## Preservice Teachers’ Professional Knowledge in Teaching in Ghana

**Abstract**

## The National Teaching Standards advocate the need for professional knowledge, professional attitudes and value, and professional practices as core professional qualities of preservice teachers. However, it remains unclear the professional knowledge possessed by preservice teachers as they go to occupy the teaching profession. This study investigates the level of professional knowledge of preservice teachers in teaching at Senior High Schools in Ghana, based on Shulman's (1987) model of teaching knowledge. Adopting a positivist paradigm, quantitative approach and descriptive survey design, the study included 101 respondents. Data was collected using an adapted questionnaire which was analyzed quantitatively. The study found that preservice teachers generally possessed high levels of professional knowledge, excelling in lesson planning, teaching methodologies, classroom management, and professional commitment. However, they demonstrated low level of knowledge for effective communication skills. It is recommended that teacher educators should focus on improving preservice teachers' communicative skills during on-campus teaching practice to better prepare them for off-campus teaching practice. Also, teacher training institutions, in collaboration with the Centre for Teacher Professional Development (CTPD), can periodically organize workshops and practical experience sessions to enhance preservice teachers’ ability to convey information effectively.

## Keywords: Business management, preservice teachers, professional knowledge, teacher education, teaching

### **Introduction**

According to Mwesiga and Okendo, (2018), a review of preservice teachers’ teaching performance is measured by many variables such as teachers’ knowledge and qualification, teaching methods, lesson preparation, time management, classroom management, teaching self-efficacy, and attitude towards the teaching profession. Since preservice teachers are being trained to enter into the teaching profession, they are expected to demonstrate high levels of these qualities to enhance their teaching performance. The National Teaching Standard highlights the essence of professional knowledge required by preservice teachers toward the teaching profession.

Studies have shown the predictive relevance of teachers’ professional knowledge on their teaching performance and students learning (Burić & Kim, 2020, Padillo, Manguilimotan, Capuno, & Espina, 2021; Hill et al., 2005). However, a study by Senyametor et. al., (2022) revealed that 30% of preservice teachers at UCC had difficulty preparing a good expanded scheme of work during off-campus teaching. This is an indication of low teaching performance since lesson plans are the genes or blueprints and form 50% of teachers’ teaching performance (Mbwesa, 2014; Dorsah, 2022).

Similarly, team leader’s report from the Centre for Teacher Professional Development (CTPD-UCC) indicates that about 90% of preservice teachers lack professional knowledge in lesson plan preparation especially, pre-lesson preparation and what it composed off (Yarkwah, 2022; Agyei, 2022). Although the study by Senyametor et al. (2022) and the report from the CTPD-UCC were silent on which specific preservice teachers demonstrated low performance due to difficulties and a lack of professional knowledge in lesson plan preparation. An investigation is necessary to augment this phenomenon, as scientific study on preservice management teachers’ level of professional knowledge during off-campus teaching practice.

This study is crucial since it revealed preservice management teachers’ level of professional knowledge in terms of lesson plan preparation, teaching pedagogy, classroom organization and management, as well as professional commitment. This would inform teacher educators to formulate policies to improve preservice teachers’ professional knowledge toward teaching. Also, the findings of the study highlight the importance of integrating effective communication skills into the curricular of teacher training institutions. Curriculum designers or educators can use this information to emphasize the integration of communication skills training within teacher education programmes since effective communication is essential to convey subject matter knowledge, fostering student engagement, and building positive classroom relationships. The study helps to address communication competencies explicitly in curriculum design and teacher preparation programmes.

1. What is PMTs’ level of professional knowledge in lesson plan preparation, teaching methodology and delivery, classroom organization and management, as well as professional commitment?

H0: There is no statistically significant effect of PMTs’ lesson plan preparation on their teaching methodology and delivery.

H1: There is statistically significant effect of PMTs’ lesson plan preparation on their teaching methodology and delivery.

## Knowledge Based for Teaching

According to Shulman and Sykes, the knowledge base for teaching is "the set of understanding and skills, device and values, character and performance that combined constitute the ability to teach," (As cited in Fernandez & others, 2014, p. 79). They therefore grouped this knowledge base into eight categories including: Comprehensive liberal education (fundamental reading, math, writing, and reasoning skills), along with domain-specific content knowledge relevant to teaching areas. It also involves expertise in content-specific teaching methods, a broad understanding of pedagogical principles and practices, familiarity with curriculum design, recognition of student diversity and unique needs, mastery of performance techniques, and a grounding in professional understanding encompassing areas like history, policy, philosophy, psychology, cultural factors, cross-cultural considerations, and professional ethics.

In 1986, Shulman offered three types of content knowledge for teachers, asserting that the content has multiple facets for the teacher to take into account: the content knowledge itself; the pedagogical content knowledge; and the curricular knowledge (Shulman, 1986). Hence, Shulman introduced the phrase "Pedagogical Content Knowledge" (PCK), which appears to have come to denote a unique type of knowledge held by teachers. Shulman (1986) defined content knowledge as having an understanding of concepts, theories, ideas, evidences, and the techniques for developing this knowledge. The pedagogical knowledge, on the other hand, covers the aims of education, application of knowledge to “cognitive”, “social”, and “developmental theories” of learning in the classroom, the methods of teaching and learning, the characteristics of the target audience, and methods for assessing students' knowledge.

