whole year in some countries like Portugal as described by (Caires & Almeida, 2005). 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 preservice 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).

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, Onyia (2013) has 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 (Syatriana, 2019) (Alabere, 2017), Dong et al. (2009), Onyia (2013), and 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).

2. Methods

This study was conducted to assess preservice teacher's creativity in developing instructional materials using the descriptive survey method to obtain more comprehensive, valid, reliable, and objective data. A simple random sampling technique was adopted to select 308 penultimate and final year preservice teachers from 9 academic departments from the Faculty of Education, University of Ibadan. One research instrument titled *"Assessment of Pre-service Teachers' Creativity in Developing Instructional Materials (APTCDIM)* was used to gather data. The instrument had 3 sub-scales: Section A collected respondents' data; Section B has (10) items used to elicit information about preservice teachers' creativity while Section C also with (10) items was used to determine challenges faced by preservice teachers in developing instructional materials.

The validity of the instrument was determined by selected experts from the Faculty of Education, University of Ibadan and the reliability was determined through a pilot testing with a separate sample who did not participate in the main study. Data collected through the pilot testing were analyzed using Cronbach Alpha which yielded a reliability co-efficient of .87. Section B and C structured on a 4-point scale (4-Often, 3- Sometimes, 2-Rarely, 1- Never and 4- strongly agree, 3- agree, 2- disagree, and 1 – strongly disagree) was used for data collection. The administration of the instrument which was conducted by the researchers lasted for 8 weeks. Data collected were analyzed using simple frequency count, percentage score, mean and standard deviation. The criterion norm was set at 2.50.

3. Results

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

Table 1: Preservice 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					

Table 1 presents preservice teachers' creativity in developing instructional materials during their professional practice. It shows that the preservice teachers demonstrated creativity in engaging learners critical thinking by adapting relevant technologies to stimulate their interest during lesson delivery. The weighted average of 3.9 was greater than the decision rule of 2.5. These responses highlight their strong commitment to creativity and adaptability which could be because of many factors such as their enthusiasm to turn their theoretical knowledge into practical experience. Another factor could be the need to meet up with the academic requirements knowing that the professional practice course carries a significant grade which might affect their overall result.

2. What are the Challenges faced by Preservice Teachers in Developing Instructional Materials During their Professional Practice

Table 2: Challenges faced by Preservice 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							

Table 2 shows that preservice teachers encountered several challenges when developing instructional materials during their professional practice. These challenges include 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 preservice teachers are potentially creative during their professional practice, especially in developing instructional materials, they encounter some challenges which limited their ability to effectively demonstrate their creativity in developing instructional materials. The weighted average of 2.52 was greater than the decision rule of 2.5.

4. Discussion of Findings

Preservice Teachers' Creativity in Developing Instructional Materials

The findings revealed that preservice teachers demonstrated a notable degree of creativity and resourcefulness during their teaching practice. Their consistent responses, predominantly leaning towards “often,” highlight their efforts to adapt instructional strategies to meet student’s diverse needs, reflecting a commitment to modern and innovative teaching

methodologies. This corroborates Valtonen et al. (2021) submission that preservice teachers need to develop some 21st-century skills to be able to model it in their classrooms. In addition, the findings highlighted the preservice teachers' confidence in experimenting with novel ideas and motivating students to actively participate in problem-solving as emphasized by Süer & Karagül (2023). The latter in their work explained that preservice teachers are expected to demonstrate creativity in managing diverse learners, identifying their learning styles and skilfully adapting resources, strategies and methodologies to meet their learning needs.

Furthermore, the study also showed that preservice 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) identified collaboration as one of the three important 21st-century skills that preservice 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 not 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) submissions that innovative teachers deploy such practices, and it helps them develop their learners' creativity and innovative skills.

Although the study showed that preservice teachers could create instructional resources that can engage the students and enhance their learning, teacher education program needs to be structured to enhance and promote creativity towards actual implementation of ideas in instructional materials/resources development. As Süer & Karagül (2023) rightly stated that creativity is merely the initial starting point for innovation, hence, idea creation might not fully determine creativity until such ideas are strategically implemented. To achieve this, the study showed that 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 preservice teachers' creativity in developing novel instructional resources for effective teaching and learning (Chen et al., 2022).

Challenges faced by preservice teachers in developing instructional materials during their professional practice

Generally, preservice teachers encounter some challenges during their professional practice resulting from several factors. For instance, in a study conducted by Napanoy et al., (2021) about the difficulties preservice teachers in the Philippines encountered during their professional practice, inability to effectively and efficiently integrate technology into teaching, lack of support from cooperating teachers as well as language barriers were identified as the most significant challenges. However, findings from this study particularly revealed challenges faced by preservice teachers in developing instructional materials during their professional practice. These challenges are resource-related constraints underscoring systemic issues that may hinder their ability to implement creative and effective teaching strategies. This corroborates Sajid et al. (2022) submission in their study titled “*Challenges Pre-Service Teachers Face During Teaching Practicum: An Anatomy of Teachers’ Education*” carried out in Pakistan, where these challenges are categorized into three – student-related, self-related challenges and challenges related to the supervisor where it was explained that sometimes, preservice teachers are forced into using traditional instructional materials presented by their cooperating teachers in a way to ensure compliance with the syllabus completion deadline, hence depriving them of the opportunity to demonstrate their capacity to introduce innovative teaching strategies and instructional resources.

