CHAPTER III
RESEARCH METHOD

3.1 Introduction

Effective teacher education is the cornerstone of a robust education system. This chapter delves into the intricacies of researching Pre-Service Teacher Education (PSTE) management in Ghana. Recognizing the multifaceted nature of this domain, a mixed methods approach is employed to capture both quantitative and qualitative data. This chapter unfolds the rationale behind this methodological approach, outlining the research design, participant selection strategies, and the multifaceted data collection instruments utilized in the study. We will explore the strengths and limitations inherent in each method, emphasizing the importance of triangulation in strengthening the research's credibility and trustworthiness. Ultimately, this chapter lays the groundwork for the rich tapestry of data analysis that will be presented in subsequent chapters, paving the way for a comprehensive understanding of PSTE management practices in Ghana.
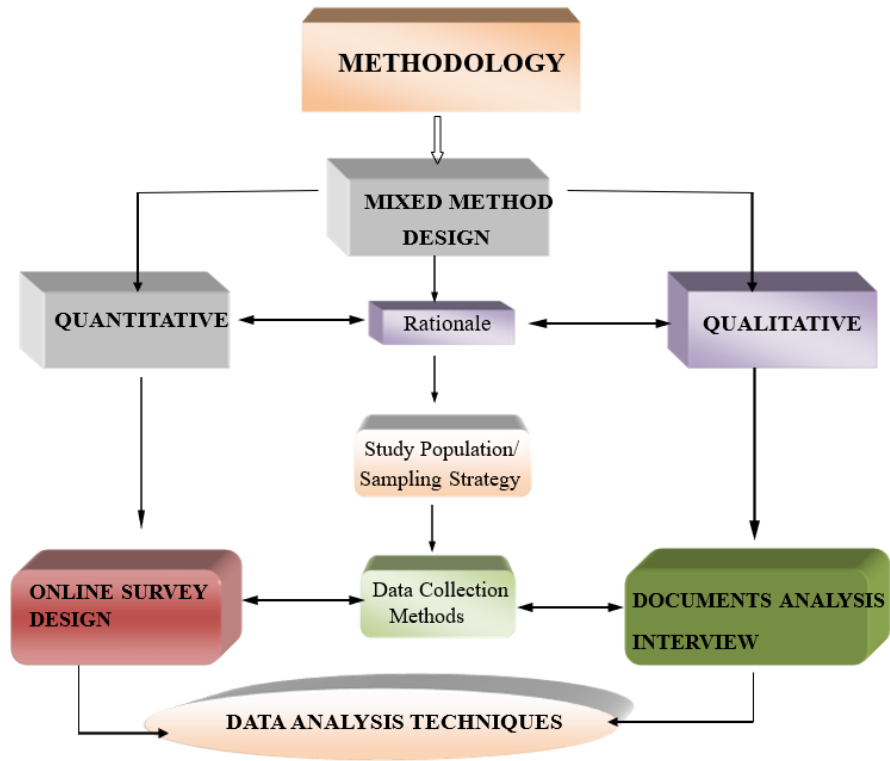

Figure 5

3.2 Research Approach and Design

This section outlines the methodological approach employed in this study to investigate the management of preservice teacher education (PSTE) in Ghana and its impact on improving teacher quality. The study utilized a mixed-methods approach, combining qualitative and quantitative methods to provide a comprehensive understanding of the research questions. Specifically, data were collected through document analysis, semi-structured interviews with officials from Ghana Tertiary Education Commission (GTEC) and National Teaching Council (NTC), and a survey administered to 400 student-teachers through Google Forms. The research methodology is designed to capture multiple perspectives and triangulate data from different sources, enhancing the reliability and validity of the findings.

3.2.1 Mixed Methods

The research adopted a mixed-methods design, which integrates both qualitative and quantitative methods to provide a deeper understanding of the topic. The rationale for using a mixed-methods approach is rooted in its ability to combine the strengths of both methods while compensating for their respective weaknesses. This approach allows for the triangulation of data, where findings from different sources can be cross-validated, providing a more robust understanding of the PSTE management system in Ghana.

- Qualitative Methods: The qualitative component involved document analysis and semi-structured interviews with two key officials, one from GTEC and another from NTC. This part of the study aimed to gather in-depth insights into policy implementation, accreditation processes, and the challenges associated with managing preservice teacher education in Ghana.

- Quantitative Methods: The quantitative component involved a survey distributed to 400 student-teachers. This phase aimed to capture the perceptions, experiences, and satisfaction levels of student-teachers regarding their training, with a focus on issues such as mentorship, practical training, resource availability, and overall program effectiveness.

A mixed methods approach combines both quantitative and qualitative research methods to provide a comprehensive analysis of a research problem. This approach allows for the strengths of both methodologies to be utilized, thereby compensating for their individual limitations. The rationale behind employing a mixed methods approach in the study of Pre-Service Teacher

Education (PSTE) is grounded in the concepts of triangulation and the attainment of a richer, more nuanced understanding of the research questions. A mixed methods approach involves the integration of quantitative and qualitative research methods within a single study. This approach leverages the strengths of each method while compensating for their respective weaknesses, thereby providing a holistic understanding of the research problem. Mixed methods research has gained prominence in educational research due to its ability to provide comprehensive insights. Gutierez (2019) highlight that mixed methods research combines the strengths of both qualitative and quantitative research, leading to a more complete understanding of research problems. This approach is particularly useful in educational settings where complex interactions and multiple variables are at play. Bernhard (2019) discuss five purposes for mixed methods research: triangulation, complementarity, development, initiation, and expansion. Triangulation refers to the use of multiple data sources, methods, or perspectives to cross-verify the findings and enhance the validity of the research. In the context of PSTE, triangulation can involve combining quantitative data (e.g., surveys and statistical analysis) with qualitative data (e.g., interviews and observations) to create a more robust picture of the educational landscape. According to Harrison et al. (2020) triangulation in mixed methods research helps in corroborating the results obtained through different approaches, thereby increasing the reliability and credibility of the findings. By integrating diverse methodologies, researchers can validate their results across multiple dimensions, reducing the biases inherent in using a single method (Hill et al., 2021).