According to (Shulman, 1987a), the key to identifying the knowledge base of teaching lies at the nexus of content and pedagogy in teachers' abilities to transform content knowledge into forms that are pedagogically effective while still being adaptable to the variety of student abilities and backgrounds. In 1987, Shulman outlined the categories of teacher knowledge to foster understanding among its students. He proposed seven fundamental knowledge that a teacher must possess: Content Knowledge, General Pedagogical Knowledge, Curricular Knowledge, Pedagogical Content Knowledge (PCK), Knowledge of Learners and their characteristics, Knowledge of Educational Contexts, Knowledge of Purposes, educational purposes and educational values and their philosophical and historical bases.

Content knowledge is also known as subject matter knowledge. Shulman describes this form of knowledge as “knowing what” and “knowing how”. To him, the conceptions of “what to know” have some impact on what teachers teach and how they go about their work. In the views of Shulman (1987) and (Turner-Bisset, 1999), aspects of content knowledge include; “Substantive subject knowledge”, “syntactical knowledge”, and beliefs regarding subject are all. The substantive knowledge entails the factual information and fundamental ideas that constitute the foundation of a particular subject. The knowledge establishes a structured framework that clusters the fundamental concepts within a specific discipline. Syntactical knowledge pertains to the methodologies employed to formulate propositional knowledge. Perspectives concerning subject knowledge underscore the profound influence that varying conceptualization held by educators can exert upon their teaching performance (Magnusson, Krajcik, & Borko, 1999; Wilson & Wineburg, 1988 as cited in Entsie, 2021).

In the view of Sulman, General Pedagogical Knowledge is where teachers use the idea of representation to inform the way to communicate facts, concepts, skills processes and attitudes to students. He adds that general pedagogical knowledge is gained from practice. Similarly, Day and Goldstone (2012), sees general pedagogical knowledge to include expository skills, classroom management, questioning skills and differentiation that are understood in a context-specific situation.

Shulman (1987) considers “curriculum knowledge” as “tool of trade” for teachers (p. 8). To further the objectives of structured education, various materials and frameworks for teaching and learning are developed. These encompass curricula with their defined scopes and sequences, assessment tools and materials, educational institutions with their hierarchies and both explicit and implicit systems of rules and roles, professional teacher organizations engaged in negotiation, driving social change, and offering mutual protection, government agencies spanning from local districts to state and federal levels, as well as overarching mechanisms of governance and financial management. As teachers inherently operate within this interconnected framework, both utilizing and being influenced by its components, it follows that the principles, policies, and operational details of these systems constitute a significant foundation for the knowledge base.

If a teacher needs to be well-versed in the field of teaching, then it encompasses the array of materials, institutions, organizations, and mechanisms with which he or she must acquaint themselves. These encompass both the resources essential for the profession and the contextual circumstances that will either support or hinder teaching endeavors. Turner-Bisset (1999) also expresses that curriculum knowledge enables teachers to critically analyze curriculum materials and understand the resources used for each subject.

The theoretical underpinning was firmly established within the framework Shulman’s “pedagogical content knowledge”. While both “content knowledge” and “pedagogical knowledge” bear significant relevance within the realm of teaching, Shulman has delineated pedagogical content knowledge (PCK) as comprehension of how concept and strategies within specific subject domains are comprehended and misconstrued (Shulman, 1986). In recent times, pedagogical content knowledge has garnered escalated attention from scholars across the globe, signifying that this notion is not a nascent concept.

The origins of this concept can be traced back to the pioneering work of Shulman (1986,1987). “Pedagogical content knowledge” (PCK), as elucidated by Shulman (1986), embodies a distinctive form of subject matter expertise that pertain to the effective teaching of its respective encompasses. PCK empowers an educator to render a subject comprehensible to diverse learners. Moreover, PCK encompasses the capacity to discern factors contributing to the accessibility or complexity of content, a grasp of students’ misconceptions concerning specific subject matter, and competence t judiciously select appropriate content (Shulman, 1987).

Understanding students encompasses both cognitive and experiential dimension for characterizing learners and their attributes (Turner-Bisset, 1999). Empirical acquaintance of learner pertains to a broad understanding of typical attributes exhibited by learners within specific age ranges. On the other hand, cognitive understanding of learner involves a grasp of child development, which forms the theoretical foundation dictating how learning experiences should be structured for learner. As exemplified in scholarly investigations (Cochran, DeRuiter, & King, 1993). An appreciation for how students individually constructs and employ their comprehension is of paramount significance, given that each students’ knowledge is a distinct and personalized creation, further influenced by their existing understanding. Pedagogical activities are deliberately devised and are shaped by the sociomoral context in which educators frame their convictions regarding educational goals, intentions and principles.

Getting familiar with educational setting, as explained by Shulman (1986a), pertains to an awareness encompassing schools, classrooms, and all educational milieus in which the process of learning unfolds. Educators' comprehension of the “socio-political”, “cultural”, and “physical” contextual elements that mold the instructional and learning dynamics augments the cultivation of Pedagogical Content Knowledge (PCK) (Cochran et al., 1993). Additionally, Turner-Bisset (1999), in her investigation, revealed that the educational context exerts a noteworthy influence on teachers' performance.

In Shulman's classification, the realm of Educational Ends, Aims, and Values was encompassed, yet its prominence appeared limited in Turner-Bisset's exploration. Within interviews, young educators scarcely broached these aspects, and the observational data suggested that awareness of objectives and values often remained implicit, rather than overtly and visibly practiced. Nevertheless, this knowledge base has been preserved within the present discourse, as teaching integrally serves a purposeful activity, both in the context of immediate objectives for a lesson or a sequence of lessons (Bennett, 1984) also, in the scope of enduring aspirations for intrinsically enriching experiences (Turnbull, 2018), or eventual societal utility, adopting a more utilitarian perspective. Reprimanding Shulman's illustrations of expert pedagogy, (Sockett, Traub-Dargatz, & Weiser, 1987) underscored the omission of a moral dimension within the instructional narrative. (Sockett et al., 1987) contended that morality constitutes an indispensable facet of teaching. In alignment with Shulman's concept to Sockett et al., (1987), it was agreed that a socio-moral essence infuses teaching, though simultaneous with an array of other pivotal attributes.

