

# Influence of Teacher Professional Development on Teaching and Learning in Public Technical Institutes in the Upper West Region, Ghana

## ABSTRACT

**Aims:** Teacher Professional Development (TPD) has received global recognition as one of the most essential elements required for increasing teachers' knowledge and skills and improving students' learning. However, not much account has been given on the influence or otherwise of TPD since some appears ineffective in supporting changes in teacher practices and student learning. This study examined the influence of teacher professional development on teaching and learning in public Technical Institutes in the Upper West Region, Ghana.

**Study design:** The study adopted the concurrent mixed method design, utilizing both quantitative and qualitative datasets.

**Place and Duration of Study:** The study was conducted between September 2019 to September 2020 in two technical institutes, namely, St. Basilide's Technical Institute and the Wa Technical Institute in the Nadowli-Kaleo district and Wa Municipality respectively.

**Methodology:** Evidence was obtained through the use of interview as well as questionnaires including both open and closed ended questions and a 5-point Likert scale. A sample size of 220 was obtained from a total target population of 1,072 at 95% confidence level and 5% margin of error.

**Results:** The findings showed that teachers in public Technical Institutes have considerable access to teacher professional development provided by the Ghana Education Service (GES), Ghana National Association of Teachers, Non-Governmental Organizations, Subject Associations, among others. Like the teachers, majority of the students have a very positive account about how well their teachers teach and how well they themselves are learning. It was found that a highly significant positive relationship ( $r(44) = .745$ ,  $p < .01$  given  $\alpha = .01$  and  $p\text{-value} = .000$ ) exists between teachers' participation in teacher professional development and teaching and learning. Furthermore, the study also showed a Kendall's Coefficient of Concordance ( $W$ ) of 0.212 in the ranking of challenges or barriers affecting teacher professional development.

**Conclusion:** The study contends that GES should put in place policies to encourage teachers to participate in professional development programs; the GES should also encourage and partly fund individual schools particularly technical institutes to conduct subject-based in-service training for teachers among others.

*Keywords: Teacher professional development; Technical institute; learning; teaching; in-service training*

## 1. INTRODUCTION

Teacher Professional Development (TPD) is deemed a very important element geared towards ensuring that schools are of high quality relative to teaching and learning (Desimone, 2011). Kang, Cha, and Ha (2013) observed that TPD is particularly extremely important, for the reason that, it has the potency of influencing teachers' own learning and classroom instruction as well as student learning. Teacher professional development has gained significant global

recognition as a critical tool for supporting students' success (Darling-Hammond, Hylar & Gardner, 2017). This requires refined forms of instruction to enhance the competencies of students in terms of command of demanding content, critical thinking, complicated problem-solving, collaboration as well as self-direction (Darling-Hammond *et al.*, 2017). Teacher professional development connotes an intentional, ongoing and systematic process of formal and informal education, training, learning and support activities taking place in either external or work-based settings and proactively engaged in by teachers, school principals and other school leaders, alone or with others, which have direct or indirect benefit to the individual teacher, students, the school and also the nation at large (Bolam & Weindling, 2006; Hawley & Valli, 1999).

Apart from being a unified component of a well-fashioned out Professional Development (PD) programme, success demands teachers to be active learners as well. Teaching and learning in the school environment can be improved by ensuring that PD needs are collaborative in nature, long-term, and content driven (Guskey & Yoon, 2009). Richardson (2003) noted that for teachers to become successful in their day-to-day teaching in school, they need to be engaged in professional development that is sustainable and intensive within the school system. It is also identified that professional development programme design elements that are based on content specific, inquiry learning, collaborative involvement, and in line with school policies have the potential of maximizing teacher learning and teaching practices as well as student learning outcomes (Garet, Porter, Desimone, Birman & Yoon, 2001; Garet, Cronen, Eaton, Kurki, Ludwig, Jones & Szejnberg, 2008; Santagata, Kersting, Givvin, & Stigler, 2011).

In fact, many African countries have, from the 1980s, operated in an austere financial environment coupled with underdevelopment, but still committed to ensuring the provision of universal basic education for their citizens (Cobbod & Dare, 2011). A lot of African countries have common issues relative to improvement in the quality and equity of education (Nieuwenhith, 1997). The supply of professional development in Sub-Saharan Africa, with specific reference to West Africa, needs to be viewed within the context that it varies from professional development that is provided in the United States of America and the European countries (Kelani & Kourey-Bowers, 2012). Christie, Harley and Penny (2004) argued that remarkable variations exist in the provision and nature of professional development. Regardless of the fact that a lot of these African countries have an existing teacher education programmes as well as training for in-service teachers, the greater majority of teachers are either not trained or do not have appropriate training (Kelani & Kourey-Bowers, 2012). Leach (2005) pointed out that one-third of in-service teachers in Sub-Saharan African countries are not trained and unqualified within the academic or professional context or both. Many teachers are recruited but they do not have adequate subject-related knowledge as well as pedagogical preparation coupled with underdeveloped or non-existent in-service training programmes (Kelani & Kourey-Bowers, 2012).

The global challenges require the Ghana Education Service (GES) to adopt creative strategies aimed at improving staff knowledge and building their capacity through continuous professional training. Continuing Professional Development (CPD) for teachers has been recognized as an important tool as far as reforms and school improvements are concerned particularly because of the fact that student learning coupled with their success are largely due to how effective their teachers are (Organization for Economic Co-operation and Development, 2009). There is evidence to the effect that a positive connection exists between Teacher Professional Development (TPD) and students' academic achievements (Killion, 2002; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). It is therefore important that teachers are well informed about the dynamics of society since by their profession they prepare people to meet societal needs.