It ensures the validity and reliability of findings through cross-verification from different sources. Complementarity clarifies and elaborates on the results from one method with findings from the other method. Development uses the results from one method to help inform the other method. Initiation seeks to discover paradoxes and contradictions that lead to a rethinking of the original research questions. Expansion aims to extend the breadth and range of inquiry by using different methods for different inquiry components. The combination of quantitative and qualitative methods enables researchers to capture the breadth and depth of the research problem. Quantitative methods provide statistical power and the ability to generalize findings across larger populations. These methods are instrumental in identifying patterns, relationships, and trends within the data (Ndukwe & Daniel, 2020). For instance, survey data from a large sample of teacher-students can reveal broad trends about the effectiveness of the PSTE program. Qualitative methods, on the other hand, offer detailed insights into individual experiences and contextual

factors that influence those experiences. These methods are particularly useful for exploring complex phenomena, understanding the reasons behind certain trends observed in quantitative data, and providing rich, contextual descriptions (Amadi, 2023). For example, interviews with teacher-students and classroom observations can provide in-depth understanding of how theoretical knowledge is applied in practical teaching scenarios. In the context of teacher education, mixed methods research allows for a more holistic evaluation of PSTE programs. For example, Fetters et al. (2023) employed mixed methods to study the implementation and impact of a new teacher preparation program. Their research demonstrated how combining quantitative assessments of teacher performance with qualitative interviews provided deeper insights into the challenges and successes of the program. Similarly, Gerald (2024) utilized a mixed methods approach to examine the factors affecting doctoral students' persistence in an online program. Their study combined quantitative surveys to identify key factors with qualitative interviews to explore the reasons behind these factors, leading to a more comprehensive understanding of student experiences and program effectiveness. By employing a mixed methods approach, this study aims to bridge the gap between theoretical knowledge and practical application in PSTE. This approach not only enhances the validity and reliability of the findings through triangulation but also provides a richer, more nuanced understanding of the educational experiences and challenges faced by teacher-students in Ghana.

3.2.2 Limitations of quantitative and qualitative methods

Traditionally, educational research has often relied on either quantitative or qualitative methodologies. Quantitative approaches, emphasizing structured data collection and statistical analysis, offer valuable insights into trends, patterns, and causal relationships. For instance, large-scale surveys can reveal the prevalence of specific teaching practices within a PSTE program or identify correlations between program elements and student outcomes. However, a significant limitation of quantitative methods lies in their potential to overlook the richness of individual experiences and subjective perspectives. They often struggle to capture the "why" behind the "what," leaving unanswered questions about the lived realities of instructors and student teachers within the PSTE program. On the other hand, qualitative methodologies, through techniques like interviews and observations, excel at uncovering the lived experiences and nuanced meanings associated with a phenomenon. In the context of PSTE research, qualitative methods can illuminate the challenges faced by instructors in implementing a new curriculum or the diverse perspectives

of student teachers navigating their pedagogical development. However, qualitative research can be susceptible to limitations in generalizability and replicability. Findings from a single case study, for example, may not be easily transferable to a broader population of PSTE programs, hindering the overall reach and impact of the research.

3.3 Participants and Research Site

The study population for this research encompasses two primary groups: policymakers and pre-service teachers (PSTs) within Ghana's teacher education landscape. Policymakers include individuals from key institutions such as the Ghana Tertiary Education Commission (GTEC) and the Ghana Teaching Council (GTC). These institutions play a pivotal role in shaping the policies and regulations governing PSTE programs in Ghana. Understanding their perspectives on PSTE management is crucial for gaining insights into the existing policy framework and identifying potential areas for improvement (Trinter & Hughes, 2021). The second segment of the study population comprises PSTs, particularly students in levels 200, 300, and 400. This specific focus targets students who have likely undergone some form of practicum experience, providing them with valuable firsthand insights into the implementation of PSTE curriculum and pedagogy within Ghanaian institutions. By including PSTs from various levels, the research captures a broader perspective on the evolving experiences and challenges encountered throughout the PSTE program (Wallerstein et al., 2019).

3.4 Sampling Strategy

3.4.1 Qualitative Sampling

A purposive sampling technique was used to select the two officials from GTEC and NTC. These officials were chosen due to their key roles in policy formulation and implementation in preservice teacher education. Purposive sampling was deemed appropriate as it ensured that the individuals interviewed had the expertise and authority to provide deep insights into the research topic.

3.4.2 Quantitative Sampling

For the quantitative survey, random sampling was employed to select 400 student teachers from various teacher education institutions across the country. The goal was to ensure a representative sample from different geographical regions, institutional types (public and private), and specializations within teacher education. The random sampling method was chosen to avoid bias and ensure that the results could be generalized to the broader population of student teachers in Ghana.

3.4.3 Purposive Sampling

For the policymakers' segment, a purposive sampling technique will be employed. This approach involves strategically selecting participants who possess specific knowledge and experience relevant to the research questions. In this case, policymakers from GTEC and GTC who are directly involved in shaping and overseeing PSTE policies will be targeted. Purposive sampling allows researchers to gather in-depth information from individuals uniquely positioned to offer valuable insights on policy development, implementation, and challenges within PSTE management in Ghana.

3.4.4 Random Sampling

To reach a representative sample of PSTs, a random sampling technique will be utilized. One approach will involve selecting a case study of a limited number of PSTE institutions in Ghana. Within these institutions, a random sample of 400 PSTs from levels 200, 300, and 400 will be invited to participate in an online questionnaire administered via Google Forms. Random sampling ensures that each PST within the chosen institutions has an equal chance of being selected, minimizing selection bias and promoting the generalizability of findings to a broader population of PSTs in Ghana.

3.4.5 Justification for the Sampling Strategies

The chosen sampling strategies cater to the specific objectives of the research. Purposive sampling for policymakers allows for targeted engagement with individuals who hold crucial decision-making power and possess in-depth knowledge of PSTE policy in Ghana. This approach ensures that the research captures the perspectives of those directly shaping the PSTE landscape. Random sampling for PSTs, on the other hand, allows for gathering data from a representative sample within the chosen case study institutions. By utilizing an online questionnaire via Google Forms, the research reaches a wider population of PSTs efficiently and geographically, overcoming potential limitations of location-specific data collection methods. While both purposive and random sampling offer valuable advantages, it's important to acknowledge their limitations. Purposive sampling, while ensuring relevant information from key stakeholders, can be susceptible to researcher bias in the selection process. Careful consideration of selection criteria and potential biases is crucial to mitigate this limitation. Random sampling, while promoting generalizability, might be affected by low response rates or limited access to technology among certain

demographics of PSTs. Employing multiple data collection methods alongside the online questionnaire can help address this limitation.

Table 1: Key Informant and Participant Sample

Key Informant	Primary Role	Experience	Expertise
Key Informant 1	Officer from Ghana Tertiary Education Commission	5 years and more at current position	Must be at decision making level
Key Informant 2	Officer from National Teaching Council	5 years and more at current position	Must be at decision making level
Respondents	2nd, 3rd, and 4th year students of selected College of Education	Must experience a form of practicum	Must be familiar with PSTE system in Ghana

In conclusion, this research project utilizes a multi-pronged sampling strategy, employing purposive sampling for policymakers and random sampling for PSTs. This approach allows for capturing diverse perspectives from key stakeholders within Ghana's PSTE landscape. By acknowledging the limitations inherent to each sampling technique and employing strategies to mitigate them, this research strives to gather reliable and representative data, ultimately leading to a more comprehensive understanding of PSTE management practices in Ghana.