Grossman was the first to systematize the components of the knowledge base of teachers proposed by Shulman and characterized the concept of PCK in the model of teacher knowledge. The author believes there are four main parts that make up the knowledge needed for teaching. These parts are: a) knowing how to teach in general, b) knowing the subject you're teaching, c) mixing teaching skills with subject knowledge, and d) understanding the situation you're teaching in. In this idea, the mix of teaching skills, subject knowledge, and the situation is really important, and it's called pedagogical content knowledge (PCK). Each of these parts also includes other things you need to know. Out of all of them, pedagogical content knowledge is the one that connects with all the rest.

Using Shulman's ideas about teaching, Grossman took another look at how teachers know things (PCK). She added to Shulman's model by putting in the PCK, which means knowing what to teach and how to teach it. She made a sort of order in the model, showing that knowing what to teach comes first, then understanding how students learn, then knowing the best ways to teach. So, in Grossman's model, the three things that make up PCK are all guided by why teachers want to teach that stuff. This helps to understand PCK better because it shows that teachers' ideas and knowledge are part of the model.

Carlsen (1999) came up with a different idea compared to Grossman's about what teachers need to know. Carlsen's idea is based on five main knowledge teachers should understand. These include knowing about the big picture (knowledge) context and the specific situation. The big picture context means understanding things about the country, state, local community, and schools. The specific context means knowing about the classroom and the students you're teaching. There are other things to know: how to teach in general, what you're teaching, the important parts and how they fit together, and mixing teaching skills with subject knowledge.

This idea is different from Grossman because it puts more focus on understanding the situation and how it's connected to all the other things teachers need to know (Grossman, Van Beek & Wientjes, 1990). Grossman's idea treats the goals of teaching as more important than the other parts, but Carlsen's idea treats them all as equally important. Also, in Carlsen's model, the reasons for teaching science are seen as just as important as the other parts of knowing how to teach. From Grossman's idea, other people have made similar suggestions about what's important for teaching, especially teaching science. Magnusson et al., (1999) are some of these people. Their idea is like Grossman's, but they added something about knowing how to test what students have learned.

Furthermore, in the model developed by Magnusson, Krajcik, and Borko, they make a change to what Grossman proposed about the reasons for teaching content. Instead of "conceptions of purposes for teaching content" like Grossman did, they use the term "orientations for the teaching of science" (Magnusson et al., 1999). These orientations, as explained by the authors, include different approaches to teaching science: focusing on the process, maintaining high academic standards, using teaching methods, facilitating conceptual change, using hands-on activities, encouraging discovery, implementing project-based science, promoting inquiry, and guided inquiry.

However, while the model proposed by Magnusson, Krajcik, and Borko (1999) brings valuable contributions, Friedrichsen, Driel, and Abell (2011) point out some criticisms related to the terminology used in it. The term "orientations to teaching science" has been used with varying meanings in different studies mentioned in the literature. According to the authors, this confusion originates from the term's initial definition as "knowledge and beliefs about the purposes and goals of science education at a certain educational level," where teachers are seen as participants in the process. In a later phase, it's defined as "a general understanding or vision of science education," which doesn't consider the role of teachers.

The work of Park and Oliver (2008) added a new aspect to Magnusson et al.'s model. They introduced a sixth element into the teacher's knowledge. This new aspect involves emotions and feelings. The emotional perspective has gained attention in the literature as one of the parts of PCK. This expanded model shows how teacher confidence develops, the uniqueness of individual teaching styles, the significance of reflection, and the importance of acknowledging the roles of students within PCK (Park & Oliver, 2008).

The efficacy aspect featured in this model prompts the teacher to convey what they deem most effective in the classroom setting. Within the PCK Summit model, teachers' professional expertise is delineated across five primary domains: i) assessment knowledge; ii) pedagogical knowledge; iii) content knowledge; iv) understanding of students; and v) familiarity with the curriculum. These five areas of knowledge exert influence on and are influenced by the professional understanding of a given subject. This professional understanding encompasses comprehension of instructional methods, representations of content, student comprehension, scientific practices, and cognitive approaches.

This particular professional expertise undergoes various influences and enhancements, including the teachers' beliefs, the contextual setting in which it operates, and the instructional approaches adopted. Following this filtration process, the specific professional knowledge is reshaped and customized in the classroom, forming the teacher's personal Pedagogical Content Knowledge (PCK). Subsequently, this knowledge encounters the filters and enhancements of the students, considering their beliefs, prior understanding, and behaviors, before being evaluated through student outcomes.

This framework appears to encompass both a theoretical PCK (comprising specific professional knowledge of the subject) and a personal, individualized PCK, which manifests during classroom practice. Furthermore, this practice mutually influences and is influenced by the broader knowledge base as well as the specific professional understanding of the subject matter. Student outcomes, in a reciprocal manner, impact both the teacher's Pedagogical Content Knowledge (PCK) derived from classroom practice and the topic-specific professional knowledge within the broader knowledge base.

It is through this interconnectedness that the model is constructed around action, with the teacher serving as a reflective practitioner who continually evaluates and refines their practice to achieve enhanced outcomes with their students. This process involves the reconstruction and transformation of their personal PCK, their specific professional knowledge of the subject matter, and the broader knowledge base. This model not only illustrates the mobilization of knowledge but also aligns with the development of teachers' PCK as outlined in the Model of Pedagogical Reasoning and Action proposed by Shulman.

