Contextual Factors Affecting Professional Development Implementation: A Study from College Physics Tutors in Ghana

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Abstract Professional development takes place within a context (school, district, regional and national) which has strong influence on the content, process and outcome. The colleges of education in Ghana have been involved in a continuous professional development for the past four years with support of Transforming Teacher Education and Learning (T-TEL). The purpose of this study was to determine the factors affecting the implementation of the professional development ideas by the physics tutors in the colleges. The study employed qualitative case study using four physics tutors who were purposively selected from four different colleges of education. Using typological analysis for interview data collected, it was identified that the factors that affect the implementation of the professional ideas can be put into two themes; positive and negative factors. It came out that the commitment of school leadership and support of the professional development team help in the implementation of the professional development ideas. Unwillingness of tutors to change, tutors' perception, lack of resources, lack of time and the long period of the professional development are factors thwarting the implementation process. It was recommended among others that assessment practices especially end of semester examination must be aligned with ideas tutors learn in the professional development programme. Also, there should be an explanation by the T-TEL team to tutors as to why the programme has extended so long and if possible a time that the professional development session will end.

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1. Introduction

Professional development takes place within a context (school, district, regional and national) which has strong influence on the content, process and outcome [1]. Reference [1] maintains that contextual factors determine whether professional development will have impact or not. Professional development that work well in one school may not work in another because of different contextual factors. Organizational context is a key variable when it comes to implementation of professional development as reference [2] states it as one of the key elements of a professional development system. School contextual factors like existing curriculum, principals and colleagues [3] can support or thwart the expected outcome of professional development [4,5,6]. This is supported by reference [1] who indicates that school policies that are at variance with professional development practices will thwart implementation effort. While there is the need for a pattern of behaviour at general level, researchers must attend to context specific

issues of professional development systems [2] as there is interaction between the context of professional development and its outcome [4]. Reference [6] therefore maintains that contextual issues cannot be ignored in studying the impact of professional development. However, they noted that most studies on professional development neglect the impact of school context on professional development.

1.1. The Context of the Study

A national effort is on-going to transform and upgrade teacher educational programmes in Ghana to produce high quality teachers for the country. The Government of Ghana has aimed at overcoming the poor learning outcomes and identifies teaching both as a hindrance and solution to that progress [7]. It has therefore instituted a four-year programme called Transforming Teacher Education and Learning (T-TEL) with the financial support of £17 million from the UK government which is aimed at transforming the pre-service teacher education in Ghana by improving the quality of teaching and learning in the country.

T-TEL seeks to initiate a reform programme to instigate effective professional learning for college tutors and student teachers with the view to developing professional teachers who are well-equipped with knowledge, skills, and the disposition to learn, and who will guide their pupils to achieve the learning outcomes of the national curriculum in basic education. The intended outcome of the programme is the development of beginning teachers who demonstrate interactive, student-focused instructional methods, who demonstrate gender-sensitive and student-centred instructional strategies, and who know and can apply the school curriculum and [[7], p.9]

In view of the reform in teacher education in Ghana, an ongoing professional development sessions have been instituted for the tutors of the colleges of education. The main idea behind the professional development is that an "interventions to improve tutors' teaching skills will lead to changes in the behaviour, performance, and teaching skills of student teachers" [[7], p.10]. This implies that as college tutors learn and adopt interactive and student-centred instructional strategies, the pre-service teachers will also teach using these students-centred approaches as they have experienced in their training. T-TEL provides support for the college based professional development of the tutors. This is a weekly professional development session which is organized in every semester to improve teachers teaching practice. The programme which was started in 2015 has been sustained till now. The professional development has focused on classroom practices -such as Creative Approaches, Questioning, Group Work, Use of Teaching and Learning Materials, Talk for Learning and many more - which are treated thematically for a semester. But with the recent change in the colleges from the Diploma Awarding to Degree Awarding institutions, another dimensions of the professional development session have been added which are aimed at helping tutors to understand the National Teachers Standards (NTS) and National Teacher Education Curriculum Framework (NTECF) and to also prepare them for the delivery of the 4-year Bachelor of Education (B. Ed) Curriculum. The programme is organized by specially trained college tutors who are known as professional development coordinators.