3.5 Research Site

Delamont (2012) advises that before a researcher commences data collection, the researcher needs to identify site(s) that would provide rich sources of data. An important element of this thesis was to make clear the context within which the thesis was conducted. Selected pre-service teacher education institution in Ghana were purposively chosen as the context of this study

3.6 The Ghana Education System

Until recently, formal Basic Education was for all Ghanaian pupils from KG to JHS 3 (Grade 9), after which learners could progress to formal Senior High education, vocational education and training, direct entry to employment or distance learning. However, in the current education reforms, Basic Education has been redefined as a concept to include Senior High School, and the system sub-divided into five key phases as follows:

- Key Phase 1 [Foundation level comprising Kindergarten 1 & 2],
- Key Phase 2 [Lower primary level made up of B1 to B3],
- Key Phase 3 [Upper primary level of B4 to B6],

- Key Phase 4 [Junior high school level of B7 to B9], and
- Key Phase 5 [Senior high school level comprising SHS1- SHS3].

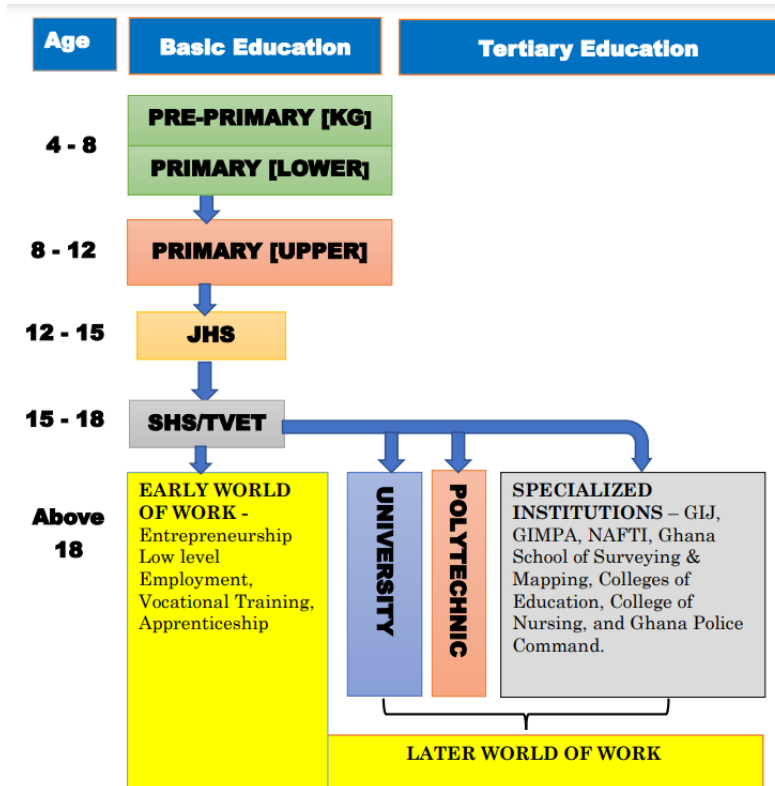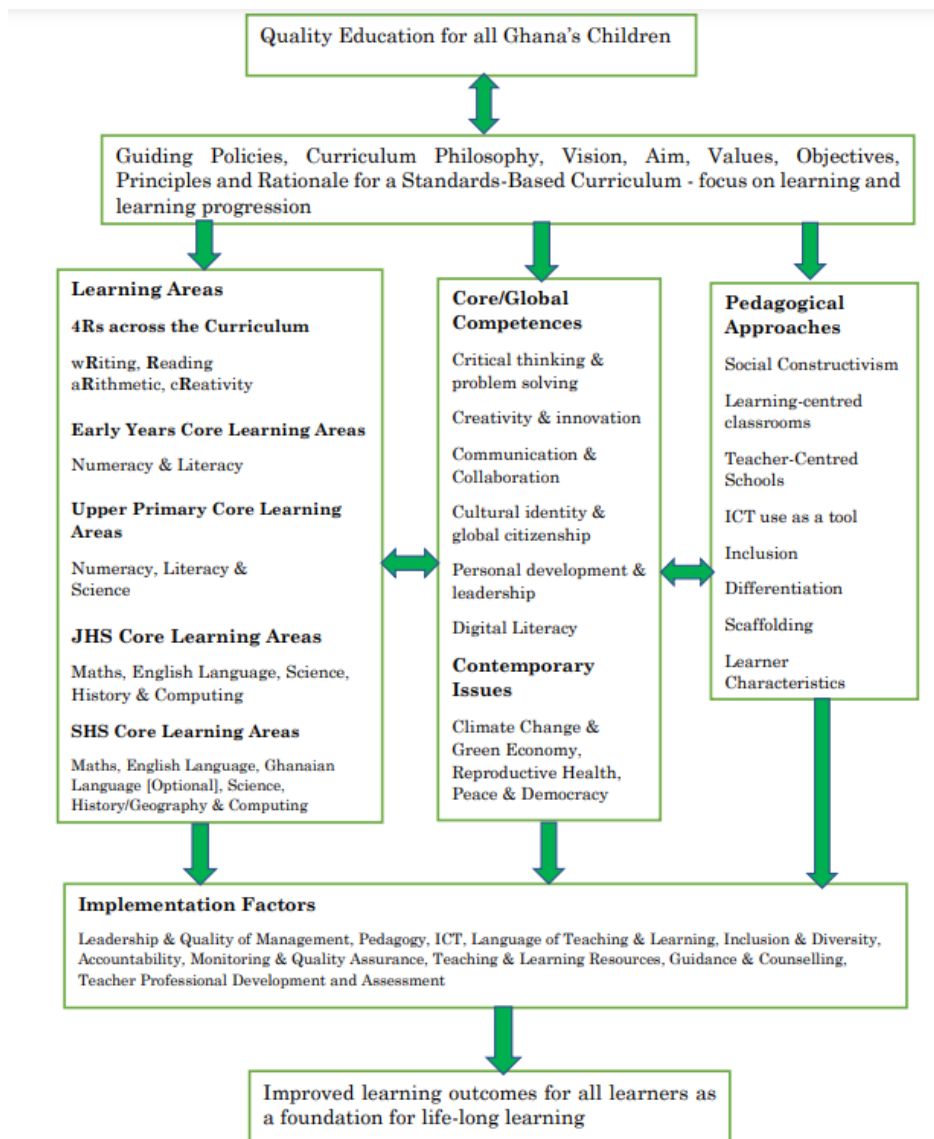Key Phases 1 and 2 constitute Early Years.

Figure 5 Structure of pre-tertiary education in Ghana.

National Pre-tertiary Education Curriculum Framework

The concept for the National Pre-tertiary Education Curriculum Framework is presented in Figure below. It summarizes the key elements of the framework and provides an overview of the key elements for curriculum developers.