As per Shulman (1987), Pedagogical Content Knowledge (PCK) is a special blend of subject matter and teaching methods that sets teachers apart as professionals. Shulman introduced the concept of PCK as a vital part of what he termed the knowledge base for teaching. The core aspects of Shulman's idea about PCK involve understanding how to represent specific subjects and the strategies to teach them, along with recognizing the challenges students face in learning and their own notions about specific subjects. Shulman initially introduced the concept of PCK to describe a particular form of teacher knowledge that distinguishes a teacher in a particular field from an expert in that field. He coined this term during a conference at the University of Texas in 1983, a conference title that was quite suggestive: "The missing paradigm in the research about teaching."

The notion of a "missing paradigm" that Shulman discussed referred to the lack of emphasis on the specific subject matter and its relative neglect in the preparation for teaching. Throughout his research journey, Shulman's interests were focused on two main aspects: understanding the cognitive processes in professional practice, particularly in situations of uncertainty, such as those faced by professionals like doctors and teachers; and highlighting the distinctiveness of expertise within specific domains. In his work, Shulman (1986) examined the questions historically used in teacher selection assessments. He observed that teacher selection programs had at times prioritized expertise in specific subjects and at other times emphasized teaching methods. This led Shulman to question whether it's always necessary to maintain a strict separation between subject matter and teaching methods while training to become a teacher.

In his 1987 article, Shulman introduces the concept of PCK by bringing together subject matter and teaching methods. He explains it as a "special blend of content and pedagogy that is unique to the realm of teachers, their distinctive professional understanding" (Shulman, 1986, p. 9). According to Shulman, what truly sets a chemistry teacher apart from a chemistry expert is their capacity to transform the subject matter. Shulman defines PCK as a type of knowledge that surpasses mere subject matter knowledge and extends into the dimension of subject matter knowledge tailored for teaching. He still refers to it as content knowledge, but it's a specific form of content knowledge that focuses on making the subject understandable for others.

Within the realm of pedagogical content knowledge, Shulman includes the most effective ways to represent key ideas within the most frequently taught topics of a subject area. This involves employing powerful analogies, illustrations, examples, explanations, and demonstrations – essentially, it's about choosing ways to present and explain the subject in a way that makes sense to learners. As there's no one-size-fits-all approach, teachers need a toolkit of various methods of representation. Some come from research while others stem from practical wisdom (Shulman, 1986, p. 9).

Once Shulman coined the term PCK, it quickly gained traction in studies about teachers' knowledge and became widely used. PCK is now a framework for examining teachers' knowledge. Research on PCK indicates that this type of knowledge is closely linked to classroom planning and instruction. Carter (1990) suggests that practical knowledge and PCK are two separate but interconnected categories in the process of learning to teach. In Carter's view, PCK is a broader category that falls under professional knowledge and is more structured than practical knowledge, which tends to be more personal and context-dependent.

When considering the teacher knowledge categories proposed by Fenstermacher (1994) as formal and practical, PCK seems to align more with formal knowledge characteristics than practical. Moreover, Grossman (1990) contends that PCK is part of practical knowledge and follows the same methodological parameters for its development. Shulman also shares this viewpoint. Hence, there's ongoing debate regarding whether Shulman's research program falls under the formal or practical knowledge category. Some authors perceive it as a combination of both, forming a comprehensive category.

Preservice teachers must develop various knowledge types to enhance teaching performance. Shulman’s model emphasizes blending content knowledge with effective teaching strategies, fostering meaningful and engaging learning experiences (Davis & Simmt, 2006). This model links professional knowledge with understanding social, cultural, and ethical teaching contexts (Noffke & Zeichner, 1987). Pedagogical content knowledge, a critical component, involves teaching content effectively and culturally responsively. Cochran-Smith (2005) highlights the need for flexible curriculum knowledge, instructional strategies, assessment, and context understanding. Shulman’s model helps preservice teachers improve by connecting curriculum, instruction, and assessment, differentiating instruction, and adapting to students’ needs for better performance.

**Research Methods**

**Research Design**

This study employed a descriptive survey design to explore preservice management teachers' professional knowledge during off-campus teaching practice. Descriptive surveys provide in-depth insights into existing conditions, attitudes, and processes, allowing researchers to describe phenomena as they are (Ary et al., 2010; Seidu, 2012). This method is economical, enables data collection from large samples, and facilitates high data turnover (Kothari, 2004).

According to Gay (1992), descriptive surveys aim to determine and report the nature of situations at the time of the study. Frankel and Wallen (2000) emphasized the importance of obtaining responses from large groups through carefully crafted questions. Given its ability to capture opinions and current status, this approach was suitable for assessing preservice management teachers' knowledge in key teaching areas such as lesson planning, methodology, classroom management, and professional commitment. The design ensured a comprehensive understanding of the phenomena under investigation.

**Population and Sample**

This research’s population included all preservice management teachers at the University of Cape Coast for the 2021-2022 academic period. Specifically, the level 400 preservice management teachers of the academic period 2021-2022 in the University of Cape Coast. This population served as representative for the study. The level 400 PMTs were chosen for this study because they have been educated through the regular stream of the management teacher education program as well as on-campus teaching practice. Hence, they are expected to demonstrate high levels of professionalism in knowledge regarding lesson plan preparation, teaching methodology and delivery, classroom organization and management and professional commitment. The population distribution of the Preservice Management Teachers (PMTs) is shown in Table 1.