Various reports and policy recommendations have made suggestions with respect to the need of putting in place a professional development framework to guide the implementation of teacher professional development, particularly for teachers at the pre-tertiary level of which Technical Institutes are no exception (Anamuah-Mensah, 2002; Ministry of Education, 2010; Ministry of Education & Ghana Education Service, 2012). This creates an avenue for continuing professional learning programmes to be put in place to offer opportunities for both trained and untrained teachers to upgrade their professional knowledge and competencies relative to content and pedagogy (Mulkeen, Chapman, DeJaeghere & Bryner, 2005). The study therefore sought to examine the perspectives of teachers in public Technical Institutes in the Upper West Region of Ghana on the influence of teacher professional development on teaching and learning. Teacher Professional Development (TPD) is essential for influencing teaching and learning and ensuring the quality and progress of teachers (Macheng, 2016). However, the manner in which most teacher professional development is carried out seems ineffective in bringing about the needed influence on teaching and learning. Opportunities for CPD are important in order to sustain a high quality of teaching and learning. Continuing professional development for teachers is crucial and appropriate in order to bring teachers up to speed with changing trends in the teaching profession. Nonetheless, teacher professional development in public technical institutes has received little or no attention in the realm of research in Ghana. It is in this vein that, the study sought to generally examine the influence of teacher professional development on teaching and learning in public Technical Institutes in the Upper West Region. The principal objective of this study was to examine the influence of teacher professional development on teaching and learning in public Technical Institutes in the Upper West region. The specific objectives are:

1. To find out the type of professional development programmes that teachers in public Technical Institutes in the Upper West Region participate in.
2. To evaluate the relationship between teacher professional development and teaching and learning in public Technical Institutes in the Upper West Region.
3. To assess the challenges confronting teachers relative to access to professional development programmes.

### **1.1 Professional Development (PD)**

Professional development (PD) on a continuous basis is one of the primary means for improving classroom instruction that in turn contributes to the achievement of students. Hargreaves and Fullan (2007) contended that continuing professional development (CPD) has become necessary for uplifting the quality of standards in education owing to the fact that teachers need to learn continuously to instill in them the needed knowledge and skill set to facilitate teaching and students learning.

According to Guskey (2000) Professional Development (PD) entails continuing, long-term activities of learning that are consciously planned in a manner that will bring about teacher transformation. It is further argued that teachers need to have a reflection on their daily practices, learn about new things in relation to everyday classroom practices, as well as be capable of coping with the challenging circumstances bedeviling teachers' practices in a well fashioned system. Supporting this view, Villegas-Reimers (2003) observed that some PD activities are grounded on theoretical models, reflective and collaborative exercises which are deemed as processes that occur within a particular context.

Continuous acquisition of knowledge and skills by both existing and new staff form an essential component of any profession of which the teaching profession is not an exception (Shulman & Sparks, 1992). According to Tanner and Tanner (1987) professional development is significant mainly for two reasons. Firstly, knowledge is evolving continually. Some new things come out each day which the teacher needs to refresh his/her mind on. Since not everything can be taught during the teachers' training in college, there is the need for the teacher to undergo some form of on-the-job training to become abreast with time. Secondly, the principles and practices of teaching are more involving than what the teacher received during the pre-service preparatory phase in college (Mensah, 2016). The real challenges of teaching are in the classroom, where the teacher requires understanding to overcome the challenge. Well-structured professional development has been associated with changes in teachers' practice, pedagogical skills improvement and students' achievement (Bolam & Weindling, 2006). It is therefore worth stressing that teachers in Technical Institutes need professional development on consistent basis in order to update their knowledge on modern trends of teaching and learning. This would enable them to alter their classroom practices and boost student-learning outcomes.

### **1.2 Teacher Professional Development (TPD)**

Historically, TPD is seen as an evolving concept in teacher learning and transformation (Bredeson, 2002; Knapp, 2003). Rahman (2016) argued that the notion of teacher learning and change, and a number of associated terms, are open to many and varied interpretations and each interpretation is rooted in particular perspectives or theories on TPD. These theoretical orientations can be classified into four different perspectives. The first perspective is put forward by scholars who see TPD as activities, events, or opportunities. In this vein, Bolam (2000) asserted that TPD includes the education, training and on-the-job-related activities that teachers are involved in, after their initial certification programmes. These activities are geared towards contributing to their professional knowledge, facilitating improvement in their professional skills as well as aiding them to make explicit their professional values so as to educate their students more effectively. The focus of this perspective of TPD is on formulating the types of learning activities that can effectively and efficiently lead to the expected knowledge and skills that teachers need. This perspective concerns itself with the quest for "what" types, forms and models of TPD work best to improve teachers' instructional practices (Rahman, 2016). Therefore, in the current discussion of TPD, proponents of this perspective demand for the adoption of the "reform" type of TPD activities such as action research, collaborative learning and peer networks in lieu of the so-called "traditional" ones such as workshops, seminars and in-service training (Rahman, 2016).

The second perspective views TPD as a process that has the potential of enhancing teacher quality (Evans, 2002; Kelchtermans, 2004). Evans (2002) views TPD as the process whereby the professionalism of teachers may be seen to be enhanced. The concern of this perspective is about unearthing the processes that work best for developing teachers' knowledge and skills. There are some competing ideas within this perspective. The first idea is that TPD is a process of transferring knowledge to teachers. Second, TPD is viewed as a constructive process in which teachers are viewed as those who mediate ideas and construct meaning and knowledge and act upon them (Richardson, 1996). Lastly, TPD is regarded as a process of increasing participation aimed at making teachers knowledgeable in the practice of teaching

(Adler, 2000). Thus, the focus of this perspective is on whether to send teachers on courses, allow them plan and pursue their own learning, or present them with the problems and challenges resulting from their own practices.

The third perspective is a mixture of the previous two perspectives and conceives of TPD as comprising both activities and processes. In this regard, Guskey (2000) defined TPD to include processes and activities designed for the enhancement of the professional knowledge, skills and attitudes of educators with the express aim of bringing about improvement in students' learning.

This perspective is a combination of the "what" and "how" of TPD. Theoretically, the activities and processes of TPD depend on one another and, in most cases, a particular TPD activity informs the process that it entails and vice versa. This third perspective is evident among the scholars who propose a set of effective features of TPD (Ball & Cohen, 1999; Burney & Elmore, 1999; Darling-Hammond & McLaughlin, 1995; Hawley & Valli, 1999; Knapp, 2003).

### **1.3 Teacher Professional Development and Teaching and Learning**

Now, more than ever before, teachers are being held accountable for the roles they play in student-learning. Schools depend, in large part, on PD so that gaps in the knowledge and skills of teachers can be effectively bridged. Ingvarson, Meiers and Beavis (2005) observed that TPD is now recognized as an integral part of policies geared towards enhancing the quality of teaching and learning in educational institutions. Continuing professional learning opportunities for teachers has largely been viewed as a vital activity relative to any educational reform (Fullan, 2007). The case of Ghana's Technical Institutions in relation to TPD is fundamental particularly in view of reforms in the provision of technical and vocational education. Teacher learning is interlinked with their on-going practice, making it likely that what they learn will indeed influence and support their teaching practice and bring about improvement in students' learning outcomes (Correnti, 2007; Putnam & Borko, 2000).

