Pre-service Teacher Preparedness for Standards-Based Curriculum Implementation in Ghana: Perspectives from Mentors and Teacher Trainees

Isaac Atta Kwenin[1], Angelina Nimoh[2], Collins Ato Anobil[1], and Jessica Yaa Boateng[1]

[1]Department of Business and Social Sciences Education, University of Cape Coast, Cape Coast, Ghana.
[2]Principal Superintendent, Presby Model Junior High School, Ghana Education Service, Ghana.
*Corresponding Author Email: isaac.kwenin@ucc.edu.gh, Tel: +233204445965

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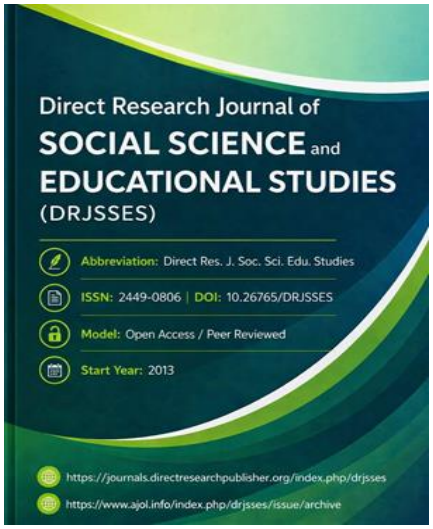
ABSTRACT

Ghana has replaced the Objective-Based Curriculum with the Standards-Based Curriculum, which sets explicit standards for teachers' application of knowledge into practice. In line with this, teacher training institutions have aligned their programs to these standards, but there is no systematic data on whether pre-service teachers are actually prepared to meet these standards, especially in Social Studies, which is a core subject geared towards citizenship education. This study therefore investigated the preparedness of pre-service Social Studies teachers in implementing the Standards-Based Social Studies Curriculum in Ghana (SBC). The study employed explanatory sequential mixed method design which used the outcomes of the qualitative data to clarify and explain the initial quantitative results. All the 206 final year pre-service teachers in the University of Cape Coast and University of Education, Winneba were included (census) in the study. However, 12 practising teachers who mentored these pre-service Social Studies teachers were purposively selected for in-depth interview (after data saturation). Both questionnaires and in-depth interviews were used to collect data. Whilst means and standard deviation were used to analyse and present the quantitative data, thematic and narrative analyses were employed for the qualitative data analysis. All ethical issues outlined by the University of Cape Coast were adhered to in this study. The study revealed that while pre-service teachers were adequately prepared in both content knowledge, pedagogical knowledge and pedagogical content knowledge, they had moderate level of knowledge in technological pedagogical content knowledge. They were also sceptical about their ability to translate their knowledge into practice in the real classroom situation. It was recommended that pre-service Social Studies teachers' proficiency and competence in content knowledge, pedagogical knowledge and pedagogical content knowledge should be developed through continuous professional development programs whilst transiting into the real classrooms. Finally, mentors should be assigned to each of these teachers after successful induction for effective guidance and coaching services. This paper contributes to SBC implementation in Ghana by highlighting that while content and pedagogy preparation is moderate, the technology integration gap poses the biggest threat to achieving the goals of the SBC. By policy implication, addressing this gap requires coordinated policy action in teacher education, and resource provision. The Ghana Tertiary Education Commission and teacher training institutions should audit pre-service programs to ensure intentional, practice-based training in educational technology, not just theoretical ICT-based literacy.

Keywords: *Standards-based curriculum, field experience, pre-service teachers, mixed methods, TPACK, teacher preparedness*



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INTRODUCTION

The connection between how teachers are prepared and how ready they are to implement the curriculum plays critical role in ensuring quality and improved education system. Teachers translate curriculum standards into meaningful learning experiences for students. Thus, how well teachers are prepared and how ready they are to use the curriculum directly affects their ability to meet national and international educational standards (Norman et al., 2024). Researches (Knight et al., 2015; Richmond & Floden, 2018; Mayer & Mills, 2021) show that the quality of serving teachers is essentially dependent on the process through which they were trained, and the in-service training they received after their appointment into the teaching profession. Although studies on teacher quality have dominated teacher education research and are informative, the question of how teachers are trained and how ready they are to implement the SBC effectively remains critical.

Since 2015, many Sub-Saharan African countries have shifted from the objective-based curricula to competency-based curricula: Kenya's CBC (2017), Rwanda's CBC (2016), Uganda's competency curriculum (2020), Nigeria's NERDC review, and Ghana's SBC (2019). Ghana's SBC, for instance, explicitly describes what teachers must know and do in terms of the knowledge bases (content, pedagogical, pedagogical content knowledge and technological knowledge). Since the success of the SBC hinges on teachers' ability to translate standards into classroom practice, teacher training institutions have aligned their preparatory programs with these standards. This is in response to UNESCO's (2024) recommendation for the inclusion of AI, data literacy, and digital ethics into teacher training institutions. UNESCO and AU's continental education strategy, 2025-2035 also push for digital transformation in education. OECD (2024) found that teachers with high digital competence report greater self-efficacy. However, there is no systematic data on whether pre-service teachers are actually prepared to meet the standards, especially in Social Studies – a core subject for producing good citizens. If pre-service teachers feel uncertain or lack key competencies, it will create implementation gaps that undermine the SBC's goals of developing critical thinking, creativity, innovativeness, and other basic 21st century skills in students. While Ghana's SBC emphasizes 21st century and digital literacy skills, it makes the TPACK a critical competency in Social Studies education, whose integrated nature requires mastery of multiple foundation disciplines and pedagogies. Yet, there is little Ghana-specific data on pre-service teachers' TPACK competency, which is essential for technology-oriented instruction. Thus, this study was needed to provide evidence to guide teacher education programs, mentors, and policy makers on whether current pre-service preparation is adequate for the SBC implementation.