The purpose of this study was to determine the factors affecting the implementation of the professional development ideas by the physics tutors in the colleges of education.

2. Review of Related Literature on Contextual Factors Affecting Professional Development

Organisational factors have strong influence on the impact of professional development as they determine whether professional development will have impact or not. Organizational context is a key variable when it comes to professional development implementation since they can support or thwart the expected outcome of professional development [4]. The impact of professional development activities in bringing about change in the knowledge and practice of the teachers is influenced by the context,

teachers' previous knowledge and skills, the type of knowledge to be acquired and the network to which the teacher belong to [5].

According to reference [8], a lot of factors account for the ineffectiveness of professional development, key among them being the failure to take into consideration two crucial issues; the motivating factors for teachers to engage in professional development and the process by which change in teachers occur. Other factors that affect the implementation of professional development include existing curriculum, standards, principals and colleagues, [3,9].

The Teacher-Centered Systemic Reform model (TCSR) attach importance to context of teaching, characteristics of teacher, thinking of teacher, and relation among them as powerful factors affecting the implementation of reforms in the classroom practices [10]. Reference [10] argued that structural and cultural context in which the teacher finds him/herself affect his/her teaching practice. Reference [10] identified structural context to include the characteristics of the school setting such as arrangement of furniture, subject area, schedules, textbooks, test, teaching and learning materials and students. School contextual factors are important predictors of reforms in teaching. These school factors together with district and state policies are "powerful mediators" in influencing the impact of professional [9].

Professional development is affected by teacher's personal context such as science knowledge and "frames of interpreting policies', school schedules, resources and time for planning and reflection; "vision and leadership" and "collective commitment" [11]. As reference [12] put it that "teacher capacity interacts with system capacities [to affect professional development meant] for reform" (p.115). It is therefore important that both resources needed for implementation and likely barriers are considered for professional development in science education [11].

Reference [12] concluded their research by re-echoing the need to attend to factors that affect teachers' ability to change their teaching practice. Reference [11] advocated for the need to attend to local barriers from school environment that teachers perceive to be barriers of professional development implementation. This is because "even the highest quality professional development programs are limited in the likelihood of changing classroom practice when there are major disincentives for teachers to implement what they are learning [[12], p.118]. Several empirical studies have looked at how the various contextual elements affect professional development implementation [9,13,14].

A study was conducted after two national professional development programmes which were aimed at increasing teachers' knowledge about the principles of active learning and scientific teaching [13]. The researchers used survey and video analysis of classroom teaching in the data collection process. A total of 221 participants were involved in the survey, out of which 77 were selected for the video analysis. It was identified that the following were factors affecting teachers' implementation of professional development skills:

(1) time constraints (time to plan, develop, or adapt materials; grade and give feedback; train colleagues or

teaching assistants; and balance teaching with other activities), (2) students (attitudes toward teaching methods and course evaluation feedback), (3) implementation (classroom infrastructure and use of technology), (4) support (through the campus administration, teaching rewards, tenure, financial, staff), and (5) cooperation (of departmental and other faculty, teaching assistants, and staff.

A qualitative case study approach was use by reference [14] to study eight teachers from New York City who participated in a professional development on the use of expedition in teaching. The researchers used interview and observation in the data collection process. After the analysis of the data reference they found that even though participants agreed that the principles and practices espoused in the professional development were good, they thought it was not fit for their context, therefore some of the teachers rejected its implementation. Some of the teachers cited that students' skills and thinking level and school policy which were not appropriate for the implementation as their reasons for the rejection. The researchers identified the following as factors influencing how teachers implement professional development.

Engagement: The level of engagement and enthusiasm teachers have about professional development had positive influence on how they implemented the professional development practice in the classroom. The researchers advised that the initial enthusiasm and energy that come with professional development must be cleverly managed and sustained if teachers are to transfer it into their classrooms for students to benefit.