In view of the foregoing, for teachers to have improved performance in their work and bring about the needed transformation in students' learning there must be continuing professional development. There is no gainsaying that, teachers in Technical Institutes need to be continuously developed now more than ever so as to alter their teaching practices and improve students' learning.

### **1.4 Teacher Professional Development Models**

By and large, TPD models can be categorized into two that is, the traditional type and the 'reform-type' PD models (Birman, Desimone, Garet & Porter, 2000). The traditional type of TPD is founded on the assumption that a deficit exists relative to the knowledge and skills of teachers which can easily be developed in one-off workshop (Clarke & Hollingsworth, 2002). Teaching and Learning International Survey (2013) included nine different choices of forms of professional development programmes such as courses/workshops, educational conferences/seminars, qualification programme, observation visits to other schools, participation in a network of teachers, individual or collaborative research on a topic, and mentoring and/or peer observation and coaching. Hawley and Valli (1999) chastised the traditional type of TPD as being superficial and fragmented. This view has been corroborated by Ball and Cohen (1999) who described the in-service workshops as mentally shallow, delinked from the core matters of curriculum and learning, fragmented, and not cumulative. They further explained that the shallow nature of the TPD is as a result of the perception that teaching is about common sense and as such there is little desire for professional learning (Ball & Cohen, 1999). There is also the perception that teachers can perform their work without necessarily requiring any sustained learning to do their work (Ball & Cohen, 1999). The option to the traditional type of TPD is the reform-type otherwise called the growth model of PD (Huberman & Guskey, 1995). They described the reform model as one that has diverse PD activities that come with inquiry on continual basis into the teaching practice of teachers. The change from the traditional approach to the reform-type is indicative of the fact that TPD is altering from duplication to reflection, from individual learning to collective learning and from centralization to decentralization (Smylie & Conyers, 1991 as cited in Hawley & Valli, 1999).

Professional development is said to be effective when it is organized and carried out within the working context of teachers. Sparks and Hirsh (1997) argued that for meaningful transformation to occur in teaching it is important for professional development to be considered as a job-embedded activity which should be treated in multiple ways. In summary, the school remains the most appropriate environment within which teachers can develop professionally since recent teaching aptitudes can be obtained in practice.

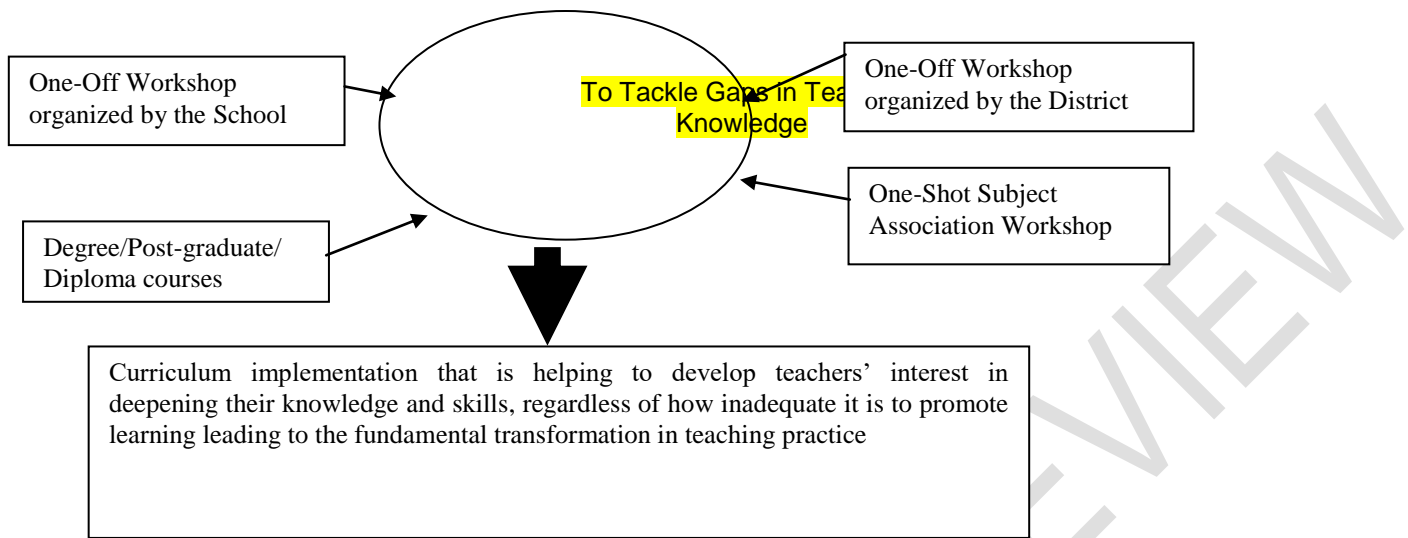


Figure 1: A Modified Traditional model of TPD adopted from Desimone, Porter, Garet, Yoon and Birman (2002)

## 1.5 Effective Professional Development

There is an emerging uniformity and agreement regarding the features of PD that are deemed to have the potential of changing teachers' knowledge and practice and by extension students' achievement (Desimone, 2009). These standard characteristics of effective PD should be measured to assess the efficacy of any professional development programmes; irrespective of what types of activities are involved (Desimone, 2011).

### 1.5.1 Critical Features of Effective Professional Development

#### 1.5.1.1 Content Focus

Kennedy (1998) notes that irrespective of the fact that a variety of research has been carried out on professional development; emphasis is mostly placed on structure at the expense of content. A review of the effect of math teacher in-service programmes on student achievement found that programmes revealed that subject matter content and how students learn recorded the largest positive effect on student teaching (Kennedy, 1998). Garet *et al.*, (2001) noted that PD programmes that focused on content had a considerable symbiotic effect in enhancing knowledge and skills, as indicated by the teachers in their sample.