Quality Education for all Ghana's Children

Guiding Policies, Curriculum Philosophy, Vision, Aim, Values, Objectives, Principles and Rationale for a Standards-Based Curriculum - focus on learning and learning progression

Learning Areas

4Rs across the Curriculum

wRiting, Reading aRithmetic, cReativity

Early Years Core Learning Areas

Numeracy & Literacy

Upper Primary Core Learning Areas

Numeracy, Literacy & Science

JHS Core Learning Areas

Maths, English Language, Science, History & Computing

SHS Core Learning Areas

Maths, English Language, Ghanaian Language [Optional], Science, History/Geography & Computing

Core/Global Competences

Critical thinking & problem solving

Creativity & innovation

Communication & Collaboration

Cultural identity & global citizenship

Personal development & leadership

Digital Literacy

Contemporary Issues

Climate Change & Green Economy, Reproductive Health, Peace & Democracy

Pedagogical Approaches

Social Constructivism

Learning-centred classrooms

Teacher-Centred Schools

ICT use as a tool

Inclusion

Differentiation

Scaffolding

Learner Characteristics

Implementation Factors

Leadership & Quality of Management, Pedagogy, ICT, Language of Teaching & Learning, Inclusion & Diversity, Accountability, Monitoring & Quality Assurance, Teaching & Learning Resources, Guidance & Counselling, Teacher Professional Development and Assessment

Improved learning outcomes for all learners as a foundation for life-long learning

Figure 6 Concept for the National Pre-tertiary Education Curriculum Framework

Education management in Ghana is a multifaceted system encompassing various stakeholders, policies, and challenges. The Ghanaian education system involves several key stakeholders, each playing a crucial role in its management and operation. At the apex is the Ministry of Education (MoE), responsible for policymaking and regulation across all education sectors. The Ghana Education Service (GES) serves as the implementing arm of education policies, overseeing public schools' administration and management. The National Teaching Council (NTC) regulates teacher training and practice, setting standards and ensuring continuous professional development. Additionally, the National Council for Curriculum and Assessment (NaCCA) is tasked with developing and reviewing the national curriculum and overseeing assessment procedures. The

Tertiary Education Commission (TEC) regulates tertiary education institutions, ensuring quality and standards are maintained. At the local level, District Education Directorates (DEDs) oversee education delivery within their respective districts, while School Management Committees (SMCs) manage individual schools with community participation. Teachers, parents, and communities also play integral roles in supporting education and holding stakeholders accountable. Ghana's education system operates within a comprehensive policy framework aimed at improving access, quality, and equity in education. The Education Strategic Plan (ESP) 2018-2030 outlines the vision for transforming Ghana into a "learning nation" through strategic interventions and investments in education. The Free Compulsory Basic Education (FCUBE) policy guarantees free basic education for all children from kindergarten to Junior High School (JHS), addressing barriers to access and promoting inclusivity. The Teacher Education Curriculum Framework (NTECF) provides guidelines for preparing qualified and competent teachers, ensuring alignment with national educational goals. Additionally, various other policies focus on specific areas such as special needs education, technical and vocational education, and gender equality, contributing to a holistic approach to education management.

Regulatory bodies and oversight mechanisms play a critical role in ensuring accountability and quality assurance within the education system. The National Inspectorate Board (NIB) conducts regular inspections of schools, providing feedback for improvement and ensuring adherence to quality standards. The Auditor-General audits financial management within the education sector, promoting transparency and accountability in resource utilization. Parliament holds the MoE accountable through legislative oversight, enacting education laws and policies to guide the sector's operations. Civil Society Organizations (CSOs) play a complementary role, advocating for improved education outcomes, and holding stakeholders accountable through monitoring and advocacy initiatives. Ghana's education system follows a 6-3-3-4 structure, comprising six years of primary education, three years of Junior High School (JHS), three years of Senior High School (SHS), and four years of tertiary education. Kindergarten education is optional but increasingly recognized as essential for early childhood development. The system incorporates external examinations to mark transitions between JHS and SHS, and SHS and tertiary education, ensuring accountability and maintaining standards. Over the years, there has been a steady increase in enrolment across all levels of education, reflecting Ghana's commitment

to achieving universal access to education. However, challenges persist in accommodating this growth, particularly in infrastructure development, teacher recruitment, and resource allocation.

Table 2: Teacher Education Programs and Qualifications in Ghana.

level	Duration	Entry level	certificate awarded	Teaching level
higher education (non-graduate)	3 years	senior high sch.	diploma in basic education	primary & junior high school
higher education (undergraduate)	3 years	senior high sch. or dip.	bed degree	senior high sch./ college of edu.
higher education (postgraduate)	1 year	degree holders (e.g. BA/BSC.)	postgraduate cert in edu. (PGCE)	senior high sch./ college of edu.

Background to curriculum reform movement

The curriculum reform movement in Ghana addresses the significant variations in teacher preparation quality across higher education institutions. These inconsistencies arise partly from diverse pathways into the teaching profession, where different institutions adopt varied standards and philosophies. Consequently, this results in curricula that equip teachers with differing pedagogic skills. The previous Diploma in Basic Education (DBE) followed an "in-in-out" model, consisting of two years of coursework followed by a year of practical teaching. This curriculum was generalized, producing teachers for Kindergarten to Junior High School with overloaded coursework that neglected local languages and literacy. The DBE program also isolated subject matter from pedagogic methods, with evaluations heavily reliant on examinations and inconsistent criteria for effective teaching practices. The introduction of a new Bachelor of Education (B.Ed.) curriculum, underpinned by the National Teachers' Standards for Ghana (NTS) and the National Teacher Education Curriculum Framework (NTECF), marks a significant shift towards specialized and integrated teacher education. This curriculum is now offered across 46 public Colleges of Education, with distinct programs for Early Childhood, Primary, and Junior Secondary education. It integrates content and pedagogy, emphasizing pedagogic content knowledge and practical teaching experience. The framework organizes around cross-cutting themes such as equity and inclusion, with continuous assessment methods evaluating new standards through portfolios and practice-based activities. Pupil-centered teaching is prioritized, with higher and clearer expectations set.

The Teacher Training in Education and Training (TFET) program aligns well with many NTS standards, particularly those related to practical teaching skills and pupil-centered pedagogy. The modules within TFET, especially those on differentiated teaching and assessment, support a significant portion of the teaching standards, focusing on pedagogic knowledge essential for organizing and managing learning activities. However, some modules, such as 'Learning through Play' and 'Time Management', received lower alignment scores. Out of the 29 standards, five were not aligned with any TFET modules. Despite this, both TFET and NTS share a commitment to equitable and inclusive teaching, emphasizing support for girls and children with special educational needs. A notable gap in the TFET program is its lack of substantive coverage on providing constructive, formative feedback to pupils, an important NTS skill associated with improved learning outcomes. Addressing this gap is crucial for the continued enhancement of teacher training in Ghana.

