Teachers We Need for the Education We Want: Agenda for Setting Up Universities in Ghana

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ABSTRACT

The foundation of any nation lies in the robust characteristics of its educational system. This paper aimed to assess whether student-teachers possess the essential skills needed to deliver the type of education desired by Ghanaians. A cross-sectional survey employing a quantitative research design was utilized. A sample of 385 from a total of 736 student-teachers was selected from the Departments of Arts Education, Business and Social Sciences Education, and Home Economics at the University of Cape Coast using a proportionate simple random sampling method. Data collection involved structured questionnaires that were analysed using Statistical Product and Service Solutions (SPSS) version 27 with descriptive statistics (mean, standard deviation, frequency and percentage. The results indicated that student-teachers demonstrated a strong grasp of content knowledge, and they were well-prepared to implement creative teaching methods. Moreover, the study found significant differences in the content knowledge of student-teachers based on factors such as sex, age, and field of study $F(18, 3) = 2.062$, $p = .008$, and partial $\eta^2 = .122$. Additionally, there were notable differences in the preparedness of student-teachers to utilise creative pedagogies, influenced by their gender, age, and program of study, indicated by $F(18, 3) = 1.922$, $p = .015$, and partial $\eta^2 = .115$. The study recommended that educational stakeholders in the Universities should encourage student-teachers to engage in workshops, seminars, and professional development opportunities to remain updated with the latest advancements in their field of work. It also suggested that student-teachers be motivated to explore innovative pedagogical approaches within their specializations. Furthermore, the research proposed that universities responsible for teacher training tailor their support systems for student-teachers, taking into account demographic variations in their preparedness to adopt creative teaching methods.

Keywords: Teachers, Agenda, Universities, Creative pedagogies, Content knowledge, student-teachers

INTRODUCTION

Education is a vital catalyst for economic and social progress, and the quality of teachers is a pivotal factor in determining the efficacy of an educational system (Darling-Hammond, 2000). Rivkin, Hanushek, and Kain (2005) analysed data from Texas and concluded that teacher quality is the most significant school-related factor influencing student achievement. In Ghana, the demand for high-quality education has been growing rapidly, driven by a burgeoning population and a recognition of the importance of human capital development for economic growth (Akyeampong, 2017). However, the country's educational system has faced numerous challenges, including inadequate teacher training, limited resources, and a lack of alignment between educational policies and societal needs (Rolleston, 2009). The inception of the 21st century came with

demands that necessitated a paradigm shift in educational settings globally. Notable among the numerous inclusions is Information and Communication Technology (ICT) in our education. This addition arose the need for institutions in charge of teacher training to put measures in place to train personnel for the education we want as a society (Anderson & Krathwohl). The past two decades of this century have created a lacuna of needs not just in information technology in education but other needs as well. The urgency with which students need to acquire modern skills has been noticed globally (Bani-Amer, 2022). Teachers' content knowledge and use of creative pedagogies are some of the requisite skills teachers need to possess. Content knowledge here deals with the depth of the student teacher's understanding of the conceptual, substantive and procedural knowledge in his/her area of study. Creative pedagogy here means, how the teacher is equipped with new methodologies and practices underpinned by 21st-century skills in his/her subject area.

Many developing nations face difficulties in ensuring that teachers possess the necessary subject knowledge and pedagogical skills. Akyeampong, Lussier, Pryor, and Westbrook (2012) conducted a study in Ghana, Kenya, Mali, Senegal, and Tanzania, and found that numerous teachers lacked in-depth subject matter knowledge and heavily relied on traditional, teacher-centered methods. This finding is supported by Mulkeen (2010), who examined teacher supply, training, and management issues in Anglophone Africa and identified significant gaps in teacher quality. Ravid (2014) posits that the European Union critically wants the acquisition of many essential skills to feature prominently in the education they want. The practical implementation of these goals by teachers is of utmost importance, necessitating the implementation of reforms in teacher education (Bani-Amer, 2022). Universities are always at the forefront when it comes to teacher education globally. In Ghana, we cannot overlook the University of Cape Coast when talking about teacher education and development. The desire to address the changing needs, demands and expectations of Ghanaians since the country gained political independence has led to the establishment of numerous educational review committees (Armah, 2017). Educational review committees formed and headed by Kwapong in 1966, Dzobo in 1974 and Anamuah-Mensah in 2002 were all formed to come up with ways of addressing the educational needs of the country. The primary focus of these committees was to address issues regarding the structure of our education notably at the pre-university level and how the various educational policies of the respective regimes can be achieved. Equally, significant attention has been given to teacher education and how it can help in the provision of the education we want in the past decades (Armah, 2017). By critically examining the trends and challenges of our educational system from a few studies and a court of public opinion, it can be concluded that, issues such as examination malpractices, poor examination results, as well as poor school administrative management and over-politicization of education among others.

A study conducted by Armah (2017) also revealed that teachers' pedagogical knowledge, content knowledge in complex subject matter, teachers' appreciation of the diverse nature of learners as well as teachers' creativity are the existing issues in the literature about teachers. The question we ask ourselves is, what kind of teachers do we expect our universities to churn out to actualize the educational goals of the country? According to Darling-Hammond (2000), teachers play a major role in ensuring high-quality learning outcomes for children. Consequently, Dave and Rajput (2000) argue that the quality of teachers is the primary factor influencing a student's academic progress within the school setting. Consequently, substantial endeavours have been undertaken in the past thirty years to guarantee that the training of teachers in Ghana aligns with both national goals and internationally recognized standards (Armah, 2017). In Ghana specifically, Mereku (2004) highlighted the need for improving teacher education through performance enhancement, arguing that the traditional approach to teacher training was inadequate in preparing teachers for the complexities of the classroom. Akyeampong (2017) conducted a study on teacher educators' practices and visions in Ghana and found that while there was a desire for more student-centred and constructivist approaches, traditional methods of teaching and learning persisted. The challenges faced by Ghana's educational system are not unique, as many developing countries grapple with similar issues related to teacher quality, pedagogy, and resource constraints. Numerous scholars and international organizations have emphasized investing in teacher education and professional development as a key strategy for improving educational outcomes (UNESCO, 2014; World Bank, 2018). Momanu (2012) found that teachers possess a moderate understanding of pedagogical practices and are capable of adhering to essential strategies, such as refraining from imposing

punishments or making threats, thereby fostering critical and independent thinking among learners. The level of pedagogical knowledge among teachers varies across different studies. Kim (2012) reports a statistically significant increase in preservice biology teachers' pedagogical knowledge after engaging in a science pedagogy course, suggesting an improvement from a potentially moderate to a higher level. Sonmark et al. (2017) validate an instrument for assessing general pedagogical knowledge internationally, implying that pedagogical knowledge is a key component of teacher profiles across countries, though it does not specify the level of knowledge (Sonmark et al., 2017). Nautiyal and Dabral (2023) find that preservice teachers have an average and positive perception of their Technology, Pedagogical, and Content Knowledge (TPACK), indicating moderate pedagogical knowledge.