Preliminary discussion by the researchers with pre-service teachers at University of Cape Coast and University of Education, Winneba, revealed concerns about their readiness to translate theory into practice, especially, given the inadequate teaching resources, weak induction, and the theory-practice gap. Research (Singh et al., 2019) shows that in such a context, teachers may feel less autonomous in carrying out their duties to develop specific skills and competencies in students. Since teachers are the key implementors of the curriculum, issues regarding their preparedness and readiness to implement the SBC need to be given utmost attention. This calls for the need to empirically test whether the reformed teacher education programs are actually producing SBC-ready graduates. While existing literature and previous studies (Kapinga, 2014; Westbrook & Croft, 2015) focused broadly on "teacher quality and professional development for in-service teachers, special education, primary teachers, or newly-qualified lower primary school teachers in Ghana", there is limited empirical evidence on how well pre-service Social Studies teachers are prepared to meet the specific knowledge standards of the SBC before entering the classroom. Besides, these studies did not comprehensively analyse the "missing links" between initial teacher preparation and the four domains required by the SBC: Content Knowledge (CK), Pedagogical Knowledge (PK), Pedagogical Content Knowledge (PCK), and Technological Pedagogical Content Knowledge (TPACK). Thus, this study contributes to the current literature on teacher quality by unpacking the 'missing links'.

Research Questions

The following research questions guided the study:

What is pre-service teachers' level of competence in the standards-based Social Studies curriculum regarding?

a. content knowledge?
b. pedagogical knowledge?
c. pedagogical content knowledge?
d. technological pedagogical content knowledge?

LITERATURE REVIEW

Theoretical Framework

This study is rooted in the Technological Pedagogical and Content Knowledge (TPACK) framework, which was introduced by Mishra and Koehler (2006). The TPACK framework provides a holistic understanding of the knowledge teachers (including pre-service teachers) need to obtain in order to effectively integrate technology

into their instructions. The TPACK framework explains the interconnections among three main basic knowledge-based domains which are Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK). According to Mishra and Koehler, the intersections of these three main domains produce another dimensions of the framework which include Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), and Pedagogical Content Knowledge (PCK) culminating in the TPACK model, which represents the dynamic knowledge required to design effective technology-enhanced instruction. The TPACK framework underscores the idea that technology integration is not simply about mastering devices or software but about understanding how technology interacts with pedagogy and content to create meaningful learning experiences to meet the desired learning needs of learners. A teacher who is competent in TPACK can select appropriate technological tools that align with the suitable content, pedagogical strategies and pedagogical content knowledge for the purpose of promoting technology-enhanced instruction. In this regard, technology complements, rather than replacing the teacher in the instructional process.

In relation to this study, once pre-service teachers have undergone successful pre-service training which encompasses content knowledge, pedagogical experiences, pedagogical content knowledge and technological knowledge, the TPACK model helps in bridging the gap between the theory and the application of the theory in the classroom. The model brings to bear the idea that once on the field, the pre-service teacher should operate within complex environments where they must balance content-specific goals, diverse student needs, and rapidly evolving technologies when teaching. According to Chai et al. (2016), successful implementation of the TPACK enhances student engagement, fosters critical thinking, and supports differentiated instruction. However, achieving proficiency in TPACK requires ongoing professional development, institutional support, and access to resources. The integration of technology in instruction comes from an appreciation of the rich connections of knowledge among the three main components and the complex ways in which these are applied in multifaceted and dynamic classroom contexts. This theoretical foundation provided a lens through which this study investigated pre-service teachers' preparedness in content knowledge, pedagogical knowledge, pedagogical content knowledge and technological knowledge in order to implement the SBC in pre-tertiary level of education in Ghana.

In Ghana, where power outage, large classes, and limited digital devices are common, the critical question is: can TPACK meaningfully guide readiness without accounting for these constraints? Besides, early TPACK literature treated the domains as relatively stable competencies, more recent literature argues TPACK dynamic, situated, and co-constructed nature through practice and collaboration which challenges the assumption that a one-time pre-service assessment can capture "readiness" for a complex curriculum like the SBC. Empirical evidence from Sub-Saharan Africa and Ghana presents a mixed picture that contextualizes this study. For instance, studies in Kenya's CBC implementation, Nigeria's NERDC reform, and South Africa's CAPS consistently report that pre-service and early-career teachers feel prepared in content and general pedagogy, but lack confidence in integrating technology. Also, research in Ghana by Asare and Nti (2020) show that Supported Teaching in School (STS) often fails to bridge university training and classroom practice gap due to weak mentorship and inadequate resources.

Teacher Training/Preparation for the SBC

Preparation of teachers for effective implementation of the SBC at the pre-tertiary level of education in Ghana is very detailed and covers a 4-year period. In Ghana, pre-tertiary teachers are prepared by the teacher training institutions for basic/junior high and the senior high/senior high technical schools as well as technical and vocational education and training integration (JHS/SHS/SHTS/TVETI). The SBC is designed to address three pillars which are subject-curriculum knowledge; foundations of education, pedagogy and assessment; and supported teaching in school (MoE, 2017). It is believed that by preparing teachers with both depth and breadth of knowledge, the SBC aims to produce teachers who are well-equipped to meet the diverse and evolving needs of learners in SHS, SHTS, and TVET schools. The SBC is also structured to ensure well-balanced and comprehensive teacher education program that prepares pre-service teachers for effective implementation of the curriculum.

According to MoE (2017), subject and curriculum knowledge pillar encompasses a range of courses with content and subject specific pedagogy related to specific selected disciplines. This allows pre-service teachers to gain competence in teaching specific subjects in the JHS, SHS, SHTS and TVETI while the foundations of education, pedagogy and assessment pillar cover educational foundation, pedagogy, and assessment courses that adequately prepare the pre-service teacher to effectively teach at the JHS, SHS, SHTS and TVETI level. The supported teaching in school pillar on the other hand, is designed to provide opportunities that will develop in pre-service teachers the quality required for effective classroom practice, applying and reinforcing what has been learnt through supported school-based experience (MoE, 2017). To qualify to implement the SBC at the JHS level, the teacher-trainee is required to go through a period of four-year teacher-trainee education, with specific credit allocations for each