Implementation Challenges and Successes

The implementation of the Bachelor of Education (B.Ed.) program in Ghana faces several challenges and successes. College tutors grapple with heavy workloads, entrenched teacher-centered pedagogies, and large class sizes, which hinder the adoption of pupil-centered approaches. Continuous Professional Development (CPD) initiatives, such as TFET's Phase III training and T-TEL's professional development guides, aim to support tutors in using active learning and student-centered methods. Despite tutors finding professional development beneficial, participation varies due to increasing workloads. The B.Ed. program's emphasis on practical teaching has heightened expectations for mentor teachers and the learning environments in basic schools, necessitating better alignment between college and basic school pedagogies. The COVID-19 pandemic further complicated B.Ed. provision, prompting a shift to online teaching and learning. Tutors noted the usefulness of TFET module videos and the potential to adapt the program for online education. Tutors also view the TFET program favorably, appreciating its alignment with the new curriculum and its constructivist ideology. TFET stands out among professional development programs due to its Ghanaian perspective and practical module videos, which complement the new B.Ed. curriculum effectively.

Mixed Quality of Teacher Education

The significant variation in the quality of teacher preparation across higher education institutions in Ghana. Over the past decade, multiple pathways have emerged for entering the teaching profession, including routes for 'professional' teachers, who hold an education degree or diploma, and 'non-professional' teachers, who enter with alternative qualifications, such as a Senior High School certificate with three credits, including English and mathematics (MoE, 2012). Historically, the University of Cape Coast and the University of Education, Winneba, awarded a 4-year Bachelor of Education (B.Ed.) degree, while Colleges of Education offered a 3-year Diploma in Basic Education (DBE). In October 2018, following the passage of the Colleges of Education Act 847, these colleges were upgraded to 4-year degree-awarding tertiary institutions under the management of the National Council for Tertiary Education (now the Ghana Tertiary Education Commission).

**Table 3: Pathways to entering teacher education in Ghana**

Pathways to Entering the Teaching Profession in Ghana

Qualification Type	Program Duration	Awarding Institutions	Description
Diploma in Basic Education (DBE)	3 years	Colleges of Education	Qualified to teach at basic school level; Dominant prior to October 2018; thereafter B.Ed. took its place, rolled out across all colleges
Diploma in Basic Education ('sandwich program')	2 years	Colleges of Education and University of Cape Coast	For teachers who already possess initial professional teachers' Certificate 'A' 3-year post-secondary qualification
Post Diploma in Basic Education (Post-DBE)	2 years	University of Cape Coast or University of Education, Winneba	For basic school teachers who already possess DBE
Untrained Teacher's Diploma in Basic Education (UTDBE)	4 years	Colleges of Education (in partnership with Teacher Education Division of GES)	For practicing teachers who have not received initial teacher education, but hold Senior High School Certificate; ad hoc measure to increase teacher numbers in rural areas; distance education
Bachelor of Education	4 years	University of Cape Coast and University of Education, Winneba; Colleges of Education (from 2018 onward)	Qualified to teach at basic or secondary level
Bachelor of Arts or Science + Post-graduate Diploma in Education or equivalent	4+ years	Universities and/or Colleges of Education	Qualified to teach at secondary level
Other (Senior High School Certificate; Diploma from Non-teaching tertiary institution; Degree without certificate in education)	4 years	Secondary and/or tertiary institutions	For non-professional teachers, licensed and regulated by the National Teaching Council

The diversity of pathways into teaching in Ghana has resulted in varying standards and teaching philosophies across institutions. These differences in curricula have produced teachers with

diverse pedagogic skills (Ministry of Education, 2017). According to a Dean of an Education Faculty, "There was great variation, a lack of unity between the colleges in how teachers were being trained." Practical teaching experience also varied significantly, ranging from one to three semesters. This inconsistency led stakeholders to question, "Who is a good teacher?" thus sparking ongoing debates about effective teaching practices in Ghana. Concerns were also raised regarding college tutor pedagogy. Traditional teacher-centered instruction, dominated by lectures, was prevalent in many teaching colleges. One informant noted, "The dominant teaching method in several teaching colleges was lecturing and committing content to memory." Another added, "Tutors were mainly lecturing and gave few opportunities for students to practice teaching practically." This pedagogic inconsistency was exacerbated by variations in tutor qualifications. Although tutors are expected to hold a Master's degree in education or a subject area (Ministry of Education, 2017), nearly half of the 1,900 tutors surveyed in 2018 by the T-TEL program lacked this qualification. In response to these concerns, new curriculum standards and management policies for teacher education now require upskilling all teacher educators in partnership with T-TEL. This includes tutors modeling exemplary teaching practices based on the National Teachers' Standards (NTS) and participating in regular professional development (Ministry of Education, 2017). Consequently, the quality of teacher preparation programs varied across colleges and universities due to diverse pathways, curricula, and pedagogies. These factors highlighted the need for the introduction of new teaching standards and a curriculum framework, aimed at addressing these disparities and improving teacher training

3.7 DATA COLLECTION METHODS
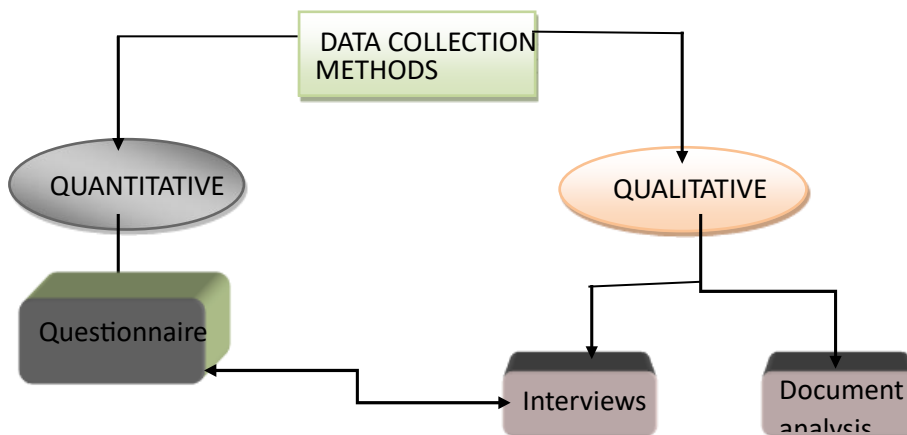
Figure 7 Data Collection Methods Adopted in this study.

Selecting suitable data collection methods is a crucial aspect of any research project. The use of various data sources is widely recognized for enhancing the study's reliability (Rose & Johnson, 2020). Barada (2019) argue that a proficient researcher should be well-versed in diverse methodologies, as employing a range of methods can significantly improve the quality of the research. In line with this, the current study utilized a combination of data collection techniques, including questionnaires, semi-structured interviews, and document analysis.

1. Quantitative Data Collection Techniques (Survey Research Method): Survey research is highly favored in educational studies for probing into student experiences and perceptions, as noted by scholars like Joram et al. (2020), with particular emphasis in pre-service teacher education. Hayashi et al. (2019) defines it as a quantitative method for investigating extensive social issues, enabling the extrapolation of sample findings to larger populations. Utilizing survey methods in this study's quantitative phase is justified for various reasons. Surveys are ideal for ensuring objectivity, replicability, and establishing causal relationships. They facilitate the collection of data to measure variables and test hypotheses, thereby supporting or disproving these hypotheses, as Stedman et al. (2019) points out. Furthermore, surveys provide an unbiased view of social realities, maintaining a separation between the researcher and participants to prevent influencing responses. Additionally, surveys are beneficial for efficiently gathering dependable information from a wide demographic at a lower cost. They are instrumental in enabling the generalization of results across populations and different contexts. Wang et al. (2023) categorizes surveys into two types: cross-sectional and longitudinal. Cross-sectional surveys collect data on current views, beliefs, or opinions at a single time point from a substantial sample. In contrast, longitudinal surveys involve data collection over various time periods from the same group or cohorts.