One approach that has gained traction in recent years is the use of information and communication technologies (ICTs) in teacher training and classroom instruction. Trucano (2015) explored the potential of ICTs to support teacher professional development and noted that while challenges exist, such as access to technology and adequate training, ICTs can provide cost-effective and scalable solutions for enhancing teacher knowledge and skills. Additionally, there has been a growing emphasis on the need for teacher education programs to be aligned with local contexts and cultural realities. Tabulawa (2003) critiqued the widespread adoption of Western-centric pedagogical approaches in developing countries, arguing that these approaches may not resonate with the cultural values and norms of local communities. Instead, he advocated for a more culturally responsive approach to teacher education that recognizes the diverse backgrounds and experiences of learners.

Numerous attempts at ensuring that, the primary institution in charge of teacher education is producing the graduate teacher professionals we need began very long ago by setting up teacher training colleges. In recent times, the effort has been more of upgrading in-service teachers. The first of such programs is the Untrained Teacher's Diploma in Basic Education (UTDBE), which is designed for educators who have not undergone initial professional teacher training. This was followed by upgrading professional teachers with Cert A to diploma, the introduction of teacher licensure for new professionals and lastly the upgrading of all diploma teachers to degree-holding teachers and awarding of degrees by colleges of education after the newly introduced 4-year duration of teacher training. The focus of all these reforms has been the colleges of education at the expense of the universities in charge of teacher education notably the University of Cape Coast and University of Education Winneba. This makes this study essential since it will seek to find out how the setting up of the University of Cape Coast can contribute to the production of the teachers, we need for the education we want. The knowledge of the education we want can be obtained from the 2019 curriculum framework for pre-tertiary schools in Ghana.

'*The Aim of the National Pre-tertiary Education Curriculum of Ghana is to turn out graduates who are good problem solvers, can think creatively and have both the confidence and competence to participate fully in the Ghanaian society as responsible local and global citizens'* (National Curriculum Framework for Pre-tertial in Ghana, 2019. p.20). The mastery of the curriculum's content confidently will help the student-teachers and teachers at large to competently implement their respective subjects. To achieve this aim of the education we want, the student-teachers the universities are churning out should have some required skills and competencies since teachers are at the heart of quality learning outcomes for students (Darlin-Hammond, 2000). Initiatives such as the Teacher Education and Accountability Model (TEAM) have been implemented to address some of the challenges in teacher education. TEAM aims to improve the quality of pre-service teacher training through a combination of curriculum reform, enhanced supervision and mentoring, and the use of ICTs (Akyeampong, Pryor, Westbrook, & Lussier, 2011). However, the success of such initiatives ultimately depends on sustained political will, adequate funding, and a commitment to ongoing monitoring and evaluation.

The issue of teacher quality and education in Ghana and other developing countries is complex and multifaceted, requiring a holistic approach that addresses factors such as teacher training curricula, pedagogical practices, resource allocation, and the integration of local cultural contexts. Continued research, policy reforms, and collaboration among stakeholders will be crucial in ensuring that teachers are equipped to

provide high-quality education and support the development of human capital for economic growth and social progress.

CONTEXT AND PURPOSE

The essence of cultivating a competent and dynamic teaching workforce capable of igniting active learning experiences through robust content mastery, innovative pedagogical approaches, and the ability to captivate students' engagement is widely acknowledged in the scholarly literature (Hammond, 2000; Rolleston, 2009). Notwithstanding the government's endeavours to elevate the educational sector, a pervasive challenge persists: Ghana's current teacher education system falls short of nurturing the calibre of educators essential to delivering the high-quality instruction that the nation necessitates to attain its developmental aspirations (Akyeampong, 2017). This predicament stems from an intricate interplay of interrelated factors. Teachers are most often accused of any shortcomings of their learners from students' conduct within and outside of the school settings to the outcome of students' performance in standardized tests. The question many stakeholders ask …are these teachers trained to address the needs of our society? The issues relating to the teachers we need span from the content knowledge of the teachers and the creative pedagogies they employ in their training as professionals.

Foremost, numerous Ghanaian teachers grapple with deficiencies in the requisite pedagogical knowledge and proficiencies to employ efficacious teaching methodologies, particularly in realms such as student-centred learning, critical thinking, and problem-solving (Akyeampong, 2017; Rolleston, 2009). This inadequacy can be partially attributed to the traditional teacher education system in Ghana, which has faced criticism for stifling creativity and innovation, resulting in educators who heavily rely on rote learning and memorization techniques (Akyeampong, 2017; Hammond, 2000). Moreover, a disconnect often exists between the curricula and teaching methods employed in Ghanaian teacher education programs and the evolving needs and demands of society and the labour market (Akyeampong, 2017; Rolleston, 2009). This misalignment creates a scenario where prospective teachers are inadequately prepared to equip their students with the knowledge and skills essential for thriving in the modern world.