discipline in 8 semesters. The curriculum focuses on both pedagogy and subject matter knowledge. Pre-service teachers are also required to cover total minimum credit load 135 (which is distributed to include 72 credits for subject and curriculum knowledge including pedagogical content knowledge, 24 credits for foundations of education, pedagogy and assessment, and 39 credits for supported teaching in school), and a maximum of 147 credits for a single major. However, content knowledge is allocated 53.% due to its significance in providing pre-service teachers with deep knowledge and skills to be able to meet the standard requirement of their chosen subject area (MoE, 2017). At the SHS/SHTS/TVET level, the single major programs design/pattern is considered. According to MoE (2017), the single major program is designed to provide in-depth specialization in one major field of study. The single major curriculum is structured to provide a comprehensive education in three key areas which are subject and curriculum knowledge (including pedagogical content knowledge), educational foundations courses, and pedagogy and assessment courses (MoE, 2017). The program places significant emphasis on content knowledge, allocating 75 credits for specialization in teaching a particular subject. This ensures that student teachers develop deep knowledge and skills in their chosen major area, while also gaining a strong foundation in education, pedagogy, and practical teaching experience. Aside the single major courses, the pre-service teacher is also required to pursue mandatory departmental core courses and departmental optional elective courses as well as subject-specific pedagogy and curriculum studies and university-wide courses in areas such as African Studies, Liberal Studies, Communications Skills etc. One key aspect of the SBC is its practical component: the supported teaching in school (STS). This practical component is intended to offer practical school-based experiences and opportunities to the pre-service teacher to effectively blend theory and practice for effective curriculum implementation (MoE, 2017). Pre-service teachers undergoing STS are assigned to professional teacher portfolio assessment intended to provide evidence of the pre-service teachers' reflections through the STS. As part of the STS, the pre-service teacher is also assigned to action research (classroom inquiry) and post-STS internship seminar. The action research component involves practical research activities undertaken by the pre-service teacher to address specific issues identified in course of their practice while the post-internship seminar enhances the pre-service teachers' active participation and reflections on their internship experiences (MoE, 2017).

MATERIALS AND METHODS

Population

The study employed the mixed methods approach with explanatory sequential mixed methods design, where quantitative and qualitative data were collected and analyzed. The study targeted a population of 206 pre-service level 400 Bachelor of Education Social Studies teachers in the University of Cape Coast and University of Education, Winneba who had just returned from the field teaching experience (off-campus teaching practice). All the 12 practicing teachers (mentors) with 10 years and above mentoring experience and had mentored these pre-service Social Studies teachers were also selected purposively for in-depth interviews. The 12 mentors were also considered because the researchers realized that there was repetition of same responses in course of the interview after the twelfth mentor had been interviewed, thus, saturation of responses was reached after interviewing the twelfth mentor (After interviewees 11 and 12, interviewees 13 and 14 just repeated what interviewees 1-12 had already said). These pre-service teachers were in their final year semester two and had been prepared to implement the standards-based Social Studies curriculum at the pre-tertiary level of education in Ghana. The level 400 pre-service Social Studies were selected because they had undertaken all their mandatory preparatory courses in the University including content knowledge, pedagogical knowledge, pedagogical content knowledge and technological knowledge as well as the practicum. It is believed that they have been prepared to implement the SBC.

Instruments

Two separate set of instruments were employed to collect date for the study. A structured questionnaire with five-point Likert-scale items (Strongly Agreed, Agreed, Undecided, Disagree, Strongly Disagreed) were administered to pre-service teachers to quantitatively examine their content knowledge, pedagogical knowledge, pedagogical content knowledge and technological pedagogical content knowledge in the implementation of the SBC. The items of the instruments were adapted from Mishra and Khoeler (2006) conception of TPACK. Six experts in teacher education and Ghana SBC also reviewed the items for relevance, clarity, and construct alignment. The item-level content validity index exceeded the 0.80 threshold. Based on their feedback, the items were reworded. A pilot test with 50 target participants was conducted to assess face validity and item comprehension. Items were retained if they achieved an item-level CVI ≥ 0.78 and ≥80% agreement on construct assignment. Construct validity was assessed using exploratory factor analysis on data from 50 participants. The analysis indicated that the data were suitable for factor analysis. The Kaiser-Meyer-Olkin value was 0.72, exceeding the recommended threshold of 0.60. This indicated sampling adequacy. In order to clarify and explain the initial quantitative results further, in-depth interviews were conducted with a purposive sample of 12 mentors to explore their views regarding the

pre-service Social Studies acquisition of content knowledge, pedagogical knowledge, pedagogical content knowledge and technological pedagogical content knowledge in the implementation of the SBC.

Data analysis

While descriptive statistics (means and standard deviation) were used to analyze the quantitative data, the interview data were analyzed thematically using coding techniques to identify key themes. A hybrid coding approach was used. Initial codes were derived deductively from TPACK domains, and additional codes were added inductively as they emerged from the data. A codebook with code definitions and exemplar quotes was developed and refined iteratively. To ensure coding dependability, two researchers independently coded 4 transcripts. Inter-coder agreement was substantial, Cohen's kappa=.78. Discrepancies were resolved through discussion and the codebook was finalized. The remaining transcripts were coded by the lead researcher. An audit trail was maintained throughout. Member checking was conducted with the mentors to confirm the credibility of the emerging themes. Thematic saturation was reached after 12 interviews. Findings from both data sets were integrated during the results and discussed to provide a comprehensive understanding of the research problem, highlighting convergences and divergences between quantitative and qualitative results. To assess practical significance, effect sizes were calculated for all mean comparisons and group differences. Cohen and partial eta-squared were interpreted using conventional thresholds. To address potential bias, the study employed anonymous survey administration, reliability testing of the TPACK instrument, independent coding of interview data, member checking with mentors, and documentation of thematic saturation. Limitations regarding generalizability of the purpose sample and reliance on self-report data were acknowledged.

Credibility of the Instruments

The protocol was pilot-tested using 50 pre-tertiary Social Studies teachers in the College of Distance Education, University of Cape Coast, and pre-service Social Studies teachers in the Institute of Distance Education and E-Learning, University of Education, Winneba. The questionnaire had reliability coefficients of Cronbach's Alpha 0.81. To ensure credibility of the interview, the researcher used "prolonged engagement", "triangulation", "peer debriefing" and "member-checking". The researchers kept records of the participants' ideas, and responses throughout the study. Finally, the researchers returned interview transcripts to each of the participants. The participants were asked to read the transcribed data to see if the researchers captured all their responses. This helped the researchers to collect data that resonated with the perspectives of the participants involved.

Ethical Concerns

All relevant ethical considerations by the Department of Business and Social Sciences Education of the University of Cape Coast, Ghana were adhered to, including ethical clearance from University of Cape Coast's Institutional Review Board with protocol approval code: UCCIRB/CES/2025/023. The researchers clearly defined the purpose of the study and assured participants' confidentiality and anonymity. Pseudonyms were used in the qualitative section instead of participants real names. Hence, there was no way their names were captured in the data collection, analysis and interpretation. The pseudonyms included Desmond, Elliot, Michael, Justice, Ellis, Susana, Emma, Joel, Festus, Jane, Diana, Joana. The voluntariness of participation was considered to give participants the free will to exit should they become disinterested along the line. Lastly, the researchers issued the participants an informed consent letter before initiating the data collection process.