For this thesis, a cross-sectional survey was chosen for its ability to provide an instantaneous overview of trends, attitudes, and relationships among variables at a specific time. This choice was also driven by the thesis's time constraints and the survey's aptitude for addressing research questions concerning prevalence, distribution, or correlations between variables. However, cross-sectional surveys have limitations, like offering a snapshot view and not tracking changes or dynamics over time, which is crucial for understanding complex, evolving phenomena. The quantitative phase employed Google Forms Questionnaires for data collection. Google Forms, part of Google Suite, is a widely used web-based tool for creating and managing surveys in fields

like education, healthcare, and social sciences (Nayak et al., 2019). It's crucial for collecting insights into individuals' perspectives, feelings, beliefs, values, and behavioral intentions. This study specifically chose an online format for its administration. Google Forms is advantageous due to its accessibility, cost-effectiveness, and the capacity to reach diverse participants without geographical limits (Neundorf & Öztürk, 2023). It enables prompt data collection and organization, expediting the analysis process. The platform's customizability also enhances the survey's precision and relevance. However, Google Forms has drawbacks, such as reliance on stable internet access, which might not be available everywhere, and the potential for reduced engagement or superficial responses in online surveys, affecting data quality (Simamora et al., 2020). Moreover, as Coppock & McClellan, (2019) note, surveys might not capture the full depth of respondents' interpretations. To overcome these limitations, this study adopted a mixed-methods approach, complementing survey data with qualitative methods like semi-structured interviews and document analysis for a more nuanced understanding and thorough examination of the questionnaire findings.

Data collection process (Survey of Student-Teachers)

The quantitative component involved a survey administered to 400 student-teachers using Google Forms. The survey aimed to assess student-teachers' experiences in their training programs, focusing on aspects such as mentorship, field experience, resource availability, and satisfaction with program quality. Random sampling was used to select the participants, ensuring that the sample was representative of the broader population of preservice teachers in Ghana.

Steps in Survey Administration:

1. Survey Design: The survey was designed using a Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to capture quantitative data on key variables such as mentorship quality, teaching practicum experiences, access to resources, and the overall effectiveness of the teacher education programs.

2. Pilot Testing: Before administering the survey to the full sample, a pilot test was conducted with 30 student-teachers. The pilot helped to identify any ambiguities or issues with the wording of the questions. Based on the feedback, minor revisions were made to improve the clarity and relevance of the survey items.

3. Survey Distribution: The final survey was distributed via Google Forms to 400 student-teachers across multiple teacher education institutions in Ghana. The online format allowed

for efficient data collection, with students completing the survey at their convenience. Reminders were sent to ensure a high response rate.

4. Data Collection and Storage: Responses were automatically collected and stored in a secure database through Google Forms. The final dataset was downloaded for analysis once the survey period was completed.

The questionnaire aimed to gather comprehensive feedback from preservice teachers on their experiences in the PSTE program. This information is crucial for program evaluation, improvement, and ensuring that graduates are well-prepared for the teaching profession. It focuses on key areas that contribute to the overall effectiveness of teacher preparation:

Curriculum and Pedagogy (Focus on Knowledge and Skills Development)

1. The PSTE program has adequately prepared me with deep knowledge in my subject area.
2. I feel confident in my ability to explain complex concepts to students in a clear and understandable way.
3. The PSTE program has provided me with opportunities to develop effective teaching strategies
4. I feel comfortable using a variety of teaching methods to cater to different learning styles.
5. I am confident in my ability to create engaging and interactive lesson plans.
6. The PSTE program has equipped me with the skills to integrate technology effectively into my teaching
7. I feel comfortable using technology to enhance student learning and engagement.
8. The PSTE program has provided me with the skills to design and use effective assessment strategies to measure student learning.
9. I feel comfortable using a variety of assessment methods to evaluate student progress.

Practical Training and Mentorship (Focus on Skill Application)

1. The PSTE program provides adequate opportunities for supervised teaching practice in real classrooms.
2. My teaching practice placements have allowed me to apply my knowledge and skills in a practical setting.
3. I received valuable feedback from my supervisors during my teaching practice placements.
4. The PSTE program provides access to qualified mentors who can support my professional development.

5. My mentor has been helpful in providing guidance and feedback on my teaching practice.

Program Management and Resources (Focus on Supportive Environment)

1. The PSTE program is well-organized and easy to follow.

2. I have access to clear and concise information about program requirements and expectations

3. My instructors are knowledgeable and passionate about their subject areas.

4. My instructors demonstrate effective teaching practices in their courses.

5. The PSTE program provides access to adequate learning resources (e.g., textbooks, technology)

6. The learning resources are relevant and up-to-date.

Overall Program Effectiveness

1. How well do you think the PSTE program has prepared you to become a successful teacher?

2. What are the biggest strengths of the PSTE program in your experience?

3. What are the areas where you think the PSTE program could be improved?

Overall, the questionnaire was well-structured and effectively captures key aspects of the PSTE program:

1. Curriculum and Pedagogy: Questions in this section assess the extent to which the program has equipped students with the necessary knowledge, skills, and dispositions for effective teaching. By measuring students' perceptions of their subject matter expertise, teaching strategies, and assessment skills, the questionnaire provides valuable information about the curriculum's effectiveness.

2. Practical Training and Mentorship: Questions in this section focus on the quality of practical experiences and the support provided by mentors. By measuring students' satisfaction with teaching placements and the quality of feedback received, the questionnaire assesses the program's ability to bridge the gap between theory and practice.

3. Program Management and Resources: Questions in this section evaluate the program's organizational effectiveness and resource adequacy. By measuring students' perceptions of

program structure, access to information, and quality of instruction, the questionnaire provides insights into the program's overall management.

4. Overall Program Effectiveness: The final section allows students to provide a holistic evaluation of the program and identify areas for improvement. This information is crucial for making data-driven decisions about program enhancement.

The questionnaire employed a Likert scale format, which is a widely used method for measuring attitudes and opinions. This format allows respondents to express their level of agreement or disagreement with statements, providing quantitative data that can be easily analyzed.

The questions are designed to be clear, concise, and directly relevant to the program's outcomes. By focusing on specific aspects of the PSTE experience, the questionnaire effectively gathers detailed information about students' perceptions. The inclusion of open-ended questions at the end of the questionnaire allows for qualitative feedback, providing additional insights into students' experiences and suggestions for improvement.