Furthermore, numerous teacher education programs in Ghana prioritize theoretical knowledge over practical experience, leaving prospective educators ill-equipped to navigate the realities of the classroom (Akyeampong, 2017; Hammond, 2000). Without sufficient opportunities to apply their knowledge in real-world settings, novice teachers may encounter challenges in translating their academic understanding into effective teaching practices. These factors have culminated in a situation where many Ghanaian teachers lack the necessary skills, knowledge, and creativity to effectively facilitate learning and prepare students for the demands of the 21st century (Akyeampong, 2017; Rolleston, 2009). To address this issue, a comprehensive reform of the teacher education system in Ghana is imperative, with a particular emphasis on enhancing pedagogical knowledge, fostering creativity, aligning curricula with societal needs, and providing ample opportunities for practical experience (Hammond, 2000; Rolleston, 2009; Vavrus, 2009).

By transforming teacher education programmes to cultivate educators equipped with the requisite knowledge, skills, and mindset, Ghana can take a significant stride towards achieving the high-quality education that its citizens deserve and that the nation requires to thrive in an increasingly competitive global landscape (Akyeampong, 2017; Hammond, 2000; Vavrus, 2009). This study sought to describe the teachers we need for the education we want from the set-up universities in Ghana. It was purported to establish the levels of student-teacher content knowledge, and preparedness to use creative pedagogies. It was to also establish the effect of student-teachers sex, age and program of study content knowledge and use of creative pedagogies as the teachers needed. The study was directed with the following research questions and hypotheses deduced from the objectives.

1. What is the level of student-teacher content knowledge?
2. What is the level of student-teacher preparedness to use creative pedagogies?

$H_0$1: There is no statistically significant difference in content knowledge of student-teachers based on their sex, age and program of study.

$H_0$2: There is no statistically significant difference in student-teacher preparedness to use creative pedagogies based on their sex, age and program of study.

LITERATURE REVIEW

Content and Pedagogy Knowledge

The teachers every country needs for the education of her children are teachers who are masters of the what (content) and the teaching strategies (how) students can learn best to fulfil the accepted curriculum for the nation. This attribute is seen to be heroic in the teaching and students' learning transaction and it is referred to as pedagogical content knowledge (PCK). PCK is described by Cochran, et al (1991) as the ability of teachers to integrate their pedagogical knowledge with their subject knowledge within the educational setting, providing a clearer framework for teaching. This concept comprises four key elements: understanding the subject matter, knowledge of students, awareness of environmental contexts, and pedagogical knowledge. The teachers needed are supposed to possess all these qualities acquired from the universities intended to train the teachers. Often, novice teachers struggle to effectively apply their subject knowledge in the classroom; instead, they tend to depend on information sourced from textbooks, commercial curricula, or established authority figures. Typically, they do not give adequate attention to effective pedagogical practices. Shulman noted that the transition from novice to expert teacher occurs when individuals engage in critical reflection on their subject matter, exploring various ways to convey the information through analogies, metaphors, examples, problems, demonstrations, and classroom activities. They also learn to tailor the material to accommodate the abilities, gender, prior knowledge, and misconceptions of their students (Shulman, as cited in Ball & McDiarmid, 1990).

This approach to teaching emphasizes a gradual enhancement of all students' success levels, placing significant academic expectations on teachers. Consequently, this empowers educators to help students connect what they already know with new concepts, information, or skills essential for their learning. Tadeko and Wilujeng (2024) indicated that integration of TPACK in science education curriculum tends to greatly influence and prove; that good knowledge of content and technology, along with the pedagogical skills of the teachers, can boost students' scientific competencies and motivation in the learning process significantly. For instance, a study focusing on biology teachers in Thailand revealed that many lacked sufficient content knowledge in biology, which hindered their classroom teaching effectiveness (Biology Teacher's Pedagogical Content Knowledge in Thailand: Understanding & Practice, 2014). To achieve the nation's educational objectives, teachers must possess a solid understanding of their subject areas. Additionally, research involving preservice teachers at Muhammadiyah Semarang University indicated a moderate level of content knowledge in disciplinary indicators (Astuti et al., 2017). Variations in student-teacher content knowledge levels have been documented. A study examining preservice science teachers' pedagogical content knowledge in physiology and anatomy found that about 89% of students achieved mastery in Content Knowledge, with method selection, material delivery, and classroom management being learned by 81%, 85%, and 84% of the students, respectively (Parmin et al., 2019). Furthermore, Mensah and Serwaa (2023) reported that religious educators in Ghana demonstrated high content knowledge. This factually establishes that the successful inclusion of UDL depends mainly on the depth of pedagogical content knowledge by teachers that enables them to adapt teaching methods and materials to the diversity of learners' needs.

Regarding the use of creative pedagogy, Momanu (2012) opines that teachers need to possess a moderate understanding of pedagogical practices and should be capable of adhering to essential strategies, such as refraining from imposing punishments or making threats, thereby fostering critical and independent thinking among learners. The level of pedagogical knowledge among teachers varies across different studies. Kim (2012) reports a statistically significant increase in preservice biology teachers' pedagogical knowledge after engaging in a science pedagogy course, suggesting an improvement from a potentially moderate to a higher

level. Sonmark et al. (2017) validate an instrument for assessing general pedagogical knowledge internationally, implying that pedagogical knowledge is a key component of teacher profiles across countries, though it does not specify the level of knowledge (Sonmark et al., 2017). Nautiyal and Dabral (2023) find that preservice teachers have an average and positive perception of their TPACK, indicating moderate pedagogical knowledge. Affandi et al. (2022) illustrate that the general pedagogical knowledge and self-efficacy of primary school teachers in STEM instruction can be significantly improved through training, progressing from a moderate to a higher level. Similarly, Li et al. (2022) indicate that teachers' TPACK (Technological Pedagogical Content Knowledge) abilities are generally high, although they differ based on educational stages and levels. For Ghana to get the kind of education it wants, there is the need for universities to train teachers who are competent enough in pedagogies and content/subject matter.