Content area belief and knowledge: The researchers found that teachers' belief about the subject matter had direct impact on how they implement the professional development practice.

Assessment: It was found that assessment practices and policies also affected the way teachers implemented professional development practices. However, the results of this study cannot be not generalized since it involved only eight teachers.

Reference [11] conducted a study using 454 teachers who undertook a professional development aimed at preparing them to implement materials from an international earth science programme. The purpose of the study was to examine the effects of different characteristics of professional development on teachers' knowledge and their ability to implement the programme. Data for the study were drawn from teachers' survey, professional development providers' surveys and from programme database. Data were analysed using hierarchical linear modelling (HLM) framework. It was found that resources like equipment and technology had significant impact on the implementation, teacher knowledge and changes in science teachers' practices.

In a study conducted by reference [15] to determine impact of the Kentucky Education Reform Act, the researchers found that even though teachers were willing to practice the various elements of standards-based instruction, many of them resorted to their traditional instructions. This was attributed to a lack of follow-up support after the professional development, as well as teachers fear about how students would fare on state tests.

Reference [9] employed hierarchical linear modelling to study the relationship between professional development and reform teaching practice. Using survey data from 3464 teachers and 666 principals in National Science Foundation Teacher Enhancement program called the Local Systemic Change (LSC) initiative, they identified the following as school factors that influenced teachers use of reform practices; supportiveness of the school principal, resource availability and socio-economic conditions. It was found that teachers who believed they had support from their principals reported significantly greater use of reform practices than those who did not believe they had the needed support from their school authorities. Schools' available resources, such as instructional materials, time for teachers to plan and prepare lessons, and availability of science relevant supplies, also had a statistically significant influence on teachers' practices. Socio-economic condition of the school (that is poverty) had great influence on teachers' practices as teachers from poorer schools seemed to use less of the reforms practices than their colleagues from schools whose students' population are well to do. The type of community in which the school is located also influenced teachers reform practices

3. Method

The study employed qualitative case study design using interview as the main instrument. The complicated and dynamic nature of profession development experiences and implementation makes a case study a best method for understanding it [14].

3.1. Sample

The participants for the interview were purposively selected. Purposive sampling was used since the researchers were interested in physics tutors who had been implementing the ideas from the professional development session and were therefore in a better position to give a right assessment of the factors affecting the implementation process. In all, four physics tutors from four different colleges were selected for the interview. These four tutors had teaching experience at the college level ranging from five to ten years with each having a master's degree.

3.2. Instrument

A semi structured interview guide attached as Appendix was prepared for the physics teachers to explore the factors affecting the implementation of the professional development ideas. The instrument was prepared by the researchers. The items on the guide were made to cover the main research question which guided the study. These items were the baseline questions that all participants were asked. There were some occasions where follow up questions which were not part of the baseline questions were asked depending on interviewee responses. Interviews can provide effective explanations, illustrations and predictions for models about the working of systems but are prone to biases on the part of the interviewer. It is

also burdensome to the researcher and the respondents and need complex analytical techniques [16].

3.3. Data Collection Procedure

Data collection was done in the second semester of the 2018/2019 academic year. The data collection stage of the research involved conduction of interviews with the four selected physics tutors after seeking their consent. The questions for the interview were send to the tutors early before the interview day. This was done to ensure that tutors got ample time to reflect on their responses before the beginning of the interview. The interviews were conducted face-to-face within the colleges of the participants on dates and times agreed upon. The average time for the interviews was about 30 minutes. The interviews were tape recorded.

3.4. Data Analysis

The tape recorded interview data were transcribed by the researchers. The data was analysed using 'typological analysis' [17]. Typological analysis begins by dividing the overall data set into categories based on predetermined typologies [17]. Initial Typologies were generated by the researcher based on literature. The transcribed data were read by the researchers and information related to the typologies were marked. Entries by typologies were read and recordings of the main ideas in the entries were done on a summary sheet. Data was read and coded according to patterns identified. Summaries were then produced for each participant. These summaries were then developed into themes.