RESULTS AND DISCUSSION

The results were obtained from a descriptive analysis and the means served as the primary tool for the interpretation of the data. The following were the key for interpreting the means:1.00-1.99 (low knowledge level), 2.00-3.49(moderate knowledge level) and 3.50-5.00 (high knowledge level).

Pre-service teachers' content knowledge

Content knowledge is useful for the selection of relevant teaching and learning resources, just like pedagogical knowledge and pedagogical content knowledge. A pre-service teacher who apparently lacks subject matter knowledge, may find it difficult to promote effective teaching. It was based on this premises that the researchers examined pre-service teachers' preparedness in content knowledge to implement the SBC.

Results in (Table 1) show that some of the pre-service teachers (N=110, 53.4%, M=3.21, SD=0.94) either agreed or strongly agreed that they have adequate knowledge and understanding of the content of the SBC that they are supposed to teach. Also, pre-service teachers (N=90, 43.7%, M=3.29, SD=0.97) either strongly agreed or agreed they can explain the content of the SBC to the understanding of students. Again, pre-service teachers (N=78, 40.8%, M=3.27, SD=.95) either strongly agreed or agreed that, they have adequate understanding of the objectives of the SBC. In relation to the statement, "I have adequate knowledge in history as a foundation course of the SB Social Studies curriculum, pre-service teachers (N=89, 43.2%, M=3.31, SD=.93) either strongly disagreed or disagreed to the statement. The results further show that while some teachers exhibit

Table 1: Pre-service teachers' content knowledge preparedness.

Item	Subscale	Freq	%	Mean	SD
I have adequate knowledge and understanding of the content of the SBC that I am supposed to teach.	SA/A	110	53.4		
	SD/D	32	15.6	3.21	.94
	Uncertain	64	31.0		
I can explain the content of the SBC to the understanding of students	SA/A	90	43.7		
	SD/D	32	15.5	3.29	.97
	Uncertain	84	40.8		
I have adequate understanding of the objectives of the SBC.	SA/A	78	37.9		
	SD/D	40	19.4	3.27	.95
	Uncertain	88	42.7		
I have adequate knowledge in history as a foundation course of the SB social studies curriculum	SA/A	89	43.2		
	SD/D	33	16.0	3.31	.93
	Uncertain	84	40.8		
I have adequate knowledge in geography as a foundation course of the SB social studies curriculum	SA/A	90	43.7		
	SD/D	35	17.0	3.38	.99
	Uncertain	81	39.3		
I have adequate knowledge in economics as a foundation course of the SB social studies curriculum	SA/A	90	43.7		
	SD/D	23	11.2	3.40	.92
	Uncertain	93	45.1		
I have adequate knowledge in sociology as a foundation course of the SB social studies curriculum	SA/A	100	48.5		
	SD/D	35	17.0	3.38	1.04
	Uncertain	71	34.5		
I can communicate effectively in a range of ways to meet the desired needs of diverse students.	SA/A	96	46.6		
	SD/D	34	16.5	3.35	1.05
	Uncertain	76	36.9		
I am capable of providing prompt and constructive feedback to students	SA/A	86	41.8		
	SD/D	35	17.0	3.33	.96
	Uncertain	85	41.3		
Average				3.34	0.97

Source: Field Data (2025)

content knowledge in geography (N=90, 43.7%, M=3.38, SD=99), others rather indicated preparedness in the history (N=90, 43.7%, M=3.38, SD=99) as a foundation course of the Standards-Based Social Studies curriculum. One could conclude based on the responses that, pre-service Social Studies teachers have moderate content knowledge level on the SB Social Studies curriculum. This was evidenced from the overall mean and standard deviation scores (M=3.34, SD=0.97) obtained.

Qualitative outcome on teachers' preparedness in content knowledge

The outcome of the interviews with the mentors concerning the content knowledge of pre-service teachers indicates that pre-service teachers have strong conviction that their pre-service preparatory courses had effectively prepared them to implement the SBC. The reoccurring theme that emerged was the extent of content preparation pre-service teachers had received from their pre-service teacher preparation. The mentors indicated that the pre-service programs have prepared the pre-service teachers to adequately implement the standards-based curriculum. They indicated that the programs have given the trainees both content and practical knowledge which are key features in pre-service teachers' professional development.

For instance, Joel commented that,

"the intense have what it takes to implement the SBC. I believe they have been prepared in terms of content. Yes, in fact, the content knowledge, especially, in relation to subject-areas preparation. They are well-positioned to implement it" (Joel, Sept. 4, 2025).

It is worth noting that once the teachers possess the content knowledge and have sucessfully completed all the course works and the practicum, they are better positioned to implement the SBC at the pre-tertiary level of education.

In a similar view, Jane intimated that,

"*Well, teaching the standards-based curriculum requires teachers to possess some competences in relation to the standard. Teachers require certain standards to meet the standards of the standards-based curriculum. These standards include competence in the content knowledge which is critical when it comes to teacher preparation. This competence has already been inculcated in them* (pre-service teachers)*"* (Jane, Sept. 2, 2025). Also, Justice asserted that, "O*ne interesting thing about their* (pre-service teacher) *preparation is that new courses have been introduced to align their training and preparation with the new standards-based curriculum which has been introduced at the pre-tertiary level of education. So, they are trained both in content and pedagogy. I don't see why they should struggle to implement the standards-based curriculum"* (Justice, Sept. 8, 2025).

In line with these views, the teacher training institutions in Ghana have recently restructured their programs to align their programs with the SBC. This restructuring is geared towards equipping pre-service teachers with the knowledge, values, and skills needed to effectively implement the SBC. While existing courses have be reviewed, new courses have been introduced. It it believed that with this curriculum shift in teacher training institutions, trainee-teachers will adequately be prepared to implement the SBC (MoE, 2017). Pre-service teachers are also given adequate content knowledge across departments in teacher training institutions. One unique feature about these content courses is that they provide detailed exposure of the teacher-trainee to varied content areas in the trainees' program of study. For instance, trainees in Social Studies education are provided in-depth content knowledge in all the foundation courses of Social Studies which prepare the teacher to teach any of those courses at the pre-tertiary level.