Conceptual Review

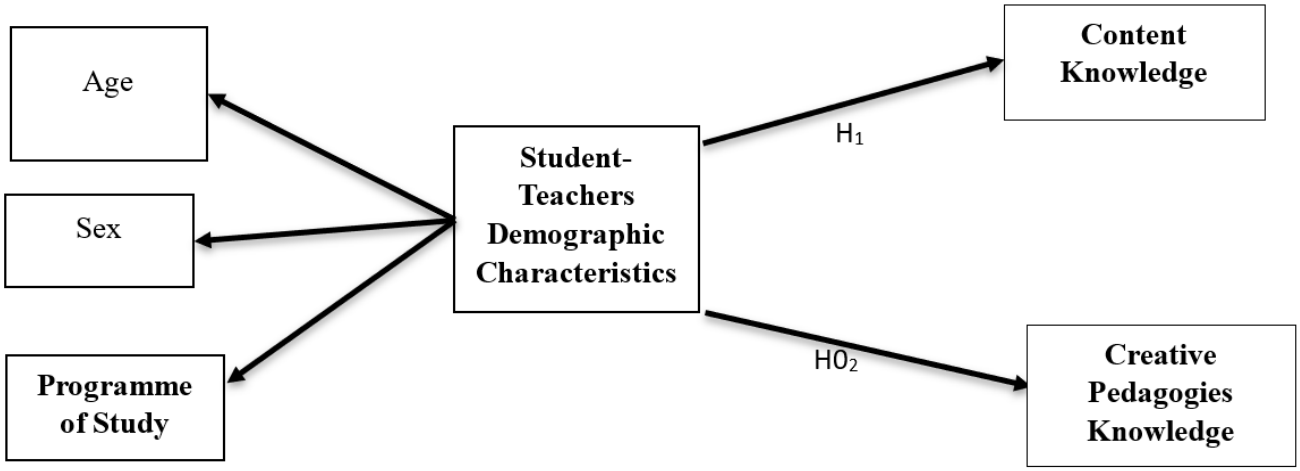

Figure 1: Content and Creative Pedagogies Conceptual Framework (CCPCF),

As Figure 1 specifies in the Content and Creative Pedagogies Conceptual Framework (CCPCF), enhanced content and creative pedagogical knowledge are to be achieved when university student-teachers are taught in their areas of specialisation (programme of study). The programme of study with the corresponding age and sex of the student-teacher can improve content knowledge and creative pedagogical knowledge. The framework with the respective hypotheses supports the self-determination theory and expectancy-value theory, which posits that individuals are motivated when they have a sense of autonomy, competence, and relatedness. In the student-teacher demographic characteristics, students are provided with choices, fostering a sense of competence and creating a supporting learning environment to enhance content and creative pedagogical knowledge.

The results of this study, therefore, imply a most salient need for the betterment of the pedagogical content knowledge of teachers, as a consequential requirement to facilitate the effective application and use of UDL principles. For example, better training and support could enable educators to understand and implement strategies that take into account how different students prefer to learn and, therefore, improve educational outcomes. Ma's research, therefore, offers valuable insights concerning the relationship between a teacher's pedagogical content knowledge and the successful application of a particular way of imparting knowledge. Regarding tertiary education, Bosu (2015) considered that the same was related to ICT, curriculum content, and pedagogy. The study points out the importance of learning pedagogical content knowledge that would integrate these elements effectively in enhancing educational administration and policy in universities in Ghana. The paper by Bosu argues that access to technology is not enough in and of itself; the acquisition of skills by educators is equally important in being able to integrate technology into pedagogical strategies and curriculum content. A review of related studies (Akyeampong, 2017; Armah, 2017; Bosu, 2015; Mulkeen, 2010; Ravid, 2014; Rolleston, 2009) has tackled issues related to the kind of education a country needs but looking at different aspect of the discussion. This study also seeks to contribute to the discourse.

METHODOLOGY

Procedures

The study followed the assumptions of the positivists' paradigm of assessing a phenomenon. Positivism emphasizes the use of quantitative measures to establish causal relationships and generalizable findings (Park, 2020). In the context of descriptive cross-sectional survey design, Leavy (2017) opines that positivism involves the use of large quantitative data sets to establish general truths. As demonstrated in the study by Preston (2018), this design can be enhanced by the simultaneous linking of cross-informant and large data volumes at a point. At the University of Cape Coast, there are four dynamic educational faculties: the Faculty of Humanities and Social Sciences Education, the Faculty of Educational Foundations, the Faculty of Science and Technology, and the School of Educational Development Outreach (SEDO). These faculties are well-equipped to prepare qualified and skilled teachers capable of implementing the curriculum effectively in classrooms. The study involved 736 level 300 student-teachers trained to educate the unique needs of Ghanaian children.

All level 300 student-teachers from three key departments studying education at the University of Cape Coast were eligible to participate in the research. The selected departments—Arts Education, Business and Social Sciences Education, and Home Economics—were chosen from the four available faculties. Data were gathered from 285 of the 736 level 300 student-teachers who were receiving education training and were preparing to advocate for the educational philosophy desired by the country. Their being trained in teaching methods lectures positions them to contribute significantly to the objectives of Ghana's Education System. Thus, 285 student-teachers from this cohort participated in the study.

The respondents were selected using a proportionate simple random sampling method, ensuring representation from all relevant departments. This sampling technique guarantees that each individual in the population has an equal chance of being included in the sample while maintaining proportionality regarding specific characteristics of the population (Levy & Lemeshow, 2013; Lohr, 2021). This method is particularly useful when the population is divided into distinct subgroups or strata, allowing for a fair representation of each subgroup in the sample. Table 1 provides the demographic details of the student-teachers who took part in the study.

Table 1; Demographic Characteristics of Student-Teachers (n= 285)

Variable	**Subscale**	**No.**	**%**
Sex	Male	106	37.2
	Female	179	62.8
Age	18-20	28	9.8
	20-24	159	55.8
	26-30	95	33.3
	30 34	3	1.1
Programme of Study	B.Ed. Home Economics	78	27.4
	B.Ed. Art	121	42.5
	B.Ed. Management	84	29.5
	Communication Design	2	.7

Source: Field Data (2024).

A rigorous adherence to ethical considerations was maintained. To ensure this, a letter of introduction was obtained from the Faculty of Humanities and Social Scenes Education, University of Cape Coast for formal approval to receive permission to engage with the student-teachers. All ethical issues were strictly respected as confidentially, Informed Consent and anonymity were all ensured. The purpose of the study was further explained to the student-teachers since they were all willing to participate fully and were made to understand that they could freely provide information as it was going to be used for only academic purposes and one could even decide to withdraw if anyone felt intimidated or coerced.