2. Qualitative Data Collection Techniques (Documents analysis and Semi-structured interview): Rahman (2019) emphasizes the importance of proficiency in diverse data collection methods for case study researchers, underscoring the need for utilizing multiple sources of evidence. This approach is crucial, as relying on a single source could result in losing a significant advantage inherent in case study design. In light of this perspective, this study will incorporate a multi-source approach, utilizing document analysis and interviews. The following discussion explores why these techniques are particularly suited for this research and examines their respective strengths and limitations.

Semi-Structured Interviews: Interviews are powerful tools for capturing participants' perspectives, and this study opted for face-to-face semi-structured interviews to explore preservice teacher education management in depth. Why this choice? Semi-structured interviews offer the perfect blend of structure and flexibility. Guiding questions ensure coverage of key areas, while open-ended prompts allow participants to freely express their thoughts, beliefs, and feelings (Ben-Amram, 2024). This flexibility allows researchers to probe further for clarification and context, enriching the understanding of participants' experiences and perspectives (Mears, 2009). This format reveals hidden gems beneath the surface. By exploring perceptions, opinions, and even unspoken nuances, semi-structured interviews shed light on aspects that might remain buried in

quantitative data (Govender & Ajani, 2021). Face-to-face interactions further enhance this, allowing researchers to observe non-verbal cues and adjust their approach to maximize participant engagement (Maharani & Fithriani, 2023).

Open-ended questions do double duty. Not only do they elicit rich responses, but they also provide opportunities for the researcher to seek clarification if something remains unclear (Jita & Munje, 2021). This ongoing dialogue ensures precision and depth in the data collected. Like any method, semi-structured interviews have limitations. Subjectivity and bias can creep in, influenced by both the interviewer's approach and the participant's comfort level (Rundgren, 2023). Additionally, costs and time investment can be significant, and face-to-face interactions don't guarantee anonymity, which can hinder some participants' openness.

Data Collection steps

2. Semi-Structured Interviews

Semi-structured interviews were conducted with two key officials, one from GTEC and another from NTC, to gather in-depth insights into their perspectives on the management and quality assurance of PSTE in Ghana. The officials were selected through purposive sampling, ensuring that the participants had the relevant expertise and experience to provide detailed insights on the topic.

Steps in Conducting Interviews:

1. Development of Interview Guide: An interview guide was developed based on the themes identified in the document analysis. The questions focused on issues such as accreditation challenges, teacher licensure processes, and policy implementation in preservice teacher education.

2. Participant Selection and Consent: Officials from GTEC and NTC were contacted and formally invited to participate in the study. Consent was obtained, ensuring that the participants were informed of the purpose of the study, their role, and the confidentiality of their responses.

3. Conducting the Interviews: The interviews were conducted online vis zoom and lasted approximately 60 minutes each. The semi-structured nature of the interviews allowed for flexibility in exploring new themes that emerged during the conversation while maintaining a focus on the key issues.

4. Transcription and Data Storage: The interviews were audio-recorded (with permission) and transcribed verbatim for analysis. The transcripts were stored securely to ensure data confidentiality.

The interview questions aimed to delve into the intricacies of the accreditation process for Preservice Teacher Education (PSTE) programs in Ghana, as administered by the Ghana Tertiary Education Commission (GTEC). The primary objective is to gain insights into the effectiveness of the current accreditation system in ensuring the quality of teacher preparation programs.

The interview questions are designed to explore several key dimensions of the accreditation process:

1. Accreditation Standards and Procedures: This section seeks to understand the specific criteria used to evaluate PSTE programs, the frequency of standard updates, and any potential gaps in these standards.

2. Institutional Capacity: The questions explore the challenges faced by PSTE institutions in meeting accreditation standards, the support provided by the GTEC, and the overall capacity of institutions to undergo the accreditation process.

3. Implementation Challenges: This section aims to identify practical difficulties encountered during the accreditation process, including bureaucratic hurdles and communication issues.

4. Impact of Accreditation: The questions assess the effectiveness of the accreditation process in driving program improvement and ensuring quality teacher preparation.

5. Recommendations: The final section seeks expert opinions on potential enhancements to the accreditation system and future developments.

The interview questions are directly relevant to the research objectives by providing a comprehensive understanding of the accreditation process in the Ghanaian context. By exploring the strengths and weaknesses of the current system, the interview contributed to identifying areas for improvement and inform the development of recommendations for enhancing the effectiveness of accreditation. Specific questions about accreditation standards, institutional capacity, implementation challenges, and the impact of accreditation on program quality provided valuable insights into the factors influencing the quality of PSTE programs in Ghana. Additionally, exploring the GTEC's role in supporting institutions and the potential for future improvements contributed to a comprehensive assessment of the accreditation system.

Overall, the interview questions offered a structured approach to gathering qualitative data on the accreditation of PSTE programs in Ghana, enabling a deeper understanding of the system's strengths, weaknesses, and opportunities for improvement.

Document analysis: Document analysis is a valuable data collection method in qualitative research, providing researchers with valuable insights and context related to the research topic. Documents, in this context, refer to written accounts or records that have been prepared by observers, participants, or the institution itself (Owen, 2019). They serve as a rich source of information about events, phenomena, policies, and programs that have taken place within the study setting. Researchers can use documents to gain a deeper understanding of the historical and contextual dimensions of the study, complementing the insights gained from interviews and observations (Darling-Hammond et al., 2019). One significant advantage of using documents as a data source is that researchers can learn directly from the original sources, providing a more objective perspective on events and actions within the institution. Additionally, documents can offer valuable historical information, allowing researchers to trace the evolution of certain practices or policies over time. They can also shed light on any hidden or implicit information that may not be readily apparent through interviews and observations alone.

In the case of the research at the selected College of Education, various types of documents were used to enrich the understanding of pre-service teacher education management. These documents included the college curriculum, school policies, and various programs implemented by the institution. The college curriculum outlines the educational content and structure of the teacher education program, providing insights into the subjects taught, pedagogical approaches, and learning outcomes expected from the students. School policies are essential to understanding the governance and decision-making processes within the institution, shedding light on the rules and regulations that guide the college's operations. To analyze the documents effectively, the study will utilize the content analysis approach. Content analysis involves systematically examining the content of documents to identify patterns, themes, and key information (Muñiz, 2020). Through content analysis, researchers can extract relevant data, categorize information, and draw conclusions based on the data extracted from the documents. Ethical considerations are crucial when using documents as a data source. Respecting the confidentiality and privacy of the documents is essential to maintain the integrity of the research and protect the rights of the

institution and individuals involved. Researchers should ensure that they have proper authorization to access and use the documents for research purposes.