#### 1.5.1.2 Active Learning

Various research works that have been undertaken regarding the forms of high quality TPD concluded that the reform approach of professional development is deemed to be effective in altering teaching (Hawley & Valli, 1999; Helmer, Bartlett, Wolgemuth & Lea, 2011). Criticisms have been leveled against TPD programmes that are hinged on the traditional model for not being conducive and responsive enough to engender any meaningful transformations in teaching (Birman *et al.*, 2000; Desimone, 2011; Kwakman, 2003). This approach is deemed to have the capacity of transforming teaching practice as opposed to PD programmes that come in the forms of large group presentations, training programmes, workshops and seminars.

#### 1.5.1.3 Collective Participation

This borders on the involvement of teachers within the same school, department, or class in the same professional development programme (Garet *et al.*, 2001). Birman *et al.* (2000) maintained that inherent in this critical feature of PD is

the likelihood of providing a platform for active learning that is likely to be coherent with the other experiences of teachers. Therefore, teachers from the same school who are involved in collective participation are able to sustain changes made to their teaching practice. Hargreaves (1995) points to the use of collaborative effort as one of the surest pathways that can bring about improvement in teaching practice. Key among the merits of this feature is that it increases the ability for reflection (Hargreaves, 1995).

#### **1.5.1.4 Duration**

It has to do with the contact hours used as well as the span of time in a given professional development activity undertaken by teachers (Garet *et al.*, 2001). The reform model is deemed to be more effective because it has a longer duration as opposed to the traditional approaches of professional development. Birman *et al.*, (2000) opined that PD programmes that span for a longer period are replete with more subjects cum content focused activities, more coherent with the other experiences of teachers and provide a platform for learning in which teachers are more active than activities that span for a shorter duration. Duration per se is not sufficient to ensure success (Kennedy, 1998). She discovered that variations in content have a stronger effect than whether the programme happens over time. Wenglinsky (2002) also observed that there is little influence that teachers make on student-learning outcomes even after spending more time on professional learning that is not centered on content. This implies that the content is as critical as the duration of any teacher professional learning programme.

#### **1.5.1.5 Coherence**

There are three dimensions of coherence as outlined in the literature, that is; an association between the PD activity and the goals that teachers have in respect of same; a link between the PD activity and the standards, assessments and curriculum frameworks and lastly, providing continuous professional communication for teachers who are making efforts to alter their practice (Garet *et al.*, 2001). Nurul (2012) opined that teachers are expected to formulate their own knowledge by anchoring new information obtained through to pre-existing knowledge.

### **1.6 Barriers to Teacher Professional Development**

Although there exist a common believe that teaching and learning can be improved by virtue of teachers' participation in professional development programmes, research has revealed that a lot of PD programmes have not been effective and are not able to bring about the desired results (Guskey, 2002). Guskey further noted that attempts have been made by researchers in education to determine the issues that inhibit how effective PD programmes are supposed to be since the effectiveness or ineffectiveness of TPD has a direct effect on student learning. The ineffectiveness of professional development programmes is attributed largely to personal related issues. These factors contributing to the ineffective nature of TPD include but not limited to lack of motivation among teachers to participate in professional learning (Guskey, 2002); attitude of teachers regarding changes in pedagogy, the willingness on the part of teachers to learn as well as perception of teachers relative to their professional identity (Maskit, 2011). Johnson (1990) noted that the context and structure of a school has the tendency of determining how effective teacher professional development could be. Clarke and Hollingsworth (2002) observed that dearth of coordination and leadership, shortage of collegiality and the neglect of professional development in certain schools have the potential of negatively affecting the motivation and commitment of teachers to professional development. Atta and Mensah (2015) identified teacher challenges in accessing teacher professional development programmes to include but not limited to the inability of schools to factor PD into the school calendar, inadequate funding sources by the government and lack of resources bedeviling school leadership to sponsor teachers to take part in professional learning activities. They added that limited number of teachers required to take part in professional development programmes on behalf of the school thereby depriving the majority, inadequate information and materials, lack of administrative support, delay in releasing allowance among others were some of the barriers teachers faced in their bid to access TPD programmes.

The length of time spent has also been recognized as a major challenge facing teacher professional development activities. Cohen and Hill (1998) observed that there is a direct link between the extent of time spent in the PD experience and the utilization of methods of instruction in the classroom. Anderson (2002) identified challenges such as political and cultural drivers that inhibit TPD.

## **2. MATERIAL AND METHODS**

### **2.1 Research Design**

The study employed the concurrent mixed method design, utilizing both quantitative and qualitative data. The motivation for using the mixed approach was to obtain detailed understanding of the responses from quantitative method coupled with qualitative interviews.

## 2.2 Population

The study participants constituted two hundred and twenty (220) representing 60 teachers and 155 students from two out of the three public Technical Institutes as well as 5 institutional heads (Ghana Education Service, Ghana National Association of Teachers and National Association of Graduate Teachers) in the Upper West Region. The two technical institutes the study involved comprised St. Basilide's Technical Institute and the Wa Technical Institute located in the Nadowli-Kaleo district and Wa Municipality respectively.

## 2.3 Sample and Sampling Procedure

The sampling frame for this study stood at 1,072; constituting 70 teachers, 991 form three (3) students and 11 institutional heads. The Raosoft Online Sample Size Calculator was used to determine the sample size. Using the Raosoft Online Sample Size Calculator with a confidence level of 95% and 5% margin of error, a sample size of 60 teachers was obtained from a total of 70 teachers. Again, the same procedure was followed to generate a sample size of 155 students from a total of 991 form three (3) students with a confidence level of 95% and 5% margin of error. Also, 5 institutional heads were purposively selected bringing the overall sample size of the study to 220. The study employed both probability (systematic and simple random) and non-probability (purposive) sampling techniques in selecting the sample for the study. The simple random sampling technique was used to select a total of 60 teachers from eight (8) departments for the study. The systematic sampling and the simple random sampling techniques were used concurrently to obtain the sample of 155 students.