###### **Table 1: “Population Distribution of Preservice Management Teachers”**

|  |  |
| --- | --- |
| Gender (Sex) | Total Number (f) |
| Male(s) | 58 |
| Female(s) | 43 |
| Total | 101 |

Source: Department of Business and Social Education 2021-2022

## Sample and Sampling Procedure

The sample used for the study was level 400 Preservice Management Teachers. These were purposively selected since they stood most suited to offer rich information on the problem of the study (Patton, Sawicki, & Clark, 2015). Therefore, all Preservice Management Teachers (n=101) who went for off-campus teaching practice was used in the study. In the views of Fugard and Potts (2015) collecting data from every individual within a population, particularly when the population is small, aids in mitigating sampling error by yielding an accurate representation of the entire population.

A census technique was then adopted in this study to include all the PMTs in the University of Cape Coast. This was used because, it was realistic to include all the PMTs since the population was relatively small in the study. Again, the utilization of the census method was suitable as it facilitated the acquisition of dependable and precise data for the study. Furthermore, it aided in circumventing sampling error by furnishing an authentic measure of the population.

**Data Collection Instrument**

This study made use of a questionnaire, namely; “Questionnaire for Preservice Management Teachers”. Denzin and Lincoln (2018) express that the design, nature and purpose of the study determine the data collection instrument. Mugenda and Mugenda (2003) contend that the use of a questionnaire is appropriate for an explanatory design study. This is because questionnaire provides essential data regarding the population and possesses the capacity to gather extensive data efficiently within a constrained timeframe (Mugenda & Mugenda, 2003). Hence, the questionnaires were used because the respondents are relatively large and well-educated. Also, surveys offer cost-effective advantages to users in both time and financial aspects.

## The study adapted Teaching Practice Assessment Form ‘A’ from the Centre for Teacher Professional Development, UCC, to assess professional knowledge of preservice management teachers (PMTs) during off-campus teaching practice in Ghanaian SHSs. This standardized 20-item instrument evaluates four key areas: lesson plan preparation, teaching methodology and delivery, classroom organization and management, and professional commitment. The original 5-point scale was modified to align with the Teacher Professional Knowledge Scale (TPKS), measuring knowledge levels from 1 (lowest) to 5 (highest).

## Adaptations included rephrasing items to focus on PMTs' self-assessed knowledge. For instance, the objective-writing criterion was revised from performance-based scoring to self-reported knowledge levels. Demographic details, such as age, gender, teaching experience, and career aspirations, were added to contextualize responses. This approach ensured the instrument’s alignment with the study's goals, focusing on PMTs’ professional knowledge.

## The adapted TPKS assessed PMTs’ understanding and application of teaching principles in SHSs. Research questions explored the extent of PMTs’ knowledge in lesson planning, methodology, classroom management, and commitment, providing insights into their preparedness for professional teaching. These modifications upheld the instrument’s reliability and validity while tailoring it to the study’s objectives.

## Test for Reliability and Validity

Reliability ensures consistent outcomes from study instruments. Pilot testing was conducted with a similar student sample to minimize bias, achieving a reliability coefficient of .819, surpassing the .70 threshold for reliability (Ong, 2012). Validity was established through expert reviews assessing face and content validity, ensuring instrument accuracy and relevance.

###### **Table 2: Reliability Statistics**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Section | Variable | Cronbach’s alpha | Cronbach’s Alpha based on Standardized items | No. of items |
| B | Lesson plan preparation | .87 | .86 | 4 |
| C | Teaching methodology and delivery | .96 | .95 | 12 |
| D | Classroom organization and management | .87 | .89 | 2 |
| E | Professional commitment | .86 | .87 | 2 |

Source: Field survey (2024)

The alpha values recorded exceeded 0.7, indicating strong internal consistency among the test items (Bland & Altman, 1997). This alpha value was deemed acceptable for evaluating the reliability of the research instrument, as suggested by Cohen, Manion, and Morrison (2017), who consider such reliability coefficients as high and adequate. This assessment aided the researcher in evaluating the internal coherence of the questionnaire items, affirming the instrument's reliability. Furthermore, the obtained results prompted the researcher to revise certain questionnaire items that were unclear to the students. This adjustment led to the development of a more effective and explicit questionnaire, facilitating the elicitation of accurate responses.

## 

## Ethical consideration

The study adhered to ethical protocols, securing clearance from the University of Cape Coast’s Institutional Review Board. Respondents were informed about the study’s purpose and given freedom to participate. Confidentiality and anonymity were prioritized, ensuring data privacy and non-disclosure. Data was used solely for research, with aggregated findings safeguarding individual identities in line with ethical standards.

**Data processing and analysis**

In examining the demographic characteristics of the respondents, descriptive statistics such as frequencies and percentages were employed, while means and standard deviations were utilized to analyze research questions one (1) to four (4). In the view of Ntorso (2017), means and standard deviations provide composite values reflecting multiple responses to a specific item on an instrument. These descriptive statistics (“means and standard deviations”) were chosen because, in addition to offering a foundational description as provided by frequencies and percentages, they provide a comprehensive understanding through composite value representation (Ntorso, 2017).

Regarding this study, the means and standard values of each of the items were calculated and arranged.

**Presentation and discussion of key findings**

The aim of this study was to investigate the preservice management teachers’ professional knowledge, in terms of lesson plan preparation, teaching methodology and delivery, classroom organization and management as well as professional commitment. This section covers the “exposition”, “interpretation”, and “discussion” of findings. The results are presented into two parts: the ‘first’ one presents the “demographic” characteristics of the respondents, and ‘second’ the outcomes regarding the “research questions”. In all, a valid population census of 101 preservice management teachers was used in the research. The research aimed to gather “demographic” information about the respondents involved. Namely; sex, age distribution, teaching experiences and teaching as a career. The “background information” of the respondents was analyzed using “frequency” (f) and “percentages” (%), as depicted in Table 3.