Measures

A structured questionnaire was utilized for data collection, consisting of 33 items tailored to fit the study's context and distributed to junior high schools. This approach allowed researchers to gather essential information from the teachers. The questionnaire comprised three sections. Section A collected demographic data about the student-teachers, while Section B included 10 self-developed items assessing teachers' content knowledge, measured using a five-point Likert scale: 5 = Strongly Agree, 4 = Agree, 3 = Disagree, 2 = Strongly Disagree, and 1 = Uncertain. Section C contained 10 self-designed items focused on teacher adaptability, also rated on the same five-point Likert scale. Lastly, Section D included 10 self-designed items concerning creative pedagogies, along with 17 adapted items addressing the psychological well-being of student-teachers, based on the work of Ryff (2010).

Validity and Reliability

The instrument underwent assessment for content and face validity, evaluated by experts and the researchers themselves, based on relevant literature and the specific nature of the research problem. To verify the reliability of the instrument, Cronbach's Alpha was calculated for the items about teachers' content knowledge, adaptability, creative pedagogies, and the psychological well-being of student-teachers. Both construct and predictive reliability tests indicated that the items were robust. The overall alpha value was .86, with individual values of .76 and .89 for the aforementioned variables. According to Tavakol and Dennick (2011), an alpha value between 0.70 and 0.95 is regarded as strong and acceptable. Thus, an alpha value of 0.86 falls within the acceptable range of .7 to .95 for this instrument.

Statistical Treatment of Data

Data collected from the questionnaire were analysed quantitatively. The questionnaires were serially numbered for easy identification. The collected data were organized, sorted, and cleaned—not to alter responses to fit the researchers' preferences but to ensure that any missing data were appropriately addressed to maintain accuracy. All responses to each questionnaire item were analysed using descriptive statistical methods and processed through Statistical Product and Service Solutions (SPSS) version 27. The demographic section of the questionnaire was examined using frequencies and percentages. For the items related to the first two research questions, frequencies, percentages, means, and standard deviations were calculated. Also, factorial ANOVA was used in analysing the two hypotheses.

RESULTS

Research Question One: What is the level of student-teacher content knowledge in teaching?

This question aimed to assess the level of content knowledge among student-teachers regarding their teaching competencies. Participants were asked to express their level of agreement or disagreement with various statements using a scale: 5 = Strongly Agree, 4 = Agree, 3 = Disagree, 2 = Strongly Disagree, and 1 = Uncertain. Mean scores and the overall average were categorized as follows: 1.00-1.7 (low), 1.8-3.4 (moderate), and 3.5-5.0 (high). The results are detailed in Table 2.

Table 2: Level of Student-Teachers Content Knowledge in Teaching (n= 285)

Statement	U		SD/D		A/SA		M	SD
	No	%	No	No	%	No		
I can break the contents into teachable units	14	4.9	33	11.6	238	83.5	3.9	1.0
The content of my subject area is selected taking into consideration its appropriateness regarding pupils' level of development	13	4.6	42	14.7	230	80.7	4.0	1.1
I believe the approaches to the teaching of my subject should be factual and rigid.	20	7.0	153	53.6	112	39.3	3.2	1.1
I am competent in selecting content to match spelt out objectives to be achieved	14	4.9	39	13.7	232	81.4	3.9	1.0
I teach contents that develop knowledge, skills, values and attitudes	8	2.8	32	11.2	245	86.0	4.2	.9
I relate the content of my subject area to the life experiences of students.	13	4.6	33	11.6	239	83.8	4.0	1.0
The content of my subject area exposes students to life principles and values to help them in making sound value judgments.	16	5.6	32	11.2	237	83.2	4.0	1.0
I can present the content to lead to a change in human behaviours	26	9.1	49	17.2	210	73.7	3.8	1.2
I know the current issues in my subject area	20	7.0	65	22.8	200	70.2	3.7	1.1
I can teach the content in line with related 21st Century	15	5.3	57	20.0	213	34.7	3.9	1.1
Average							**3.9**	**1.1**

Source: Field Data (2024)

The data presented in Table 2 indicates that 245 (86.0%) of the students acknowledged having received training in teaching content that fosters knowledge, skills, values, and attitudes (M= 4.2, SD= .92). A significant majority, 230 (80.7%), agreed that the selection of content in their subject areas considers its suitability for the developmental level of students (M= 4.0, SD= 1.1). Similarly, 239 (83.8%) confirmed that they connect the content of their subjects to students' life experiences (M= 4.0, SD= 1.0), while 237 (83.2%) noted that their subject matter introduces students to important life principles and values to aid in making informed value judgments (M= 4.0, SD= 1.0). Moreover, most students (213, 34.7%) felt confident in their ability to break down content into teachable segments (M= 3.9, SD= 1.7) and to teach relevant 21st-century skills (M= 3.9, SD= 1.1). They also expressed competence in selecting content that aligns with specified learning objectives (M= 3.9, SD= 1.0). Additionally, 210 (73.7%) agreed that they can present material to influence behavioural change (M= 3.8, SD= 1.2). Furthermore, 200 (70.2%) acknowledged awareness of current issues within their subject areas (M= 3.7, SD= 1.1). However, 112 (39.3%) disagreed with the notion that the teaching approach should be strictly factual and inflexible (M= 3.2, SD= 1.1).