## 2.4 Study Instrument

Questionnaire and interview guides were used for data collection in this study. To ensure that the study covers the sample within the shortest possible time, questionnaire was the main instrument that was used to collect data for the study from teachers and students. Using questionnaire as a means of data collection was the most convenient because all the respondents could read and write. Questionnaire was therefore used to elicit responses from teachers on their participation in professional development and how it affects teaching and learning in their respective Technical Institutes. It was also used to get the perspectives of students in respect of their teachers' instruction and their own learning. The questionnaire incorporated open and closed – ended as well as a five-point likert scales (Strongly Disagree-1, Disagree-2, Uncertain-3, Agree-4 and Strongly Agree-5). Also, the challenges/barriers faced by teachers in respect of access to TPD in the study area were ranked (on a scale of 1-10 in order of importance) from the most pressing to the least pressing challenges with the aid of the Kendall's Coefficient of Concordance.

### 2.4.1 Pilot-Testing of Research Instruments

Prior to the administration of the questionnaire, it was pilot-tested in one of the Technical Institutes under study (St. Basilide's Technical/Vocational Institute) in the Nadowli-Kaleo District of the Upper West Region. After the analysis, a reliability coefficient of 0.77 was yielded which indicates the cohesive nature of the items in defining the constructs of the study. The interview guide was not pilot-tested since the results of the pilot-testing of the questionnaire served as the foundation for determining the worth of the interview instruments.

## 2.5 Data Analysis

Descriptive statistics of means, percentages and frequencies were utilized to aid in answering the research questions. The Pearson Product Moment Correlation was also employed to test for statistical significance with the help of the Statistical Package for Social Sciences (SPSS). Charts were generated with the aid of Microsoft Excel and tables were also used to illustrate the data where applicable. In the case of the qualitative data, content analysis was used to analyze it via vivid descriptions of the relevant themes that emerged in the study. The Kendall's Coefficient of Concordance (W) was also employed to analyze the challenges that teachers faced with respect to access to TPD. The Kendall's coefficient of concordance (W) measures the agreement on the scale of zero to one (0-1) with the interpretation that; the larger the value, the greater the agreement in the ranking and vice versa.

## 2.6 Ethical Consideration

Firstly, the confidentiality of information given by respondents was paramount to the study thus; a great deal of care was taken in order not to reveal the identity of the respondents. Secondly, all information that the respondents needed was made available to them. The objective of the study and the contribution it will make to them was fully explained. Thus, the issue of deception did not arise. Thirdly, the consent of the respondents was sought through the various Principals of the two Technical Institutes with clear explanation. Finally, no one was coerced or influenced in any way to respond to the questionnaire or the interview; it was done in an atmosphere of friendliness.

## 3. RESULTS AND DISCUSSION

### 3.1 Socio-Demographic Characteristics of Respondents

This aspect of the study sought to find out the demographic characteristics ranging from gender, age, marital status, religious denomination to academic qualification of respondents. A total of 220 questionnaires were administered to respondents which included 60 teachers, 155 students and five (5) institutional heads that were regarded as key informants. In respect of the gender of respondents, male teachers and male students constituted the majority representing 48 (80%) and 115 (74.2%) respectively whereas the female teachers and female students formed 12 (20%) and 40 (25.8%) respectively. This implies that the male teachers and students' population constituted a larger percentage in these public Technical Institutes in the Upper West Region. This is possibly due to the fact that these Technical Institutes are offering programmes that are perceived by society to be the preserve of men as such not many women are venturing into such programmes either as teachers or students. With regards to marital status, there are more married teachers that is, 50 (83.3%) than single teachers who constituted 10 (16.7%). This is so because components of the target population were adults, and therefore, it was not surprising that majority of them were married with none being widowed or divorced. In terms of religious denomination of respondents, more than half 120 (55.8%) of the respondents indicated they were Christians and 95 (44.2%) were Muslims.

The academic qualification of the teachers in both schools was very remarkable as more than half 41 (68.3%) were first degree holders whilst 11 (18.3%) indicated they were postgraduate degree holders. Those teachers who indicated they had acquired Diploma and Advance Technician Diploma constituted 7 (11.7%) and 1 (1.7%) respectively. The educational qualification of teachers in these Technical Institutes presents a good picture for technical education in the Upper West Region and Ghana as a whole. Table 1 gives a breakdown of the socio-demographic features of respondents.

**Table 1: Socio-Demographic Characteristics of Respondents and Study Area Cross tabulation**

Variables		Name of school		Total	%	
		St. Basilide's Technical Institute	Wa Technical Institute			
<b>Gender of respondent</b>	Male	Teachers	25	23	48	80
		Students	60	55	115	74.2
	Female	Teachers	7	5	12	20
		Students	17	23	40	25.8
<b>Marital status of respondent</b>	Single	4	6	10	16.7	
	Married	28	22	50	83.3	
<b>Religion of respondent</b>	Christianity	89	31	120	55.8	
	Islamic	20	75	95	44.2	
<b>Academic qualification of respondent</b>	Diploma	5	2	7	11.7	
	Degree	19	22	41	68.3	
	Postgraduate		4	11	18.3	

Advanced Technician Diploma	1	0	1	1.7
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Source: Field Survey, 2019

The age distribution of the teachers showed that the majority fell within the age brackets of 30 and 44. In effect, the age groups 30-34, 35-39 and 40-44 recorded a percentage share of 21.7%, 25% and 25% respectively as depicted in Table 4.2 below. However, the age groups 20-24 and 50 and above recorded the least share of 1.7% and 6.6% respectively. This distribution therefore implies a relatively young teacher population. The age distribution is depicted in Table 2.

**Table 2: Age Distribution of Teachers**

Age Group of Teachers	Frequency	Percent
20-24	1	1.7
25-29	6	10
30-34	13	21.7
35-39	15	25
40-44	15	25
45-49	6	10
50+	4	6.6
Total	60	100

Source: Field Survey, 2019

On the other hand, the age distribution of students also showed that the majority of students were between the ages of 18 and 20. More than a quarter 54 (34.8%) attained the age of 19 whilst near a quarter 51 (33%) of them also attained the age of 18. Those who indicated they had attained the age of 17 recorded the least percentage of 3.2 representing 5 out of the 155 final year students. This implies that majority of the students fall between the ages of 17 to 19 while a little below a quarter fall within the age bracket of 20 and 21 above. The age distribution of students is shown in Table 3.

**Table 3: Age Distribution of Students**

Age of Students	Frequency	Percent
17	5	3.2
18	51	33
19	54	34.8
20	27	17.4
21+	18	11.6
Total	155	100

Source: Field Survey, 2019

### 3.2 Discussion and Findings of Objective One

Objective one (1) sought to find out the type of professional development programmes that teachers in public Technical Institutes in the Upper West Region participate in.