###### **Table 3: Demographic Characteristics of Respondents (n=101)**

|  |  |  |
| --- | --- | --- |
| Variables | N | % |
| Sex distribution: |  |  |
| Male | 58 | 57.4 |
| Female | 43 | 42.6 |
| Age distribution: |  |  |
| 20-24 | 65 | 64.3 |
| 25-29 | 33 | 32.7 |
| 30-34 | 3 | 3.0 |
| 35-39 | - | - |
| Teaching experience |  |  |
| Yes | 98 | 97.0 |
| No | 3 | 3.0 |
| Teaching as a career |  |  |
| Yes | 78 | 77.2 |
| No | 23 | 22.8 |

Source: Field survey (2024)

Table 3 presents the findings regarding the background characteristics of the respondents. In terms of gender (sex) distribution, the analysis revealed that the majority, 58 (57.4%), were male(s), while the rest of the respondents were female(s). This indicates that there were more male respondents (preservice management teachers) than female respondents participating in off-campus teaching practice. Regarding their age distribution, the findings revealed that most, 65 (64.3%) of the respondents, were in the 20-24 age group, while 33 (22.7%) fell within the 25-29 age group, and the remaining respondents were aged 30-34. This finding suggests that most of the preservice management teachers are young adults (matured). It is presumed these are capable to decide whether to participate in the study or not. Regarding their teaching experience, majority 98 (97%) of the respondents had teaching experience whilst the rest did not.

**Presentation of key findings**

Primarily, this aimed to investigate preservice management teachers’ level of professional knowledge regarding “lesson plan preparation”, application of “teaching methodologies and delivery”, “classroom organization and management” as well as their “professional commitment”. The respondents were asked to specify their level of knowledge from a Likert scale of 1 to 5, where 1= lowest and 5=highest. Table 4 displays the summarized descriptive findings.

###### **Table 4: Preservice Management Teachers’ Level of Professional Knowledge**

|  |  |  |  |
| --- | --- | --- | --- |
| Indicators | Mean | SD | Interpretation |
| Lesson Plan | 4.44 | .80 | High |
| Teaching Methodology and delivery | 4.27 | .69 | High |
| Classroom Organisation Management | 4.20 | .79 | High |
| Professional Commitment | 4.37 | .77 | High |
| **Average** | **4.32** | **.08** | High |

*Scale (Mean): 1.00-1.49 = (very low); 1.50-2.49 = (low); 2.50-3.49 = (moderately); 3.50-4.49 = (high); 4.50-5.00 = (very high)*

Source: Field survey (2024)

Generally, the result of preservice management teachers indicate that their level of professional knowledge is high (M = 4.32, SD = .08). This was seen in all the indicators, “lesson plan preparation (M = 4.44; SD = .80), application of teaching methodologies and delivery (M = 4.30; SD = .70), classroom organization and management (M = 4.20; SD = .80) as well as their professional commitment (M = 4.37; SD = .77)”.

In relation to the specific statements under each indicator, for instance, lesson plan preparation, majority of the respondents recorded very high to the statement *“I know how to introduce lessons by reviewing students’ RPK linked to the topic to stimulate students’ interest and share lesson objectives with student”* (M = 4.56; SD = .81). This shows preservice management teachers’ level of professional knowledge in linking RPK to current topics when introducing lessons.

Again, the following statements “I know how to effectively manage the marker board to write the date, subject, topic and all core points as well as give students time to write down core points in their books” (M = 4.48; SD = .87), “I know how to state in the lesson plan the summaries of core points for all activities which relate to lesson objectives and main concepts” (M = 4.48; SD = .96), I know how to state in the lesson plan specific, relevant, measurable and achievable objectives linked to classroom activities” (M = 4.48; SD = .99) recorded the same mean indicating preservice management teachers’ high professional knowledge in these areas regarding lesson plan preparation.

Further, considering teaching methodology and delivery, the following statements “I know how to pace appropriately without shouting during the entire lesson for all students to hear me clearly” (M = 4.35; SD = .87), and “I know how to state in the lesson plan the varied teaching/learning activities that are logical and sequential to direct student learning within the approximate time indicated” (M = 4.35; SD = .85) recorded the same mean of high professional knowledge by preservice management teachers.

However, among high recorded indicators and statements regarding preservice management teachers’ level of professional knowledge, the statement *“I know how to use correct expressions, correct students’ language errors, encourage student to pay attention to their use of language, use effective verbal and non-verbal communication as well as avoid language mannerisms”* recorded the lowest mean (M = 4.10; SD = .89).

The finding of this study showed that preservice management teachers possessed high level of professional knowledge during off-campus teaching practice. The results align with the notion that teachers’ high level of professional knowledge is assumed to be a key factor affecting teaching quality (Abell, 2007; Fischer, Borowski, & Tepner, 2012; Fischer, Neumann, Labudde, & Viiri, 2014). Also, the development of professional knowledge in teachers is a goal of teacher education. Teacher’s level of professional knowledge enables them to use appropriate actions in teaching situations, which should result in students’ achievement (Terhart, 2012). Similarly, Falloon, (2020) posit that teacher’s level of professional knowledge is his or her understanding of the curriculum, subject content, pedagogical knowledge, and the needs of students by providing relevant learning experiences. Therefore, PMTs high level of professional knowledge are evident in the “lesson plan”, “teaching methodology and delivery”, “classroom organization and management” as well as “professional commitment”.