With an average mean score of 3.9 (SD= 1.1), it was found that the student-teachers are highly well-prepared in their content knowledge to meet the educational needs of the nation. Thus, they can break the contents into teachable, select content taking into consideration its appropriateness, competent in selecting content. This finding disconfirms other research suggesting that some student-teachers may experience gaps in their content knowledge. Understanding and Practice (2014) focusing on biology teachers in Thailand revealed that many lacked sufficient content knowledge in biology, which hindered their classroom teaching effectiveness (Biology Teacher's Pedagogical Content Knowledge in Thailand). To achieve the nation’s educational objectives, teachers must show mastery of a solid understanding of their subject areas. Additionally, Astuti et al., (20170) found that preservice teachers at Muhammadiyah Semarang University indicated a moderate level of content knowledge in disciplinary indicators. Variations in student-teacher content knowledge levels have been documented. For example, Parmin et al., (2019) examining preservice science teachers' pedagogical content knowledge in physiology and anatomy found that about 89% of students achieved mastery in Content Knowledge, with method selection, material delivery, and classroom management being learned by 81%, 85%, and 84% of the students, respectively. Furthermore, Mensah and Serwaa (2023) reported that religious

educators in Ghana demonstrated high content knowledge, aligning with this study's findings that student-teachers at UCC possess a strong grasp of content knowledge. This suggests that while many student-teachers exhibit a solid understanding of their subjects, there remains a need for improvement and targeted support in specific areas to ensure thorough comprehension and effective teaching practices. Due to the high level of the respondents' content knowledge in their respective fields, the self-determination theory which posits that individuals are motivated when they have a sense of autonomy, competence, and relatedness is validated here and appears to be sound. Thus, autonomy and competence are attributed to the country's potential teachers who will ensure the nation gets a better education. Having high content knowledge indicates that the teachers in the university are teaching every bit of information students will need to progress the nation's broad educational aims.

Research Question Two: What is the level of student-teacher preparedness to use creative pedagogies?

This question sought to establish the level of preparedness to use creative pedagogies among student-teachers. The teachers were to indicate their agreement or disagreement with the items based on the scale: 5= Strongly Agree, 4= Agree, 3= Disagree, 2= Strongly Disagree and 1= Uncertain. The mean scores and overall mean were interpreted as 1.00- 1.7 (low), 1.8- 3.4 (moderate) and 3.5-5.0 (high). Table 3 presents the details of the results.

Table 3: Level of Student-Teachers' Preparedness to Use Creative Pedagogies (n= 285)

Statement	U		SD/D		A/SA		U	SD/D
	No	%	No	%	No	%		
I have been taught how to have command of various teaching methods, knowing when and how to apply each method	13	4.6	34	11.9	238	83.5	3.95	.98
I am selective of the methods that respect the eventual freedom of the child to refuse to participate in religious practices	15	5.3	45	15.8	225	79	3.85	1.01
I have been taught how to understand the goals of formative or summative evaluations, and how different frames of reference influence students' thinking	7	2.5	32	11.2	246	86.3	4.16	.86
I have been taught how to motivate students who show low interest in the subject I teach	4	1.4	40	14	241	84.6	4.17	.84
I have been taught how to provide an alternative explanation for example when students get confused in the lesson	9	3.2	28	9.9	248	87.1	4.19	.91
I can maximise the quantity of instructional time, handle classroom events and maintain clear direction in lessons	6	2.1	36	12.6	243	85.3	4.11	.85
I have been taught how to be conversant with the process of using a variety of teaching/learning aids during lesson delivery	8	2.8	30	10.5	247	86.6	4.13	.85
I have been taught how to understand the techniques of using the local environment as a teaching resource to make my lesson more enjoyable	8	2.8	39	13.7	238	83.5	4.02	.86
I demonstrate an understanding of the procedures for phasing	16	5.6	42	12.7	227	79.6	3.94	1.01
I get brilliant students to believe they can do well in schoolwork	14	4.9	36	12.7	235	82.5	4.00	.99
Average							**4.05**	**0.92**

Source: Field Data (2024)

The data presented in the table indicates that a significant number of teachers, specifically 248 (87.1%), affirmed that they have received instruction on how to provide alternative explanations when students experience confusion during lessons (M= 4.19, SD= .91). Nearly all respondents, 241 (84.6%), reported that they have been trained to inspire students who exhibit a lack of interest in the subjects they teach (M= 4.17, SD= .84). Furthermore, 246 (86.3%) teachers acknowledged that they have learned to comprehend the

objectives of formative and summative assessments, as well as how various frames of reference can affect student thinking (M= 4.16, SD= .86). Additionally, 247 (86.6%) teachers expressed that they have been educated on effectively utilizing a range of teaching and learning aids during their lessons (M= 4.13, SD= .85). Similarly, 243 (85.3%) agreed that they are capable of maximizing instructional time, managing classroom activities, and maintaining a clear focus in their lessons (M= 4.11, SD= .85). Moreover, 238 (83.5%) teachers stated they have been taught how to leverage the local environment as a teaching resource to enhance the enjoyment of their lessons (M= 4.02, SD= .86). Also, 235 (82.5%) teachers reported that they encourage high-achieving students to believe in their academic potential (M= 4.00, SD= .99). Furthermore, 238 (83.5%) agreed that they have acquired knowledge of various teaching methods and understand when and how to apply each one (M= 3.95, SD= .98). Likewise, 227 (79.6%) teachers confirmed their understanding of the procedures for effective lesson pacing (M= 3.94, SD= 1.01). Lastly, 225 (79%) of the teachers indicated that they are selective in their choice of methods, ensuring they respect a child's autonomy regarding participation in religious practices (M= 3.85, SD= 1.01).