#### 3.2.1 Teachers Participation in Professional Development

Teacher respondents in the two technical institutes under study were required to indicate whether or not they have participated in professional development in the last two years. Out of the 60 respondents, more than half that is, 44 (73.3%) of the teachers indicated that they had participated in professional development programme in the past two years whilst 16 (26.7%) of the respondents noted they have not had any professional development programme within the same period. In effect, even though all 60 respondents had indicated that they were willing and ready to participate in PD programmes not all of them had the opportunity within the last two years to participate in same. However, it is instructive to note that a vast majority of the teachers were able to participate in one PD activity or the other within the past two years. The implication of this is that these Technical Institutes placed premium on teachers continuing professional development to keep them abreast to changing trends in the teaching profession particularly for this category of teachers who are engaged in the technical education sector. This is consistent with the view of Ingvarson, Meiers and Beavis (2005) who noted that professional development of teachers is now recognized as a vital component of policies aimed at enhancing the quality of teaching and learning in educational institutions and Technical Institutes for that matter. It is therefore not surprising that majority of teachers have considerable access to professional development programmes in public Technical Institutes in the past two years. Notwithstanding, teachers who did not participate in any PD in the past two years largely attributed it to limited opportunities for them whilst others blamed their non-participation in PD on they

not being aware of PD programmes and non-existent opportunities. Figure 2 shows teachers' participation or otherwise in PD in the past two years.

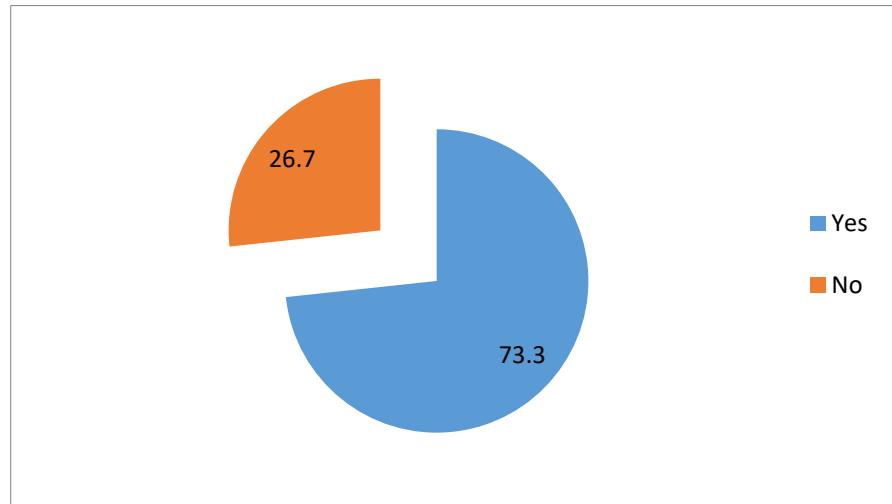


Figure 2: Teachers Participation in Professional Development in the Last Two years.  
Source: Field Survey, 2019

### 3.2.2 Types and Duration of Teacher Professional Development Programmes

This was meant to obtain from teachers the types/forms of professional development programmes they have participated in or otherwise.

#### 3.2.2.1 In-service Training/Workshops

Out of the 44 teachers who indicated that they have participated in professional development in the last two years, an overwhelming majority that is, 42 participated in workshops. The implication is that majority of the teacher respondents were engaged in workshops in the past two years making it the commonest and populous type of professional development that teachers in Technical Institutes participate in to deepen their professional skills and to update them on new development in their respective fields of teaching. However, Hawley and Valli (1999) chastised this form of TPD as being shallow and fragmented. This view has been corroborated by Ball and Cohen (1999) who described the in-service workshops as intellectually and superficially delinked from the core issues of curriculum and learning, fragmented, and not cumulative.

#### 3.2.2.2 Peer Networks

The study revealed that 8 out of the 44 teachers in the two public Technical Institutes in the Upper West Region who participated in professional development activities in the past two years participated in peer networks whilst a vast majority; that is 36 teachers did not participate in peer networks. The indication is that, there are scarcely professional development activities for public Technical Institutes in the Upper West Region to build knowledge and skills through interaction between and among teachers of similar characteristics or status.

#### 3.2.2.3 Educational Conferences/Seminars

The study showed that majority that is, 39 out of the 44 teachers who participated in professional development in the past two years had the opportunity to participate in educational conferences/seminars and 5 teachers responded in the negative. This indicates that out of the 42 teachers in the two public Technical Institutes who participated in workshops in the last two years, 39 of them also had the opportunity to participate in educational conferences/seminars. Like workshops, this type of professional development also saw a significant participation among the respondents thus making it the second most common PD programme for teachers in public Technical Institutes in the Upper West Region. Hence, in terms of participation, workshops recorded the highest percentage followed closely by educational conferences/seminars.

#### **3.2.2.4 Coaching/Mentoring**

Coaching/mentoring recorded little above a quarter that is, 14 out of the 44 respondents participated in this type of PD in the last two years. On the contrary, more than half that is, 30 of the teachers who participated in professional development in the last two years did not take part in this type of PD. This could be as a result of limited opportunities and by extension little emphasis being placed on coaching and mentoring by providers of continuing professional development activities for teachers in public Technical Institutes in the Upper West Region. Regardless of this revelation, this type of professional development presents a great deal of opportunities to less experienced teachers to learn from more experienced ones playing supervisory roles by observing classes led by the former. For instance, Joyce and Showers (1988) organized 30hours of training in relation to a new instructional strategy with two groups of teachers that is, the treatment group and the control group. While the treatment group involved in ongoing peer coaching, the control group did not. Consequently, they observed that, the coached teachers utilized the new instructional strategy more often, applied them to other concepts and made use of them more appropriately than their counterparts who were not coached. They added that students who were taught by coached teachers were more likely to comprehend the nature and operational definition of new concepts and to make use of them without guidance. This clearly illustrates the importance of coaching particularly for teachers in Technical Institutes where more experienced teachers can be given the latitude to coach and mentor their less experienced colleagues to make them effective in the teaching and learning processes within the school environment.