4. Results

The research sought to identify the factors affect the implementation of the professional development ideas by physics tutors. From the analysis of the interview data, it was identified that the factors that affect the implementation of the professional ideas can be put into two themes; positive and negative factors.

On positive factors, commitment of school leadership and support of professional development team were the subthemes identified. Tutors believed that they are able to implement the ideas in the professional development because of the support from the professional development team. The team which comprise local tutors who are called Professional Development Coordinators and external team provide tutors with the needed support in a form of feedback, recommendations and suggestions. For example, one physics tutor stated:

> Although we have professional development team here, we also have T-TEL officials who come here to help us. Sometimes they go to the classrooms to see whether we are practising them (the professional development ideas) there. And they also send people to come and help us with the implementation of some these things that were are learning."

Another tutor also commenting on the support for implementation stated that:

> Last semester they (the professional development team) came to my class to observe what I was doing and made recommendations and inputs... They (T-TEL officials) have been coming a lot. They even come to my class very often than the local ones. As for the local ones, my HOD is always around, he sits in my classes. Even today I had two teachers sitting in my class to look at what was happening.

The following factors were identified as subthemes which negatively influence the implementation of the professional development ideas: unwillingness to change, teachers' perception, lack of resource, lack of time, long period of the program and assessment policies. A tutor had this to say "*you see change is very difficult. There are people (tutors) who have learnt these things at the professional development sessions but you go to their classrooms and they are still doing the old things because they are unwilling to change. This also affect the kind of impact we want to see*".

On lack of resource it was indicated by one tutor that "*... we are learning how to integrate ICT tools like projectors into our teaching but if you go the classroom and these materials are not there, it does not allow us to be able to implement very well the ideas learnt*".

One tutor lamented how teachers' perception about the professional development is negatively affecting the implementation by saying that "*you see some teachers also have the perception that these things we are learning are from other countries and they want to just damp it on us. Some peoples have collected money somewhere and we are now being used as guinea pigs to experiment other people ideas*".

Another factor that came out which tutors believed is having a negative effect on the implementation of the professional development is the long period of the professional development programme. A tutor indicated that:

> It (the long period of the professional development session) is really having negative impact on us because it is a kind of deception. We were made aware that we were just going to do it (the professional development program) for two years then after the whole exercise we get a certificate and everything ends. But it keeps on coming and we don't know when it will end. New modules are being developed every day and teachers are asked to go for them.

Tutors identified lack of time as also affecting the implementation of the program. A tutor said, "*this semester for example we have a lot activities running on campus, sporting activities are there. As we speak now, the students have lost about six hours today because they have to go the field for sporting activities. So imagine six hours every day within the week gone and there are other programmes, like SRC week. So the lack of time is really affecting the implementation.*"

Policies like assessment were also identified to impact negatively on the implementation of the professional development. One tutor asserted this point by saying:

> There is also this issue about policy like assessment. If we teach using T-TEL approaches but the end of the semester is set by a different body without taking these (the professional development ideas) into consideration, do you think it will not affect the implementation? It

will. Honestly speaking if we are to strictly go by what we learn at the professional developments we can't finish the course outline. So sometimes we have to bend the polices a little in order to go on so that our students can pass the end of semester exams.

5. Discussion

From the interview data, it came out the contextual factors affect the professional development implementation both positively and negatively. This is supported by reference [6] who state that the context within which professional development takes places affects its content, process and impact. It was identified that commitment of the school leadership and support of the professional development team were factors that affected the implementation positively. "Vision and leadership" and "collective commitment" have been noted by reference [11] to affect professional development.