An average mean score of 4.05 (SD= .92) was obtained showing that teachers feel well-prepared to implement creative pedagogies in the future, aligning with the educational goals Ghana education aspires to achieve. This result is in tune with findings from Momanu (2012), 017) validate an instrument for assessing general pedagogical knowledge internationally, implying that pedagogical knowledge is a key component of teacher profiles across countrie who found that the teachers who partook in the study possessed a moderate understanding of pedagogical practices and were capable of adhering to essential strategies, such as refraining from imposing punishments or making threats, thereby fostering critical and independent thinking among learners. The level of pedagogical knowledge among teachers varies across different studies. Kim (2012) reports a statistically significant increase in preservice biology teachers' pedagogical knowledge after engaging in a science pedagogy course, suggesting an improvement from a potentially moderate to a higher level. Sonmark et al. (2s, though it does not specify the level of knowledge (Sonmark et al., 2017). Nautiyal and Dabral (2023) also find that preservice teachers have an average and positive perception of their Technology, Pedagogical, and Content Knowledge (TPACK), indicating moderate pedagogical knowledge. Affandi et al. (2022) found that the general pedagogical knowledge and self-efficacy of primary school teachers in STEM instruction can be significantly improved through training, progressing from a moderate to a higher level. Thus, Affandi et al seem to have found that the teachers they studied had moderate use of pedagogies. Similarly, Li et al. (2022) found that teachers' TPACK is generally high, although they differ based on educational stages and levels. Sojat and Markic (2022) also found that the PCK of pre-service chemistry teachers ranges from novice to intermediate, reflecting an overall moderate level with potential for enhancement. Cheng and Zhan (2012) do not specify the exact level of pedagogical knowledge yet suggest that pre-service teachers can effectively implement instructional strategies following TPACK training. König and Kramer (2015) found that a teacher’s expertise in classroom management, which is a facet of pedagogical knowledge, showcases a spectrum from moderate to high levels of pedagogical knowledge. Rajalakshmi (2022) reports that the techno-pedagogical skills of prospective teacher educators are at an average level, indicating a moderate grasp of pedagogical principles. In Ghana, Appiah and Mfum-Appiah (2019) and Asare Danso (2017) found that teachers exhibited solid pedagogical and content knowledge, supporting CRS's teaching and learning. Lastly, Barcus and Moles (2020) discuss instructional expertise in terms of declarative, procedural, and conditional knowledge, but do not provide a direct assessment of the level of pedagogical knowledge. Based on the findings of other works, it can be said that the student-teachers in the accredited university are highly prepared to use the right pedagogies. On a general parlance, it can be said that the teachers have a high level of preparedness to use creative pedagogies to

$H_0$1: There is no statistically significant difference in student-teacher content knowledge based on their sex, age and program of study.

The hypothesis aimed to explore the differences in content knowledge among student teachers as influenced by their sex, age, and field of study. Existing empirical research indicates that student-teacher demographics play a role in their ability to master the content they are required to teach. To investigate the impact of these demographic factors on content knowledge, a three-way factorial ANOVA was performed.

Table 4: Test of Between Subjects Effects on Content Knowledge

Source	DF	Mean Square	F	Sig.	Partial η^2
Corrected Model	18	92.037	2.062	.008	.122
Intercept	1	52773.54	1182.252	.000	.816
Sex	1	95.153	2.132	.145	.008
Age	3	56.650	1.269	.285	.014
Programme of study	3	102.930	2.306	.077	.025
Sex * Age	2	10.329	.231	.794	.002
Sex * Programme of Study	2	242.516	5.433	.005	.039
Age * Programme of study	4	87.215	1.954	.102	.029

Sources: Field Data (2024)

The findings from the General Linear Model (GLM) corrected model indicated a statistically significant difference in the content knowledge of student-teachers based on their gender, age, and field of study, with results showing $F(18,3) = 2.062$, $p = .008$, and partial $\eta^2 = .122$. However, there were no significant interactions observed between sex and age, $F(2, 3) = .231$, $p = .794$, partial $\eta^2 = .018$, or between age and program of study, $F(4, 3) = 1.954$, $p = .102$, partial $\eta^2 = .029$. Nonetheless, a statistically significant interaction was found, $F(2, 3) = 5.433$, $p = .005$, with partial $\eta^2 = .039$. The results further revealed there is no significant effect of sex, $F(1, 3) = 2.132$, $p = .285$, partial $\eta^2 = .008$; age, $F(3, 3) = 1.269$, $p = .169$, partial $\eta^2 = .014$; or program of study, $F(3, 3) = 2.306$, $p = .077$, partial $\eta^2 = .025$ on the content knowledge of student-teachers in the university.

The country needs all teachers no matter their sex, age and programme of study in all endeavours to push learners to learn the approved content by the curriculum developers. Numerous studies have explored how demographic factors influence pre-service teachers' content knowledge. Cetin-Berber and Erdem (2015) found significant differences in the perceptions of TPACK among pre-service teachers based on sex, programme, and year of study, but not on age or type of instruction. They found that content knowledge (CK) and pedagogical knowledge (PK) significantly contributed to TPACK development, while technology knowledge (TK) did not play a significant role. Similarly, Jacob and Pillay (2022) identified a notable difference in knowledge and perceptions of inclusive education among pre-service teachers based on their gender and programs. Conversely, Sintema et al. (2023) and Altunsoy et al. (2010) found no significant differences in pedagogical content knowledge and academic self-efficacy based on gender or year of study. Elbahan et al. (2023) observed a gender disparity in computational thinking skills, favouring male teacher candidates. Alnujaidi's (2021) analysis indicated a significant influence of gender on both pre-service and in-service EFL teachers' levels of TPACK. While some studies identified gender and program of study as crucial factors affecting content knowledge and related competencies (Alnujaidi, 2021; Cetin-Berber & Erdem, 2015; Elbahan et al., 2023; Jacob & Pillay, 2022), others did not find these differences (Altunsoy et al., 2010; Sintema et al., 2023). Age consistently emerged as a non-significant factor. Consequently, the hypothesis cannot be definitively accepted or rejected based on the existing evidence; the influence of gender and programme of study on content knowledge appears to be context-specific, while age does not significantly impact the factors of sex, age, and programme of study. This provides sufficient grounds to assert that all the teachers are good at presenting content aimed to be provided to the dream Ghanaian child.

$H_0$2: There is no statistically significant difference in preparedness to Use creative pedagogies knowledge of student-teachers based on their gender, age and program of study.

The hypothesis sought to investigate the difference in preparedness to Use creative pedagogies knowledge of student-teachers based on their gender, age and program of study. A three-way factorial ANOVA was conducted to examine the difference in preparedness to Use creative pedagogies knowledge of student-teachers based on teachers' gender, age and their program of study.