To buttress this, Elliot disclosed that,

"*pre-service teachers are made to register content courses from other departments. A critical observation of my intense revealed that they offered courses in geography, economics and history and even sociology. So I believe that they have what it takes to teach the standards-based curriculum when it comes to content area"* (Elliot, Sept. 16, 2025). According to Kwenin (2021), once the trainee is well-prepared in varied content areas, content knowledge, does not become a challenge. "*Content knowledge is not a problem at all. Once teachers have been taught what to teach out there, implementing the standards-based curriculum wouldn't be challenging. Besides, with the advent of technology including AI, once they encounter any difficulty, they will refer to AI or any teachnological tools available to them for support. They are therefore competent in teach it"* (Desmond, Sept. 1, 2025).

Content knowledge

The outcome of the quantitative data analysis shows that pre-service Social Studies teachers have moderate level of content knowledge regarding the SB Social Studies curriculum. It must be pointed out that the integrated nature of Social Studies requires teachers to master the foundation courses of the subject such as Geography, History, Economics, Sociology, etc. However, most pre-service Social Studies teachers have mastery in either Geography and History or History and Sociology with little knowledge in Economics, which is also a key component of Social Studies education in Ghana. Pres-service teachers' moderate level of knowledge in the foundation courses of Social Studies (Geography, Economics, Sociology and History) education is largely the result of insufficient training and preparational challenges in those subject areas. However, the qualitative outcome revealed that teachers have knowledge in the content areas of Social Studies. According to Kwenin (2021), one major contributing factor to teachers' moderate level of content competence is the lack of uniformity in the content of Social Studies education at the tertiary level of education in Ghana. Pre-service teachers' moderate knowledge in the foundation courses of Social Studies has implications on their preparedness to implement the SBC. Kwenin (2021) further indicated that teachers who lack adequate knowledge in all the foundation courses of Social Studies face implementation challenges and are likely to skip contents or at best, they would put more emphasis on contents they are well abreast with, and ignore contents they are deficient in. This situation create knowledge gap that may hinder the full realization of the objectives of the SBC.

Quantitative outcome on teachers' preparedness in pedagogical knowledge

Teachers' pedagogical knowledge involves the best practices in teaching and learning. Their understanding of how and when to use each pedagogy method is crucial to the realization of the objectives of the SBC. It is the guiding principle which educators use to shape students' classroom enagement and experience. Table 2 presents the outcome of the analysis of teachers' competence in pedagogical knowledge. Results from (Table 2) show that majority of the pre-service teachers (N=144, 69.9%, M=3.90, SD=.90) have knowledge on Social Studies classroom assessment practices while (N=158, 76.7%, M=3.93, SD=.83) have knowledge on students' learning processes. The results further indicate that the pre-service teachers (N=146, 70.9%, M=3.88, SD=.90) have knowledge in identifying and catering for individual characters among students in their classrooms. Also, majority of the pre-service teachers (N=155, 75.3%, M=3.94, SD=.83) indicated that they have knowledge on effective classroom management. Finally, the pre-service teachers (N=138, 67.0%, M=3.84, SD=.87) either agreed or strongly agreed that they have knowledge on the teaching methods of Social Studies. Collectively, these results indicate teachers possess moderate level of pedagogical knowledge for effective implementation of the SB Social Studies curriculum.

Qualitative outcome on teachers' preparedness in pedagogical knowledge

The mentors were asked to indicate how prepared the pre-service teachers were, in terms of knowledge of the pedagogies of the SBC.

Susana commented that, "their (pre-service teachers) *performance was a reflection of the training they received in the university. Once the teacher is trained in the content, the pedagogy of implementing the content are equally made available to them* (Susana, Sept. 8, 2025).

Table 2: Teachers' Preparedness in pedagogical knowledge of the SBC.

Item	Subscale	Freq.	%	Mean	SD
I have knowledge on Social Studies classroom assessment practices	SA/A	144	69.9		
	SD/D	10	4.9	3.90	.90
	Uncertain	52	25.2		
I have knowledge on students' learning processes	SA/A	158	76.7		
	SD/D	9	4.4	3.93	.83
	Uncertain	39	18.9		
I have knowledge on identifying and catering for individual student characteristics	SA/A	146	70.9		
	SD/D	11	5.3	3.88	.90
	Uncertain	49	23.8		
I have knowledge on effective classroom management	SA/A	155	75.3		
	SD/D	9	4.3	3.94	.83
	Uncertain	42	20.4		
I have knowledge on the teaching methods of Social Studies	SA/A	138	67.0		
	SD/D	10	4.8	3.84	.87
	Uncertain	58	28.2		
Average				3.87	0.87

Source: Field Data (2025)

Teacher training programs have been restructured to provide both pedagogical and content knowledge to enable trainees implement the SBC with ease. Pre-service teachers are therefore equipped with both general pedagogies and specific pedagogies for effective curriculum implementation. In furtherance to this, Emma commented that,

"*Pedagogy is not a problem.. Once the trainees are education students, they are mandated to read a course in methods of teaching. This course prepares the trainee in all the methods of implementing the content. So, I believe that they are fully prepared to teach the content"* (Emma, Sept. 9, 2025). Emma further expressed that, "*They are prepared to teach the content. During the teaching practices, especially the off-campus, they demonstrate their preparedness towards both the content and the methods. This has really shaped their competence in using a variety of methods to teach the content* (Emma, Sept. 9, 2025*).*

However, she expressed uncertainties about pre-service teachers' ability to translate this to the real classroom situation. She was however quick to add that exposure to continuous professional development courses would enable them perform creditably. Professional development provides teachers with opportunity update their knowledge and skills (Huisman et al., 2010).

Seeking professional development weaves into problem-solving and continues to build the foundation for resiliency by positioning the teacher for success. In line with this,

Diana, asserted that, "*Once content knowledge is provided, the pedagogy of the content is added. So, trainees are prepared in both the content knowledge and the pedagogical content knowledge. Their preparation is multifaceted in nature. I believe that they have been fully groomed to implement the pre-tertiary curriculum, either at the senior high or junior high school level* (Diana, Sept. 17, 2025). However, some mentors showed skeptism in pre-service teachers' preparedness towards the pedagogies of teaching the content. "*Well! this is a new program, and university courses and programs are already in existence. As to whether there is alignment in terms of the standards-based curriculum and their preparatory program, it is uncertain, but I believe that although they have been prepared to implement the curriculum in terms of methods, they are likely to face some implementation challenges since it is new* (Michael, Sept. 19, 2025). In a similar veiw, Desmond asserted that, "*Every new program has its own challenges, although they are being prepared to fully employ the requisite methods to implement the curriculum, since they are yet to face the reality on the ground, I can't conclude that they can teach it* (Desmond, Sept. 1, 2025).