The highest-rated challenge as shown in this study was financial limitations, which reflects the difficulty preservice teachers face in acquiring materials or resources necessary for instructional material development. This finding aligns with studies emphasizing that financial barriers are a major hindrance to quality education in resource-constrained environments as highlighted in the work of Alabere (2017), Humphreys et al. (2020). For instance, 91.3% and 73.5% of the respondents respectively agreed that financial constraints and limited or lack of resources impede their ability to develop instructional materials during their professional practice. However, the use of locally made instructional materials is one of the effective strategies that can be deployed to solve a good number of the identified challenges. 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 preservice teachers at national colleges of education programs in Adamawa State, Nigeria demonstrated creativity in creating and improvising instructional materials using local resources such as waste products. However,

the locally made instructional materials faced the challenge of suitability in terms of the age, needs, and interests of the learners. Hence, preservice teachers must be adequately trained 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 preservice 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 preservice 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 preservice teachers' ability to develop instructional materials that can make lessons effective and engaging. In addition, the present teacher education program does not strictly prepare preservice teachers to creatively develop instructional materials, and this may limit the creative attitude of preservice 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 preservice teachers' creativity into the teacher education program will significantly improve their preservice and in-service delivery. Ultimately, the findings reinforce the need for sustainable reforms in teacher education to meet global standards.

Recommendations

This research offers key recommendations to enhance preservice 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 preservice teachers during their professional practice is financial constraints.
3. Teaching practice should assess and reward preservice 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.

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*.
- Amadioha, S. W. (2009). *The importance of instructional materials in our schools an overview*:
- 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*.
- 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>

- Caires, S., & Almeida, L. S. (2005). Teaching practice in Initial Teacher Education: Its impact on student teachers' professional skills and development. *Journal of Education for Teaching, 31*(2), 111–120. <https://doi.org/10.1080/02607470500127236>
- 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*
- 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*
- Dong, S., Xu, S., & Lu, X. (2009). Development of online instructional resources for Earth system science education: An example of current practice from China. *Computers & Geosciences, 35*(6), 1271–1279. <https://doi.org/10.1016/j.cageo.2008.08.013>
- 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>
- Harris, K. R., & Graham, S. (1994). Constructivism: Principles, Paradigms, and Integration. *The Journal of Special Education, 28*(3), 233–247. <https://doi.org/10.1177/002246699402800301>

- 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>
- 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>
- Olaniran, C. O. (2012). *Resources and Resourcefulness in Language Teaching and Learning*.
- Olawale, S. G., & Salami, A. R. (2024). Creativity Orientation as Determinant of Resourceful Behaviour among Lecturers in Tertiary Institutions in oyo state, nigeria. *International journalL*, 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>

- Osokoya, I., Null, N., Null, N., & Null, N. (2010). Teacher Education in Nigeria: Past, Present and Future Challenges. *Academic Leadership: The Online Journal*. <https://doi.org/10.58809/HYLI2137>
- Romero, J. P. (2021). Go and separate: A strategic intervention material (SIM) in improving the academic performance of grade 6 science pupils. *Sapienza: International Journal of Interdisciplinary Studies*, 2(4), 91–100. <https://doi.org/10.51798/sijis.v2i4.179>
- Sajid, M., Malahat, S., & Khadija, A. (2022). *Challenges Pre-Service Teachers Face During Teaching Practicum: An Anatomy of Teachers' Education Programs*. <https://vfast.org/journals/index.php/VTESS/article/view/1049/934>
- Steve, O., & Bada. (2015). *Theory of Constructivism*.
- Syatriana, E. (2019). *A Model of Creating Instructional Materials Based on the School Curriculum for Indonesian Secondary Schools*. <https://doi.org/10.31219/osf.io/z8gf9>
- Tan, C., & Ng, C. S. L. (2021). Constructivism in Education. In C. Tan & C. S. L. Ng, *Oxford Research Encyclopedia of Education*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190264093.013.92>
- Valtonen, T., Hoang, N., Sointu, E., Näykki, P., Virtanen, A., Pöysä-Tarhonen, J., Häkkinen, P., Järvelä, S., Mäkitalo, K., & Kukkonen, J. (2021). How pre-service teachers perceive their 21st-century skills and dispositions: A longitudinal perspective. *Computers in Human Behavior*, 116, 106643. <https://doi.org/10.1016/j.chb.2020.106643>
- Wilson, A. (2009). *Creativity in primary education* (2nd ed). Learning Matters.
- Yahaya, A. (2022). *Early Childhood Care and Education Pre-Service Teachers' Skills in Producing Developmentally and Culturally Appropriate Instructional Materials in Adamawa State*.