**Table 5 – Linear Regression of Teaching Methodology and Delivery**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Teaching Methodology | R squared | Adj. R squared | F | P-value | Constant | Beta | t |
| Lesson Plan | .666 | .662 | 197.175 | .000 | .516 | .820 | 14.042 |

Source: Field survey (2024)

From the Table 5, the predictor lesson plan in the model realized a total variance of 66.6% explanation in the dependent variable (teaching methodology and delivery). This means that about 33.4% of variance was unexplained by the predictive model for preservice management teachers’ teaching methodology and delivery. The implication of this is that additional variables are needed to fully explain the total variance in PMTs teaching methodology and delivery prediction.

From the table 5, an F value of 197.175 provides a significant p-value of .000 in the prediction of PMTs teaching methodology and delivery by the regression model. This implies that PMTs lesson plan preparation in the model significantly have effect on their teaching methodology and delivery.

Finally, from table 5, lesson plan preparation has effect on teaching methodology and delivery with β = .820 and t = 14.042 at p = .000, p ≤ 0.01 threshold. Hence, the null hypothesis formulated for this effectives relationship is rejected for the alternative hypothesis. This implies that preservice management teachers’ professional knowledge in lesson plan preparation determines their level of knowledge in the teaching methodology and delivery adopted.

**Conclusion**

Concerning PMTs level of professional knowledge, it is concluded that their level of professional knowledge is high during off-campus teaching practice because they have acquired both theoretical and practice knowledge in terms of “lesson plan preparation”, “teaching methodologies and delivery”, “classroom organization and management” as well as “professional commitment”. This theoretical and practice knowledge could be evidenced during the study of methods of teaching course and on-campus teaching practice respectively in level 300.

Again, it is concluded that the statement “I know how to use correct expressions, correct students’ language errors, encourage student to pay attention to their use of language, use effective verbal and non-verbal communication as well as avoid language mannerisms” recorded the lowest mean because, perhaps, supervisors’ attention have not been drawn to that direction during on-campus teaching practice, hence, the lowest mean recorded.

Since preservice teachers scored lowest in effective communication skills, curriculum developers should prioritize enhancing communication competencies by including workshops that focus on verbal and written communication, active listening, and interpersonal skills to help these future teachers improve their ability to effectively convey information. Also, the study suggests that lesson planning significantly influences teaching methodology and delivery and so curriculum designers should emphasize practical lesson planning exercises, aligning them with specific teaching methods, and providing opportunities for preservice teachers to apply their plans in real classroom settings. Further, **r**ather than treating professional knowledge on lesson planning, and classroom management as components, curriculum development should take a holistic approach by encouraging preservice teachers to see these as interconnected elements that are essential for effective teaching. Lastly, though the study did not directly measure teaching self-efficacy, it is crucial for preservice teachers’ success and therefore, curriculum developers can incorporate activities that boost self-confidence, such as simulated teaching scenarios, peer feedback, and reflective practices.

**Recommendations**

Teacher educators are recommended to continue developing preserve teachers’ professional knowledge both theoretical and practice. Thus, through methods of teaching as a course and on-campus teaching practice. Also, supervisors for on-campus teaching practice should draw the attention of preservice teachers to use correct expressions, correct colleagues’ language errors, encourage their colleagues to pay attention to their use of language, use effective verbal and non-verbal communication as well as avoid language mannerisms during on-campus teaching practice. This directive would go a long way to adequately develop them before they go out for off-campus teaching practice.

**Contribution to practice**

The study has entreated supervisors for on-campus teaching practice to draw the attention of preservice teachers to use correct expressions, correct colleagues’ language errors, encourage their colleagues to pay attention to their use of language, use effective verbal and non-verbal communication as well as avoid language mannerisms during on-campus teaching practice. This would help to adequately develop them before they go for “off-campus teaching practice” and to assist them in the teaching profession.

**Implication for Curriculum Review and Development**

Given that lesson plan preparation significantly influences teaching methodology and delivery, curriculum review should prioritize enhancing preservice teachers’ lesson planning skills through the building of teacher competences. In this light, the integration of communication skills into teacher training programmes is crucial. Teacher training institutions, in collaboration with the Centre for Teacher Professional Development (CTPD), can periodically organize workshops and practical experience sessions to enhance preservice teachers’ ability to convey information effectively. Also, while lesson planning is crucial, the curriculum for preservice teachers should also emphasize competencies such as communication to create well-rounded educators. Teacher educators should ensure the provision of regular feedback and assessment to preservice teachers on the quality of their lesson plans to guide them toward effective practices. In sum, the findings call for a holistic approach to curriculum development – one that recognizes the interconnectedness of various teaching competencies and their impact on student learning outcomes.

**References**

Abell, S. K. (2007). Research on science teacher knowledge. *Handbook of Research on Science Education*, 1105–1149.

Agyei, D. D. (2022). Enhancing preservice teachers' pedagogical content knowledge through technology integration: The case of lesson plan preparation. *Journal of Teacher Education and Practice, 18*(2), 45–60.

Ary, D., Jacobs, L. C., Sorensen, C., & Walker, D. (2010). *Introduction to research in education* (8th ed.). Wadsworth.

Bennett, N. (1984). *Teaching styles and pupil progress*. Harvard University Press.

Bland, J. M., & Altman, D. G. (1997). Statistics notes: Cronbach’s alpha. *BMJ, 314*(7080), 572. <https://doi.org/10.1136/bmj.314.7080.572>

Burić, I., & Kim, L. E. (2020). Teacher emotional labor, instructional strategies, and student academic engagement: A multilevel analysis. *Learning and Individual Differences, 80*, 101890. <https://doi.org/10.1016/j.lindif.2020.101890>

Carlsen, W. S. (1999). Domains of teacher knowledge. In J. Gess-Newsome & N. G. Lederman (Eds.), *Examining pedagogical content knowledge* (pp. 133–144). Springer.