The responses of the mentors is a reflection of the nature of pre-service teacher. Through university education, pedagogical knowledge and series of professional practice experiences are provided to pre-service teachers. These pedagogy-based courses are intended to provide students with the skills, knowledge and understandings required for successful entry into the teaching field and professional teaching community.

Pedagogical knowledge

The quantitative results revealed that aside pre-service teachers' moderate level of knowledge in the various content areas of the SBC, they also have moderate level of knowledge in the pedagogical knowledge. The qualitative outcome, however, indicates that teachers have adequate pedagogical knowledge regarding the SB Social Studies curriculum. According to Mishra and Koehler (2006), a teacher is said to teach with his/her PK when he/she has gone beyond understanding the content

Table 3: Teachers' Preparedness in pedagogical content knowledge for SBC Implementation.

Item	Subscale	Freq.	%	Mean	SD
I have knowledge about what teaching approaches fit the content of Social Studies	SA/A	100	48.5		
	SD/D	35	17.0	3.38	1.04
	Uncertain	71	34.5		
I have knowledge about how elements of the Social Studies content can be arranged for better teaching.	SA/A	96	46.6		
	SD/D	34	16.5	3.35	1.05
	Uncertain	76	36.9		
I have students' prior knowledge concerning Social Studies concepts	SA/A	86	41.8		
	SD/D	35	17.0	3.33	0.96
	Uncertain	85	41.3		
I have knowledge of teaching strategies that incorporate appropriate conceptual representations in order	SA/A	89	43.3	3.31	0.96
	SD/D	37	17.9		
	Uncertain	80	38.8		
I have knowledge in addressing learner difficulties and misconceptions	SA/A	89	43.3		
	SD/D	37	17.9	3.34	0.97
	Uncertain	80	38.8		
I have knowledge in fostering meaningful understanding of Social Studies concepts	SA/A	96	46.6	3.44	0.98
	SD/D	27	13.1		
	Uncertain	83	40.3`		
I have knowledge of what the students bring to the learning situation in a Social Studies classroom	SA/A	98	47.6		
	SD/D	31	15.1	3.42	0.97
	Uncertain	77	37.4		
Average		3.37			0.99

Source: Field Data (2025)

subject, is capable of restructuring the subject content and present it in a form suited to the diverse interests and abilities of the students based on their preconceptions and difficulties encountered. In this regard, teachers with good PK are aware of their students' typical errors in a particular topic. As such, they are able to prepare their lessons to suit learners' understanding.

Quantitative outcome on teachers' pedagogical content knowledge

Pedagogical content knowledge is crucial for the attainment of the objectives of every educational endeavor. The integration of a teacher's subject matter knowledge and pedagogical strategies promotes effective teaching and enhances teachers' ability to tailor their teaching to students' desired learning outcomes. The views of the teachers is a reflection of their pedagogical content knowledge preparedness and readiness and how this is translated into implementing the SB Social Studies curriculum. Results from (Table 3) indicate majority of the pre-service teachers (N=100, 48.5%, M=3.38, SD=1.04) have knowledge about the teaching approaches that fit the content of Social Studies. Similarly, majority (N=96, 46.6%, M=3.35, SD=.1.05) pre-service teachers indicated that they have knowledge about how elements of the Social Studies content can be arranged for better teaching. The results further reveal that the pre-service teachers (N=86, 41.8%, M=3.33, SD=.96) showed that they have knowledge about students' prior knowledge concerning Social Studies concepts. The pre-service teachers also indicated their agreement in having knowledge in: teaching strategies that incorporate appropriate conceptual representations in order (N=89, 43.3%, M=3.31, SD=.96), knowledge in addressing learner difficulties and misconceptions (N=89, 43.3%, M=3.34, SD=.97), knowledge in fostering meaningful understanding of Social Studies concepts (N=96, 46.6%, M=3.44, SD=.98), and knowledge of what the students bring to the learning situation in a Social Studies classroom (N=98, 47.6%, M=3.42, SD=.97).

Qaultitative outcome on teachers' preparedness in pedagogical content knowledge

Pre-service teachers enter the teaching field with some level of PCK. Their perceptions and ideas on teaching and the subject matter knowledge which they learned while under training form the foundation of their PCK. In view of this, the mentors were asked to indicate how prepared the pre-service teachers were concerning their pedagogical content knowledge. The responses indicate that the pre-service teachers were prepared to select appropriate methods to teach the various content of the SB Social Studies curriculum.

Joan mentioned that, "O*nce they have adequate pedagical knowledge, selecting specific pedagogy to teach specific content wouldn't be an issuel. What they need is the pedagogy, the rest is their experience in matching the pedagogy with content"* (Joan, Sept. 16, 2025).

In a similar view, Diana asserted that, "*The pre-service education and training encompass everything one needs to succeed in the classroom, and it cuts across both content and pedagogy, so choosing appropriate pedagogy to teach specific content areas wouldn't be challenging"* (Diana, Sept. 17, 2025).

Professional field experience (both on campus and off campus teaching practices) is a key component of pre-service teacher training and education in Ghana, and an indication of pre-service teacher preparation towards the implementation of the SBC. When asked whether the professional field experience (STS) adequately prepared the pre-service teachers in the PCK,

Susana's response was that, "*Yes, it fully prepared and got them ready to teach the content. The teaching practicum, both the on-campus and off-campus have really equipped them with both pedagogical, and pedagogical content knowledge. They really understand how pedagogy influences content. Once you know both the content and the pedagogy, combining them wouldn't be difficult"* (Susana, Sept. 8, 2025),

It is important to note that a teacher's pedagogical content knowledge goes beyond knowledge of the subject matter. It also includes the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstration. Therefore, once teachers have been trained in the content and general pedagocial knowledge, they stand a better chance to implement the SBC successfully. Pedagogical content knowledge also includes an understanding of what makes the teaching of specific topic easy or difficult; the conceptions and preconceptions that students of different ages and backgrounds bring to class, to the learning of those most frequently taught topics and lessons. In line with this,

Joel indicated that, "*Oh, every education student should be ready and prepared to teach the pre-tertiary curriculum. My reason is that the various education programs adequately prepare trainees for the real-classroom teaching and get them ready to teach whatever that is presented to them. Choosing appropriate pedagogy to teach the content should be an easy task"* (Joel, Sept. 4, 2025).

Joel's views were similar to Festus' view.