#### **3.2.2.5 Action Research**

It is interesting to note that as low as 7 out of the 44 teachers who participated in PD in the last two years, have participated in action research whereas a significant proportion of teachers that is, 37 did not participate in action research. This low participation in action research may be due to non-existent or limited opportunities for teachers in public Technical Institutes in the Upper West Region, hence, the reason majority of teachers in these Institutes rather have relatively more access to and participation in workshops and educational conferences/seminars in the past two years. This picture presents an opportunity for intervention since teachers in public Technical Institutes could grow professionally if they can generate and investigate questions relating to their own practice through the utilization of action research as professional development model.

#### **3.2.2.6 Collaborative Learning**

Out of the 44 teachers who participated in PD programmes in the past two years, almost half that is 21 of them participated in collaborative learning whilst a little over half that is, 23 teachers never participated in same programme over the period. This is the third highest PD activity that a cross section of teachers in public Technical Institutes had access to in the last two years. Indeed, collaboration is critical in the teaching profession particularly for teachers in Technical Institutes as it can facilitate the sharing of new knowledge, skills and methods of enhancing teaching and learning. It is worth noting that, collaborative learning tends to encourage and create in its place new dynamics where teachers feel empowered and eager to succeed on their own terms and not only to please providers of professional development programmes. For instance, Hargreaves (1995) points to the use of collaboration as one of the surest ways that can enable teachers to improve their teaching practice. This implies that collaboration that exists in school provides teachers with moral support as it gives teachers the platform to work with their colleagues in lieu of having to handle the frustration and failure alone.

#### **3.2.2.7 Focus of Teacher Professional Development**

Teachers in the Technical Institutes under study who participated in professional development activities in the past two years were asked to indicate the areas that were covered by these professional development programmes that they participated in. They cited pedagogical competencies in teaching subject area, knowledge of the curriculum, knowledge and understanding of subject, students' evaluation and assessment practices, information and communication technology skills for teaching, students' behaviour and classroom management as well as teaching students with special needs. The implication of this is that PD programmes most often than not focus primarily on pedagogical competencies in teaching subject area, knowledge of the curriculum as well as knowledge and understanding of subject area thus, PD programmes usually blend content knowledge with methods of instruction to get the needed results. Clearly, the focus of the PD programmes teachers participated in, affirms Fishman et al. (2003) two domains with the assertion that the first domain of content focus has to do with the knowledge in relation to general teaching work such as assessments, classrooms organization and management and teaching strategies whereas the second domains revolve around the subject content itself.

### 3.3 Discussion and Findings of Objective Two

Objective two (2) of the study sought to evaluate the effect of teacher professional development on teaching and learning in public Technical Institutes in the Upper West Region.

#### 3.3.1 Teacher Professional Development and Teaching and Learning

This aspect of the study touched on teacher professional development relative to teaching and learning in public Technical Institutes in the Upper West Region. It first sought to find out whether the professional development that teachers participated in, in the last two years was and still is relevant to their subject area. Interestingly, all the 44 teachers who participated in professional development in the past two years indicated in the affirmative that it was and is still relevant to their respective subject areas. Regarding how relevant it was, some of them cited improvement in teaching skills while others pointed to deepening and broadening of content knowledge, acquisition of new approach to pedagogy and learning, new evaluation and assessment methods as well as it being relevant for career progression. On the whole, it can be said that teachers in public Technical Institutes generally have a positive view about the PD programmes they have participated in particularly with respect to the improvement in their teaching skills and the content knowledge that teachers have acquired.

##### 3.3.1.1 The Influence of Teacher Professional Development on Teaching and Learning

With respect to the extent of influence of teachers' participation in PD programmes on students learning, the results from Table 4 showed that teachers' participation in professional development in the last two years has improved teaching and learning with the highest mean score of 4.44 with a minimum of 4 and a maximum of 5 followed by the assertion that PD has made significant difference in teaching and learning with a mean score of 4.16 and a minimum of 3 and a maximum of 5. This implies a general agreement among teachers that participation in professional development activities could influence teaching and learning in a positive fashion. However, teachers disagreed with the views that teaching and learning has deteriorated and that PD has made no difference in teaching and learning with mean scores of 1.28 and 1.58 respectively. By and large, it could be deduced that teachers in Technical Institutes generally have a positive notion about the appropriateness of the PD programmes they participated in and the influence on teaching and learning. This confirms the view of Yoon, Duncan, Lee, Scarlos and Shapely (2007) that teacher professional development has significant influence on students' learning outcomes in three main ways: first, teachers' knowledge and skills are improved; second, teachers develop effective knowledge and skills, which subsequently enhance their teaching, and third, effective teaching leads to better students' learning outcomes.

**Table 4: Influence of Teacher Professional Development on Teaching and Learning**  
Descriptive Statistics

Indicator/Statement	N	Minimum	Maximum	Mean	Std. Deviation
Teaching and learning has deteriorated	43	1	4	1.28	.591
PD has made no difference in teaching and learning	43	1	2	1.58	.499
PD has made significant difference in teaching and learning	43	3	5	4.16	.721
PD has improved teaching and learning	43	4	5	4.44	.502
PD has significantly improved teaching and learning	43	3	5	3.88	.697
Valid N (listwise)	43				

1=Strongly Disagree, 2=Disagree, 3=Neutral/Undecided, 4=Agree, 5=Strongly Agree

Source: Field Survey, 2019

It was needful to find out the relationship (with the aid of inferential statistics) between teachers' participation in teacher professional development and teaching and learning. The following hypothesis was tested. Table 4.5 show a summary of the data obtained.

**Table 5: Correlation between Teachers' Participation in Professional Development and Teaching and Learning**

		Correlations				
Variable		N	Mean	Std. Deviation	R	p-value
Participation in PD programmes and teaching and learning	Pearson Correlation	44	71.41	11.006	.745**	.000
	Sig. (2-tailed)					

..Correlation is significant at the 0.01 level (2-tailed)

\*p<.01; r= Correlation coefficient

It can be observed from Table 5 that there is a highly strong positive correlation ( $r=.745$ ) between teachers' participation in professional development programme and teaching and learning and the relatively smaller value of the standard deviation ( $SD=11.006$ ) is indicative of the fact that there were no dissenting views expressed by the teachers. Also, the mathematical function establishing the relationship between teachers' participation in professional development programmes and teaching and learning is given as:  $r(44) = .745$ ,  $p < .01$  given  $\alpha = .01$  and  $p\text{-value} = .000$ . Therefore, since  $p$ -value is less than  $\alpha$ , the result is statistically significant. Hence, the null hypothesis is rejected and a conclusion is reached on the alternative that there exists a significant correlation between teachers' participation in teacher professional development and teaching and learning. The general implication is that, if teachers take part in professional development programmes, they would be able to ensure improvement in teaching and learning outcomes.