Tutors reported that impact of the professional development on the teaching physics was due the commitment of the leadership of the school who have ensured that the professional development is part of the weekly activities of the colleges. Support was identified to be a major factor that positively affected the implementation of the professional development ideas. According to reference [1], providing follow-up and support in implementing new skills are parts of professional development that are associated with increased use of new instructional practices. Therefore, the support which were provided in a form of feedback, suggestions and recommendations by the professional development team and others teaching staff enable the physics tutors to be able to practice the ideas taught in professional development. Providing opportunities for teachers to get support and mentorship during implementation of professional development ideas makes the programme effective [18]. Reference [13] carried out a research in which it was identified that support of school administration and cooperation of staff were some of the factors that influenced teachers' implementation of the professional development ideas. Reference [9] also identified supportiveness of the school principal as a factor that affected teachers' capacity to apply reform practices in their classroom. However, reference [15] attributed teachers' inability to practice ideas learnt in professional development programme to a lack of follow-up support after the programme.

The impact of the professional development was affected by tutors' personal context and institutional factors. The following tutors' personal context and institutional factors were identified to have negatively influence the implementation of the professional development ideas: unwillingness to change, teachers' perception, lack of resource, lack of time, long period of the program.

It was found out that unwillingness of some of the tutors to change was a factor that negatively affect the implementation. But trying to change the teaching practices of teachers is a very difficult task to achieve because the process requires concerted efforts [19]. Reference [20] claimed that for change in teaching

practice to occur, there must be a balance between teachers "pedagogical discontentment" (i.e. the degree to which teachers are dissatisfied with their teaching practice and want to change) and their self-efficacy. This implies that some of the tutors are satisfied with their old teaching practice and do not have the belief that it can be change. They are therefore holding on to their old teaching practices despite being introduced to reform practices.

One factor that have consistently been mentioned to have strong impact on the implementation of professional development ideas is resources. Some of reason why professional development is considered ineffective is that some professional development presents ideas that cannot be practicalize because of lack of resources [1]. It was found lack of resources such as physics laboratory and technological tools like projectors were some of the factors impacting negatively on the implementation process of the professional development. This result supports a research conducted by reference [11] who found that resources like tools and technology had significant impact on the implementation, teacher knowledge and changes in science teachers' practices after the teachers had undertook a professional development. Reference [9] also found that schools' available resources, such teaching aids, time to design and prepare lesson, and availability of science relevant supplies, also had a statistically significant influence on teachers' practices after engaging in professional development.

The lack of impact of professional development has been attributed to the shortness in intensity and length of these programmes [9] as researchers [9,12,16] reported that professional development which has long period has positive impact. However, the result from the interviews showed that the long period of the professional development is negatively affecting the implementation. This is supported by reference [21] who argues that the longer the period of professional development the more likely that other factors could influence the outcome. Reference [21] further argues that long period of professional development could cause teachers to lose interest in the programme (and its implementation).

6. Conclusion and Recommendations

It came out that the commitment of school leadership and support of the professional development team help in the implementation of the professional development ideas. Unwillingness of tutors to change, tutors' perception, lack of resources, lack of time and the long period of the professional development are factors thwarting the implementation process. This implies that the tutors are able to implement the ideas in the professional development given the needed support but faces challenges which need to be addressed. From the findings of the study, the following recommendations are made:

1. An effort should be made by the colleges authorities to provide basics resources like projectors for teaching in the colleges.
2. There should be an explanation by the T-TEL team to tutors as to why the programme has extended so long and if possible a time that the professional developments will end.

3. Assessment practices especially end of semester examination must be aligned with ideas tutors learn in the professional development programme.

4. T-TEL team need to disabuse the minds of some of the tutors that the programme is being carried out because of some peoples' parochial interest and will not help the nation.

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APPENDIX: INTERVIEW GUIDE

1. Could you tell me little background about yourself with respect to your teaching qualifications and experience?

2. You have been involved in continuous professional development for the past four years, could share your experience with me regarding the implementation?

3. What do you think as some the factors that affect the effective implementation of the ideas espoused in the professional development?

4. How do these factors impact on the implementation of the professional development ideas?

5. What kind of support do you get in implementing the ideas taught in professional development session?