According to Festus, pre-service teachers are fully prepared and ready to teach, having gone through the required content and pedagogical courses. These courses, according to him, have positioned the intense to address all issues concerning content and pedagogy, coupled with the fact that they have successfully taken and passed all course work and practicum. He concluded that, *"yes, they are confident and ready for the task"* (Festus, Sept. 18, 2025).

Teacher pedagogical content knowledge

The findings of the study revealed very interesting results worthy of discussion. In both the quantitative data and the qualitative responses, it was found that while pre-service teachers have moderate level of pedagogical content knowledge, mentors rather believed that the pre-service teachers have adequate pedagogical content knowledge regarding the SB Social Studies curriculum. Pre-service teachers' PCK implies their ability to create an intersection between the content and pedagogies of Social Studies education. Thus, they will be able to go beyond a simple consideration of content and pedagogy in isolation from one another. The PCK represents the blending of content and pedagogy into an understanding of how particular aspects of subject matter are organized, adapted, and represented for instruction. At the heart of PCK is the manner in which subject matter is transformed for teaching. This occurs when the teacher interprets the subject matter and finds different ways to represent it, and makes it accessible to learners.

Pre-service teacher courses are crucial to the growth of knowledge, conceptual, and practical understanding of students. The results potray teachers'synergistic integration of CK and PK. It is an indication of teachers' understanding of how specific content could best be taught considering the instructional demands and learners' needs. From the reponses, teachers have the ability to develop appropriate scaffolding and support strategies for implementing the subject matter of the SBC. PCK concerns the manner in which teachers relate their subject matter knowledge (what they know about what they teach) to their pedagogical knowledge (what they know about teaching), and how subject matter knowledge relates to the process of pedagogical reasoning (Mishra & Koehler, 2006).

Quantitative outcome on teacher preparedness in technological pedagogical content knowledge

At the heart of good teaching with technology is effective combination of content, pedagogy, and technology. The interactions between and among these components play critical role in enhancing learners' understanding of the content. This account for the wide variations seen in the extent and quality of educational technology integration.
Table 4 indicates that majority of the pre-service teachers (N=120, 58.2%, M=2.60, SD=1.26) either strongly disagreed or disagreed that they understand how to represent Social Studies concepts using technologies. Most teachers (N=96, 46.6%, M=2.71, SD=1.21) either strongly disagreed or disagreed that they understand pedagogical techniques that use technologies in constructive ways to teach Social Studies concepts.

Table 4: Teachers' Preparedness in technological pedagogical content knowledge for SBC Implementation.

Item	Subscale	Freq.	%	Mean	SD
I understand the representation of Social Studies concepts using technologies	SA/A	50	24.3		
	SD/D	120	58.2	2.60	1.26
	Uncertain	36	17.5		
I understand pedagogical techniques that use technologies in constructive ways to teach Social Studies concepts.	SA/A	58	28.2		
	SD/D	96	46.6	2.71	1.21
	Uncertain	52	25.2		
I understand what makes Social Studies concepts difficult or easy to learn using technology	SA/A	41	19.9		
	SD/D	107	51.9	2.56	1.09
	Uncertain	58	28.2		
I understand how technology can help redress some of the problems that students face in learning Social Studies	SA/A	70	34.0		
	SD/D	85	41.2	2.95	1.19
	Uncertain	51	24.8		
I understand how technologies can be used to build on existing knowledge and develop new knowledge or strengthen old ones.	SA/A	58	28.2		
	SD/D	103	50.0	2.78	1.16
	Uncertain	45	21.8		
Average				2.78	1.21

Source: Field Data (2025)

Majority (N=107, 51.9%, M=2.56, SD=1.09) pre-service teachers indicated that they understand what makes Social Studies concepts difficult or easy to learn using technology. Again, the pre-service teachers (N=85, 41.2%, M=2.95, SD=1.19) either strongly disagreed or disagreed that the understand how technology can help redress some of the problems that students face in learning Social Studies. Finally, majority (N=103, 50.0%, M=2.78, SD=1.16) pre-service teachers do not understand how technologies can be used to build on existing knowledge and develop new knowledge or strengthen old ones. A holistic examination of the responses attests to the fact that pre-service Social Studies teachers had low level of technological pedagogical content knowledge regarding the SB Social Studies curriculum. This was based on the overall mean interpretation score (M=2.78, SD=1.21).

Qualitative outcome on teachers' technological pedagogical content knowledge

Teachers' inability to adopt and utilise ICT for implementing the SBC is one of the problems militating against effective implementation of the SBC. Bolaji and Adeoye (2022) attest to lack of teachers' awareness on the utilization of ICT and their apathy to new innovation as a contributing factor hindering the use of ICT for instructional purposes. Similarly, Khan, Hassan and Clement (2012) revealed lack of knowledge and skill in using ICT by teachers as the main hindrances to the utilization of ICT in teaching. It is in connection with this that:

Desmond commented that, "*Although I am very much aware of the 21st Century skills identified in the SBC, but the challenge I noticed with most of the intense* (pre-service teachers) *was that they found it difficult to employ all the technological tools required in teaching* (Desmond, Sept. 1, 2025). Concerning the application of ICT in implementing the SBC, Elliot asserted that, "*Yes, the intense have received ICT literacy to teach the SBC, the knowledge they received was basically theoretical. I for instance, fall short of the translation of technology into practice"* (Elliot, Sept. 16, 2025).

In a different view, Justice mentioned that, "*The intense possess the skills and knowledge in using ICT tools to develop the required 21st skills in students but lack of computers and other relevant technological tools is a major barrier to their usage*. *Besides, some of the technological tools are new and adapting them to their use raises psychological constraints"* (Justice, Sept. 8, 2025).

On her part, Diana, shared that, "*Although the knowledge in technology has been mastered by most of them* (pre-service teachers), *technology keeps changing, making their use difficult. One needs to learn new skills due to the rate at which technology is impacting instructions*" (Diana, 2025).
In line with this, Bolaji and Adeoye (2022) found that teachers lacked sufficient time to learn new skills, and inadequate number of computers available for teachers to use in the classroom are major barriers to technology integration in lesson delivery.