In conclusion, this research project adopts a multi-pronged approach to data collection, utilizing Google Forms questionnaires, semi-structured interviews, and document analysis. This multifaceted strategy allows for capturing both the quantitative trends and qualitative richness of experiences surrounding PSTE management in Ghana. By acknowledging the strengths and limitations of each instrument, the research strives to weave a tapestry of information, leading to a more comprehensive understanding of the factors influencing the quality and effectiveness of teacher education programs in Ghana. Google Forms questionnaires offer a structured approach to gathering quantitative data efficiently from a large sample size. However, they are limited in their ability to capture in-depth insights and may be susceptible to response biases. Semi-structured interviews provide a flexible method for obtaining rich qualitative data, allowing researchers to explore complex issues and uncover unanticipated themes. However, they are time-consuming and require skilled interviewers. Document analysis offers access to official records and program materials, providing a historical perspective and context for understanding program goals and implementation. However, it relies on the availability and quality of documentation. By combining these methods, researchers can triangulate data to create a more comprehensive and reliable understanding of the research topic. This mixed-methods approach mitigates the limitations of individual methods and enhances the overall validity and trustworthiness of the findings

Data Collection steps

The data collection process was systematically organized to ensure that each method used contributed to the overall objectives of the research. The following steps outline the data collection procedures:

1. Document Analysis

Document analysis was employed to review key policy documents and reports related to preservice teacher education in Ghana. The primary documents analyzed included:

- National Teaching Standards (NTS): A key document outlining the competencies required of teachers in Ghana.
- National Tertiary Education Curriculum Framework (NTECF): A framework guiding the design of teacher education programs at the tertiary level.

- Accreditation Reports: Reports from GTEC related to the accreditation of teacher education programs in Ghana.
- Teacher Licensure Examination Guidelines: Documents from NTC detailing the requirements for teacher certification.

The document analysis focused on understanding the policy framework governing teacher education in Ghana, the standards required for accreditation, and the expectations for teacher licensure. The key findings from the documents were used to inform the design of interview questions and survey items.

Steps in Document Analysis:

1. Identification of Relevant Documents: The first step involved identifying key documents that provided insights into the management of PSTE in Ghana. This included national policy frameworks, accreditation guidelines, and reports from GTEC and NTC.

2. Document Review and Thematic Coding: Each document was reviewed thoroughly to extract relevant information related to the research objectives. Themes such as accreditation, licensure, teacher standards, and quality assurance were identified, and the data were coded accordingly.

3. Synthesis of Findings: The insights gained from the document analysis were synthesized to form a coherent understanding of the regulatory framework governing PSTE in Ghana. These findings were later used to triangulate the data from interviews and surveys.

3.7 Data analysis (Qualitative and Quantitative Data)

The data analysis involved both qualitative and quantitative methods, reflecting the mixed-methods design of the study. The qualitative data from document analysis and interviews were analyzed thematically, while the quantitative data from the survey were analyzed using descriptive and inferential statistics.

1. Qualitative Data Analysis

The qualitative data, comprising interview transcripts and document analysis findings, were analyzed using thematic analysis. The steps involved in the analysis were as follows:

- Familiarization with the Data: After transcription, the interview data were reviewed multiple times to ensure familiarity with the content. Similarly, the key findings from the document analysis were reviewed to understand the recurring themes related to PSTE management.

- Coding: The interview transcripts were coded using a combination of inductive and deductive approaches. Deductive codes were derived from the research objectives and document analysis themes (e.g., accreditation, mentorship, teacher licensure), while inductive codes emerged from the data itself (e.g., specific challenges faced by institutions).
- Theme Identification: Once the data were coded, the codes were grouped into broader themes. For example, codes related to mentorship quality, resource allocation, and technology integration were grouped under the broader theme of "Program Effectiveness."
- Data Interpretation: The themes were interpreted in relation to the research questions. The findings from the interviews were compared with the results from the document analysis to identify areas of convergence and divergence, providing a comprehensive view of the management of PSTE in Ghana.

2. Quantitative Data Analysis

The survey data were analyzed using descriptive statistics to summarize the key findings, as well as inferential statistics to examine relationships between variables. The following steps outline the quantitative data analysis process:

- Data Cleaning: The raw survey data were cleaned to remove incomplete responses or outliers. This ensured the accuracy of the final dataset.
- Descriptive Statistics: Descriptive statistics, such as means, frequencies, and standard deviations, were calculated for each survey item. This provided an overview of student-teachers' perceptions of various aspects of their training programs, such as the quality of mentorship and the availability of resources.

Data Triangulation

Triangulation is a key strength of this study, as it combines data from multiple sources to provide a comprehensive understanding of the research problem. By using methodological triangulation—combining document analysis, interviews, and surveys—the study ensures that the findings are robust and reliable.

- Cross-Verification of Data: The themes identified in the interviews were cross-verified with the findings from the document analysis and survey data. For example, if an interviewee mentioned challenges in the accreditation process, this was compared with policy documents and survey responses to validate the finding.

- Convergence of Evidence: Triangulation allowed for the identification of converging patterns across data sources. For instance, the survey results indicating a lack of access to resources were supported by both interview responses and document findings, strengthening the credibility of the conclusion.

In summary, the mixed-methods approach adopted in this study provided a well-rounded perspective on the management of preservice teacher education in Ghana. By combining document analysis, semi-structured interviews, and a large-scale survey, the research was able to triangulate data, ensuring that the findings are both reliable and valid. The detailed data collection and analysis procedures outlined here demonstrate a rigorous approach to answering the research questions and providing actionable insights into the improvement of PSTE in Ghana.

3.8 Ethical Consideration

This study adhered to key ethical considerations, including informed consent, privacy, and participant safety, as outlined by Rahman (2019) and Heystek & Emekako (2020), following ethical clearance from the University of Education, Indonesia's Ethical Committee The study on pre-service teacher education management in Ghana strictly adhered to Heckert et al. (2020) principles of voluntary participation, comprehensive information, and participant competence. Participants were given full freedom to join without pressure and informed of any potential risks. The study's objectives, methods, and its role in the researcher's PhD were clearly communicated through an informational letter. This transparency extended to the use of participants' data, their right to withdraw anytime, and the assurance of their privacy. The dissemination plans for the study's findings were communicated, and participants were given access to the final report. Consent forms reiterating these aspects were provided to all participants, ensuring their informed and ethical involvement. In the Ghanaian pre-service teacher education management study, participant privacy was paramount. Following Henriksen et al. (2021) guidance, the study took extra care with sensitive information and private settings. Anonymity was maintained by using code names for participants throughout the research process, including data handling and reporting. Identifiable details in texts were removed to preserve confidentiality, consistently applied across interviews, observations, and questionnaires, ensuring a high standard of ethical research practice. This research, focusing on ethical participant protection, followed Kenyon (2019) and other scholars' guidelines. The likelihood of causing mental or physical stress was carefully evaluated and minimized. Data collection methods, like interviews and observations,

were conducted with precautions to reduce participant discomfort, in line with Neuman's (2003) recommendations. The findings were reported anonymously using coded references and pseudonyms, ensuring confidentiality. The data was exclusively used for research purposes, avoiding any usage that might be objectionable to participants, as per Alhassan & Ankeli 's (2022) guidelines, emphasizing the study's commitment to ethical research principles.