Table 5: Test of Between Subjects Effects on Student-Teachers' Preparedness to Use Creative Pedagogies

Source	df	Mean Square	F	Sig.	Partial η^2
Corrected Model	18	76.268	1.922	.015	.115
Intercept	1	61059.368	1538.906	.000	.853
Sex	1	.961	.024	.876	.000
Age	3	36.797	.927	.428	.010
Programme of study	3	54.066	1.363	.255	.015
Sex * Age	2	40.924	1.031	.358	.008
Sex * Programme of Study	2	70.962	1.788	.169	.013
Age * Programme of study	4	67.932	1.712	.148	.025

Sources: Field Data (2024)

The findings from the General Linear Model (GLM) corrected model revealed a statistically significant difference in student-teachers readiness to employ creative pedagogies, influenced by their sex, age, and program of study, with results showing F (18, 3) = 1.922, p = .015, and partial η^2 = .115. However, there were no significant interactions found between sex and age, F (2, 3) = 1.031, p = .358, partial η^2 = .008, or between age and program of study, F (4, 3) = 1.788, p = .169, partial η^2 = .013, and F (4, 3) = 1.712, p = .148, partial η^2 = .025. The analysis indicated no significant effects of sex, F (1, 3) = .024, p = .876, partial η^2 = .000; age, F (3, 3) = .927, p = .428, partial η^2 = .010; or program of study, F (3, 3) = 1.363, p = .255, partial η^2 = .015, on teachers' preparedness to utilize creative pedagogies.

Relevant insights can be drawn from Bicer (2013), who found no significant differences among teacher candidates regarding educational philosophies based on sex or educational status, except in the case of Essentialism, where female candidates outperformed their male counterparts. Additionally, Kong and Lai (2022) suggested that factors such as years of teaching experience, rather than gender or a background in computer science, could have an impact on student achievement. This implies that while experience may play a role in pedagogical effectiveness, sex and specific programs of study do not necessarily impact the use of creative pedagogies. König and Kramer (2015) found that a teacher's expertise in classroom management, which is a facet of pedagogical knowledge, varies with experience, with seasoned teachers outperforming novices and those with intermediate skills, showcasing a spectrum from moderate to high levels of pedagogical knowledge. Contradicting this, Thabiti et al. (2023) found gender disparities in the use of teaching methods among teaching staff, which could suggest that gender may influence the adoption of certain pedagogical approaches. However, this study focused on gender-responsive teaching methods rather than creative pedagogies specifically. Ahmed and Al-Sawaf (2016) also found a significant correlation between nurses' knowledge about pediatric CPR and demographic characteristics, but it does not specify which characteristics these were. The findings from the literature do not provide conclusive evidence that there is a statistically significant difference in the readiness to implement creative pedagogies based on teachers' gender, age, or program of study. Although some research suggests that experience might play a role, other studies have found no significant differences related to gender or educational background (Bicer, 2013) or have not addressed the issue directly (Ahmed & Al-Sawaf, 2016; Thabiti et al., 2023). Consequently, it can be inferred that further investigation is necessary to definitively determine how these demographic factors influence student-teacher preparedness to utilise creative pedagogies. This finding shows that the nature of teachers needed for using the approved creative pedagogies is not shaking because they are aged, gender deficient or programme of study leading to a misdemeanour of the teachers for the education we want to be provided by the universities.

CONCLUSIONS

It can primarily be concluded that the student-teachers seem to be well-prepared in terms of their content knowledge. This indicates that they have a strong understanding of the subject matter they are teaching.

Therefore, students' failure cannot be solely pushed on the teachers not prepared content-wise. Similarly, the teachers also show a high level of preparedness in utilizing creative pedagogies. This suggests that they are equipped with various teaching methods and strategies to engage students in learning. It can be deduced that differences in the content knowledge of student-teachers are based on factors such as gender, age, and program of study. Therefore, priority be given when employing teachers. This indicates that demographic factors may impact the level of preparedness of student-teachers concerning their content knowledge. Ultimately, it can be concluded that a statistically significant difference exists in student-teachers' readiness to utilize creative pedagogies, influenced by aspects such as gender, age, and program of study. This suggests that these demographic elements could also play a critical role in how equipped student-teachers feel to implement the curriculum or content using innovative teaching strategies that can bear profitable results for the education we want in Ghana and the globe at large.

RECOMMENDATIONS

While student-teachers demonstrate strong content knowledge, continuous learning and updating of knowledge are crucial in education. It is recommended that Universities and teachers associations should encourage the student-teachers to participate in workshops, seminars, and professional development courses to stay abreast of the latest developments in their field. This can provide valuable insights and perspectives, enhancing their content knowledge further.

It is suggested that curriculum experts and universities in charge of teacher education should encourage student-teachers to experiment with various creative pedagogical approaches in their teaching practice. This could include project-based learning, flipped classrooms, or gamification techniques. Providing a supportive environment for experimentation fosters innovation and engagement in the classroom is important thereby influencing students' performances. The stakeholders should also ensure that student-teachers have access to resources such as teaching materials, technology tools, and mentorship to effectively implement creative pedagogies. Offer guidance and support as they explore new teaching methods.

Curriculum experts and universities should recognise the demographic differences identified in content knowledge preparation and tailor professional development programs accordingly. Offer targeted training and support to address specific areas where certain demographic groups may require additional assistance and help the teachers recognize diverse learning styles and preferences. Implement teaching strategies that cater to a variety of learning needs, ensuring equitable opportunities for all student-teachers to enhance their content knowledge.

Finally, universities responsible for teacher training should tailor their support systems to accommodate the different levels of preparedness for using creative pedagogies among student-teachers. This could involve providing mentorship, organizing workshops, or creating peer learning opportunities designed to meet the specific needs of various demographic groups. Additionally, student-teachers should be encouraged to investigate culturally responsive teaching practices and integrate inclusive pedagogical strategies into their classroom instruction.

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Researchers

Conflict of Interest

There is no conflict of interest attached to this work.

Contributions

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I helped with the conceptualisation, literature review, data analysis, and drawing implications. I also ensured the completion of the write-up. I conceptualized the conceptual framework.

Vincent Tete Sakyi

I contributed to the writing of the review of literature, editing, and referencing.

Boadu Kankam

I contributed to the conceptualisation of the problem and proofread**.**

Susana Kyereboah Sekyi

I helped in the literature conceptualisation, data collection and analysis. I also reviewed the empirical literature.

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Gideon Quansah

Helped in data collection, data entry and the writing of the methodology

Emmanuel Frimpong Asante

Assisted in some aspects of background to the study, data entry and editing

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