Technological pedagogical knowledge

Both quantitative and qualitative responses revealed that pre-service Social Studies teachers do not have adequate technological pedagogical and content knowledge regarding the implementation of the SBC. This implies that most teachers confront pedagogical experiences with limited knowledge on effective application and use of digital technologies in their professional practice. Expanding the discussion further,

Table 5: Joint display integrating pre-service teachers' TPACK scores with mentor explanation

TPACK domain	Quantitative Result (n=206)	Interpretation of readiness level	Mentor explanation from interviews (n=12)	Integration insight
Content Knowledge (CK)	Mean = 3.42/5 Moderate	Pre-service teachers feel fairly confident in Social Studies content but gaps exist across strands	Some trainees are very strong in History but weak in Economics. They cannot connect the strands for integrated Social Studies instructions	Moderate CK aligns with mentors' observation of uneven content mastery. This suggests that curriculum structure is the issue but not total absence of knowledge
Pedagogical Knowledge (PK)	Mean = 3.61/5 Moderate	General teaching methods are well-understood but application is uncertain	Pre-service teachers possess knowledge about learner-centred pedagogies, but with large class and inadequate materials, they default to chalk-and-talk methods.	Quantitative result shows moderate PK, while qualitative data explains why it does not translate into practice. This could be explained by contextual constraints.
Pedagogical Content Knowledge (PCK)	Mean = 3.38 Moderate	Pre-service teachers' ability to teach Social Studies content is moderately developed	The STS is too short for pre-service teachers, and mentors are also overloaded.	Moderate PCK scores are explained by weak mentorship during STS, not by lack of university preparation
Technological Pedagogical and Content Knowledge (TPACK)	Mean = 2.41/5 Low	Pre-service teachers lack confidence in using technology to enhance instruction	ICT training and technological knowledge is theoretical. Most schools do not have computers, so even if pre-service teachers have knowledge, they cannot translate knowledge into practice.	Low TPACK aligns with mentors' reports of lack of devices and psychological barriers. This indicates systemic gaps rather than knowledge gap.

Eze and Aja (2019) opined that despite the benefits derived from the use of ICT in teaching and learning, their usage especially in secondary schools is still low as teachers and school management are yet to fully embrace and utilize them for instructional purposes. The central role of teachers' knowledge in technology in implementing the SBC has made the adoption of technological tools imperative for teachers in teaching situations as a result of diverse students' needs and increase in student population. It is based on this ground that the SBC emphasizes the acquisition of the 21st Century skills which hinge on teachers' technological pedagogical knowledge in integrating technological tools in their teaching. The SBC critically emphasizes creative thinking, innovations, critical thinking, and digital literacy as the key technological standards which must be acquired by teachers in order to implement the SBC. With the advent of technology, there are questions about pre-service teachers' abilities to connect technology, pedagogy, and content knowledge within the confines of teacher education programs. This supports the views of Basargekar and Singhavi (2017) who opined that inadequate ICT knowledge of teachers is a barrier to successful integration of ICT for teaching purposes, especially, in developing countries.

Table 5 integrates the survey and interview findings. The moderate CK and PK scores were consistently explained by mentors as being undermined by STS constraints and large class sizes. The low TPACK scores converged with mentors' reports of theoretical ICT training and lack of digital, and technological devices in the schools. This integration suggests that improving pre-service teachers' readiness to implement the SBC requires systemic support, rather than just curriculum

changes in teacher education. It worth noting that while TPACK provides a useful lens for teacher preparedness, its limitations must be acknowledged. TPACK assumes access to technology, however, in Ghana, where many schools lack computers and reliable internet supply, low TPACK scores may reflect structural constraints rather than lack of teacher knowledge. The framework does not explicitly account for this, risking misattribution of the problem to teachers rather than systems. Mentors in the current study echoed the fact that pre-service teachers' preparation in ICT is "theoretical" and that lack of devices impedes application of theory into practices. Kwenin (2021), for instances, rather argues from content misalignment point of view, and explains that lack of uniformity in Social Studies content across tertiary teacher training institution curricula contributes to uneven CK among Ghanaian teachers. This complements findings from Kenya, where teachers have not adequately mastered the TPACK. Adeoye et al. (2025) surveyed 300 pre-service teachers and found low TPK among the teachers. Adeoye et al. concluded that Kenya's teacher education programs had not adequately been restructured to address the CBC's learner-centred, and technology-enhanced pedagogy. Like Ghana, Kenya's reform emphasized competencies, but teacher preparation lagged. Similar results were found in South Africa. Tondeur et al. (2020), for instance, used TPACK to assess 250 pre-service teachers and found that access to digital resources during practicum significantly predicted TPACK scores, while university coursework alone did not. This is an indication that Ghana's STS component is a critical lever, but only if schools have digital tools and devices, and mentors model technology use. Sikoyo (2023) found that Rwanda's rapid CBC rollout outpaced teacher preparation, leading to superficial implementation. Teachers, therefore, reverted to lecture methods, despite training in learner-centred pedagogy. This mirrors Ghanaian mentors' scepticism about pre-service teachers' ability to translate knowledge into real classroom practice.

Limitation

The reliance on self-reported TPACK may be subject to social desirability bias. While effect sizes indicate that the gap between TPACK and other domains is large, classroom observation is needed to verify actual competence. The qualitative sample of 12 mentors was sufficient for saturation with the context of the study but it is not intended to be representative of all Ghanaian mentors.

Conclusion

The outcome of the study presents a major constraint in integrating technology into the implementation of the SBC. Some pre-service teachers may successfully complete their pre-service training programs with limited knowledge and skills in integrating technology into their classrooms for the attainment of the 21st century skills. Thus, teachers' competence in implementing the SBC may be constrained and limited to theory, lacking practical touch. The problem of absence of technological tools in most Ghanaian basic schools and the advent of new technological tools may complicate the problem. As a matter of practical significance, most of the technologies are new, digital, and have some inherent properties that make integrating them in curriculum implementation very difficult for some pre-service teachers.

Implications

The findings show that pre-service teachers have moderate CK, PK, and PCK but low TPACK. This is a major constraint for implementing the SBC's 21st century skills strand. The Ghana Tertiary Education Commission and teacher training universities should audit pre-service programs to ensure intentional, practice-based training in educational technology, not just theoretical ICT literacy. Access to functional computers, software, and internet in schools, just like enhanced transition and induction support, must be addressed.

Recommendations

Teacher programs, on the whole, need to be examined to find out what makes a useful teacher- preparation program in terms of content knowledge, pedagogical knowledge, pedagogical content knowledge, as well as technological pedagogical content knowledge. The Ghana Tertiary Education Commission should undertake in-depth analysis of all pre-service teacher education programs in order to examine whether the programs are offering what needs to be offered for pre-service teachers to fit well in the real classrooms, especially, the development of technological competency among pre-service teachers. This will enable existing gaps between theory and practice regarding technology-assisted instructions to be filled.

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