### 3.3.4 Students Views about the Teaching of their Teachers and their own Learning

An overwhelming majority, that is 144 (92.9%) out of the 155 students who participated in the study indicated that their teachers are teaching well while 6 (3.9%) indicated in the negative; that their teachers are not teaching well. However, 5 (3.2%) indicated they do not know whether their teachers are teaching well or not. By and large, it can be deduced that students have a positive perception that teachers know their subject area well hence, their overwhelming assertion that their teachers are teaching well. It could also be deduced that the PD programmes that teachers attended in the last two years have had a positive influence on their teaching.

Students were also required to indicate whether they are learning well or otherwise. Out of the 155 students who took part in the study, a substantial number 143 (92.3%) of them indicated in the affirmative that they are learning well whilst 12 (7.7%) indicated otherwise. The implication of this is that learning can be said to be going on well in Technical Institutes possibly because a considerable number of the teachers have access to professional development activities in the past two years. It could also be deduced that teachers who attended these professional development training programmes in the past two years were and are still able to apply the knowledge, skills and methods acquired from such training in their daily teaching, hence, the reason majority of the students indicated that they (the students) are learning well.

## 3.4 Discussion and Findings of Objective Three

Objective three (3) of the study sought to assess the challenges confronting teachers relative to access to professional development programmes.

### 3.4.1 Challenges Associated with Teacher Professional Development

Even though the desire to take part in professional development may be high among teachers' in Technical Institutes in the Upper West Region and Ghana for that matter, certain factors may limit the interest of these teachers. Teacher respondents were required to rank 10 challenges/barriers that militate against their desire to participate in continuing professional development. With the aid of Kendall's coefficient of concordance, the challenges that inhibit teachers' access to and participation in continuing professional development were ranked by teacher respondents in the order of importance. As shown in Table 4.6, the attributes with the lowest mean rank are the most urgent or pressing challenges that affect teachers' access to and participation in professional development.

**Table 6: Challenges Associated with Teacher Professional Development**

Challenges/Barriers	Mean Rank	Rank
Lack of employer support	2.48	1 <sup>st</sup>
Lack of fund	3.75	2 <sup>nd</sup>
Lack of information about the availability of professional development activities	5.38	3 <sup>rd</sup>
Professional development is not easily accessible	5.63	4 <sup>th</sup>
My school does not allocate resources for professional development	5.68	5 <sup>th</sup>
Lack of support from school leadership	5.72	6 <sup>th</sup>
District/Municipal/Teacher association leadership does not make professional development a priority	6.13	7 <sup>th</sup>
No time to attend professional development programmes	6.43	8 <sup>th</sup>
There is no incentive for participating in professional development activities	6.83	9 <sup>th</sup>
There is not enough time built into teacher's schedules for professional development	6.98	10 <sup>th</sup>
<b>Test Statistics</b>		
Number of Observation	60	
Kendall's W	.212	
Chi-Square	114.573	
Df	9	
Asymp. Sig.	.000	

Source: Field Survey, 2019

Table 6 showed that the most pressing challenge relative to teachers' access to and participation in professional development programme is lack of employer support. Lack of funds, lack of information about the availability of professional development activities and professional development is not easily accessible ranked as the second, third and fourth most pressing or urgent challenges respectively affecting public technical institutes' teachers' access to and participation in professional development programmes. Notwithstanding, the least important challenges influencing teachers access to and participation in professional development programmes were that there is no incentive for participating in professional development activities as well as there is not enough time built into teacher's schedules for professional development.

Furthermore, the results from Table 6 indicated a Kendall's Coefficient of Concordance (W) of 0.212 in the ranking of challenges or barriers affecting access to and participation in professional development programmes among teachers in public technical institutes in the Upper West Region. The implication is that there is a significantly weak agreement among teachers in public Technical Institutes in the Upper West Region vis-à-vis the ranking of the challenges affecting their access to and participation in professional development activities. This further implies that regardless of the fact that teachers agree and consider these issues as challenges, the way they ranked them is not necessarily in the same pattern.

#### 4. CONCLUSION

The study examined the influence of teacher professional development on teaching and learning in public technical institutes in the Upper West Region. It emerged that teachers' in the public Technical Institutes in the Upper West Region are able to access teacher professional development programmes provided by the GES, GNAT and other NGOs. The PD programmes ranged from in-service training workshops, educational seminars/conferences, coaching or mentoring to

peer networks. Providing opportunity for in-service teachers in public Technical Institutes to actively participate in PD programmes is critical for shaping their classroom teaching practice as well as improving students learning and keeping them up-to-date with the ever-changing curriculum and methods of instruction. The study established that there is a significant positive relationship between teachers' participation in professional development and teaching and learning. Despite the influence that professional development training programmes have on teaching and learning in public Technical Institutes, there are challenges that make it impossible for some teachers to have easy access to PD activities. Topmost on the list of challenges is lack of employer support that has implications for teaching and learning.

The following recommendations have been advanced in relation to the findings in this study.

The GES should put in place policies that would encourage teachers in public Technical Institutes to participate in professional development programmes to update their knowledge and skills. One way of achieving this is to tie teachers' promotion to the number of PD programmes they participate in over a given period of time. Incentive packages can also be put in place to reward teachers who are committed to participating in professional development programmes. The GES should also encourage and partly fund Technical Institutes to conduct subject-based in-service training for teachers so as to make it relevant to the context and physical locations of these Institutes and not far removed from their classrooms. Therefore, the training programmes should be made relevant to technical education instead of the generalized manner in which PD programmes are organized for teachers across board. Moreover, professional development programmes for pure technical subject teachers should be centered more on action research and project-based instead of the popular and traditional workshops/in-service training and educational seminars/conferences. The study further recommends that a robust evaluation system be put in place so as to ensure uninterrupted feedbacks on the changes made on teaching and learning after teachers have participated in professional development programmes.

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