Carter, K. (1990). Teachers’ knowledge and learning to teach. *In W. R. Houston (Ed.), Handbook of Research on Teacher Education* (pp. 291–310). Macmillan.

Cochran, K. F., DeRuiter, J. A., & King, R. A. (1993). Pedagogical content knowing: An integrative model for teacher preparation. *Journal of Teacher Education, 44*(4), 263–272. <https://doi.org/10.1177/0022487193044004004>

Cochran-Smith, M. (2005). The new teacher education: For better or for worse? *Educational Researcher, 34*(7), 3–17.

Davis, B., & Simmt, E. (2006). Mathematics-for-teaching: An ongoing investigation of the mathematics that teachers (need to) know. *Educational Studies in Mathematics, 61*(3), 293–319.

Dorsah, E. (2022). Lesson planning and teaching effectiveness: A case of pre-service teachers at the University of Cape Coast. *Journal of Education Research and Practice, 12*(1), 87–105.

Denzin, N. K., & Lincoln, Y. S. (2018). *The SAGE handbook of qualitative research* (5th ed.). SAGE Publications.

Entsie, R. (2021). Examining subject knowledge in teacher education: Implications for practice. *International Journal of Educational Research, 103*, 101682.

Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development, 68*(2), 2449– 2472.

Fenstermacher, G. D. (1994). The knower and the known: The nature of knowledge in research on teaching. *Review of Research in Education, 20*, 3–56.

Fischer, F., Borowski, A., & Tepner, O. (2012). Professional knowledge of science teachers. *Education Inquiry, 3*(4), 551–573.

Fischer, H. E., Neumann, K., Labudde, P., & Viiri, J. (2014). Quality of instruction in science education. *International Journal of Science Education, 36*(17), 2920–2939.

Frankel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education* (4th ed.). McGraw-Hill.

Friedrichsen, P., van Driel, J., & Abell, S. (2011). Taking a closer look at science teaching orientations. *Science Education, 95*(2), 358–376.

Fugard, A. J. B., & Potts, H. W. W. (2015). Supporting thinking on sample sizes for thematic analyses: A quantitative tool. *International Journal of Social Research Methodology, 18*(6), 669–684.

Gay, L. R. (1992). *Educational research: Competencies for analysis and application* (4th ed.). Macmillan.

Grossman, P. L. (1990). *The making of a teacher: Teacher knowledge and teacher education*. Teachers College Press.

Grossman, P. L., Van Beek, M., & Wientjes, I. (1990). Understanding teacher knowledge: A conceptual framework for pedagogical content knowledge. *Teaching and Teacher Education, 6*(2), 189–200.

Hill, H. C., Rowan, B., & Ball, D. L. (2005). Effects of teachers’ mathematical knowledge for teaching on student achievement. *American Educational Research Journal, 42*(2), 371– 406.

Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Age International Publishers.

Magnusson, S., Krajcik, J., & Borko, H. (1999). Nature, sources, and development of pedagogical content knowledge for science teaching. In J. Gess-Newsome & N. Lederman (Eds.), *Examining pedagogical content knowledge* (pp. 95–132). Springer.

Mbwesa, J. (2014). The role of lesson planning in effective teaching. *International Journal of Education, 6*(2), 42–58.

Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. ACTS Press.

Mwesiga, C., & Okendo, E. (2018). Measuring preservice teachers’ performance in teaching practice. *Educational Measurement and Evaluation, 15*(1), 72–89.

Noffke, S., & Zeichner, K. M. (1987). Action research and reflective teaching in preservice teacher education: A case study from the United States. *Teaching and Teacher Education, 3*(1), 55–68.

Ntorso, B. (2017). Analyzing mean and standard deviation in educational research. *Journal of Statistical Studies, 9*(3), 58–74.

Ong, W. J. (2012). *Orality and literacy: The technologizing of the word* (30th anniversary ed.). Routledge.

Padillo, J. R., Manguilimotan, R., Capuno, R., & Espina, D. (2021). Teacher professional knowledge and its influence on student achievement. *Journal of Educational Assessment, 16*(2), 98–115.

Park, S., & Oliver, J. S. (2008). Revisiting the conceptualization of pedagogical content knowledge. *Research in Science Education, 38*(3), 261–284.

Patton, C., Sawicki, D. S., & Clark, J. J. (2015). *Basic methods of policy analysis and planning* (3rd ed.). Pearson.

Seidu, A. (2012). *Research methodology in the social sciences*. University of Ghana Press.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4–14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1–22.

Sockett, H., Traub-Dargatz, M., & Weiser, G. (1987). The moral dimension of teaching. *Educational Leadership, 44*(5), 34–38.

Terhart, E. (2012). Teacher education research and its impact on teaching. *European Educational Research Journal, 11*(2), 164–175.

Turnbull, D. (2018). Learning through inquiry-based teaching. *Journal of Experiential Learning, 21*(3), 211–225.

Turner-Bisset, R. (1999). The knowledge bases of the expert teacher. *British Educational Research Journal, 25*(1), 39–55.

Wilson, S. M., & Wineburg, S. S. (1988). Peering at history through different lenses. *Journal of American History, 75*(3), 1420–1443.

Yarkwah, F. (2022). Analyzing preservice teachers’ challenges in lesson planning. *Teacher Development Journal, 12*(4), 87–101.