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PROFESSIONAL DEVELOPMENT AND TEACHERS' EFFECTIVENESS IN SECONDARY SCHOOLS

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Abstract

The objectives of the study were twofold: to find out how collaboration in curriculum development impacts teachers' effectiveness and to investigate how reflective practice impacts teachers' effectiveness in secondary schools. This study used the explanatory sequential mixed method research design. Two research questions and hypotheses were formulated from the objectives. The accessible sample included 120 teachers from three schools. Instruments to collect data included a questionnaire and an interview guide. The data were subjected to descriptive and inferential analyses, frequency distribution and percentages using Statistical Package for Social Sciences (SPSS) version 22. The Chi-square (x^2) test of independence and Friedman's Test were used to test the two hypotheses of the study. The major findings were that there was a significant impact between collaboration in curriculum development and teachers' effectiveness in secondary schools. In addition, there was a significant impact of reflective practice on teachers' effectiveness in secondary schools. Some recommendations were made for example, regular and support professional development programmes for both new and in-service teachers. The school board should create opportunities and avenues for professional development activities for teachers to participate, as well as gain insights, and get alternative opinions and views.

Keywords: Professional development, teacher effectiveness, collaborative curriculum development, reflective practice

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Introduction

Teacher Professional Development (TPD), research has long argued, is quintessential in changing classroom practice, learning achievement and improvement in schools (Borko, 2004). TPD is part of an educational system that seeks to prepare, upgrade and educate teachers to achieve the required or needed competencies in order to improve teachers' quality in a chosen area (Afe, 1995). TPD includes activities that teachers engage in after they finalise their teacher training (Shawer, 2010). The term professional development according to Collins & O'Brien (2003, p.284):

Encompasses the intentional, on-going, and systematic processes and activities design to enhance the professional knowledge, skills, and attitudes of educators so that they might in turn improve the learning of students.

Jackson and Davis (2000. p. 110), described professional development as a "results-driven, standards-based package that is embedded in the teachers "daily work" and grows out of understanding the principles of adult learning". Accordingly, TPD is a process that helps teachers come across the challenges of their work and achieve their own and their learning-centered goals (Yazdi et al., 2017). It offers information to help teachers improve, whether they are starting out as teachers, or whether they are already highly experienced teachers (Yazdi et al., 2017). TPD comprises of a lasting professional development process which is very critical in the overall requirement for competent, professional, and qualified teachers in a dynamic society (Ukpo, 1996). Timperley (2011) states that TPD many times take peer teaching, collaborative planning, and mentoring between colleagues while Little(2012) is of the opinion that teachers may also learn through informal interactions that occur during peer teaching, collaborative planning, and mentoring between colleagues.

Literature indicates many descriptors for TPD but Day's (1999, p.4) is seminal:

… all natural learning experiences and those conscious and planned activities which are intended to be of direct or indirect benefit to the individual, group or school and which contribute through these to the quality of education in the classroom. It is the process by which, alone and with others, teachers …acquire and develop critically the knowledge, skills and emotional intelligence essential to good professional thinking, planning and practice.

This definition is broad and highlights several issues regarding TPD including knowledge, behaviours, thinking, and emotions as well as places of occurrence of experience which may be naturally at the work place, through planned or even informal activity. The benefits of TPD have been noted at various levels including individual, group, school and the quality of education in the classroom (Borg, p. 2).

TPD is complex and multifaceted phenomenon with no one size fits all. Research indicates there are many characteristics (Borg (2015), Orr et al., (2013), Timperley et al., (2008) and Broad and Evans (2006) as listed below:

- It is seen by teachers to be relevant to their needs and those of their students
- Teachers are centrally involved in decisions about the content and process of CPD
- Collaboration and the sharing of expertise among teachers is fostered
- CPD is a collective enterprise supported by schools and educational systems more broadly
- Expert internal and/or external support for teachers is available
- CPD is situated in schools and classrooms

- CPD is recognised as an integral part of teachers' work
- Inquiry and reflection are valued as central professional learning processes
- Teachers are engaged in the examination and review of their beliefs
- Student learning provides the motivation for professional learning
- CPD is seen as an ongoing process rather than a periodic event
- There is strategic leadership within schools. (Borg, 2015, p.3).

It is seen that, while not deleting traditional practice of TPD, current shift is empowering implementers who are the teachers more insolvent and participation from erstwhile course, seminars, lectures and conferences.

Underlying characteristics of TPD should be the question of approaches to match the objectives of the activity. Borg (2015, p. 4) has outlined some:
• Various forms of self-study such as teacher research, action research, and exploratory practice, through which teachers systematically investigate teaching and learning in their classrooms
• Lesson study, which involves repeated cycles of collaborative lesson planning, teaching and reflection
• Reading groups, where teachers meet regularly to discuss something they have read and which is relevant to their teaching reflection groups, where teachers meet to share experiences of teaching and to examine evidence from their lessons (such as video recordings of teaching or examples of student work)
• Peer observation, where teachers work in pairs, visit one another's lessons and afterwards discuss these (in a constructive manner and without formal evaluation)
• Professional learning communities, through which groups of teachers meet regularly to examine critical issues in their schools and classrooms
• Curriculum study groups, where teachers collaborate to examine in detail and further their own understandings of a particular area of the curriculum they teach
• Collaborative materials writing, where teachers work together to design units of material for particular groups of learners
• Mentoring schemes, through which appropriately-skilled more experienced teachers support the development of those with less experience and expertise
• Personal learning networks, where professional development is pursued through interactions via social media.

The implication of TPD practice may be formal as well as informal; it may be individual as well as group. There is no template for effective TPD and many variables could be at work for successful practice. Alexandrou et al., (2005) stress that teachers who engage in the high-quality professional development programmes eventually improve in knowledge and on pedagogical activities, which ultimately affect students' achievement and success (Hennessey et al., 2021; D'Angelo et al., 2022; Liu, 2012; Agusta & Kristiawan, 2021). Therefore, this article focuses on teachers' professional development and teachers' effectiveness in secondary schools.

Literature Review

Conceptual Review

Four concepts are briefly reviewed, including professional development, collaborative curriculum development, reflective practice and teachers' effectiveness.

Professional Development

From the point of Agusta and Kristiawan (2021), professional development is: "*Any attempt to increase teachers' professional knowledge both during and after the initial preparatory stages in adaptating of new skill and updating the previous beliefs to face the development of the world*." As for Dean (1991) TPD involves activities aimed at increasing aspects of teacher professionalism. As Guskey (2002, p. 16) argues professional development could be seen as "those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students." Roth, et al, (2011) and Watts and Hammond, 2009) conceive TPD as an approach of training or mentoring in specialised teaching techniques for different subjects as well as identifying and evaluating teaching techniques that suit the varying needs and demands of the students. Since teachers are pivotal to (Dilworth and Imig, 1995). The implication is that TPD is broader than mere teaching methodology.

TPD could also be described by qualified teacher and teacher trainee. For Tang et al. (2022) professional development involves learning to obtain or maintain professional credentials such as academic degrees and skills required to improve one's assigned responsibilities. That apart, some strategies for effective TPD as pointed by Powell et al, (2010) consist of coaching, consultation, and communities of practice, lesson study, mentoring, reflective supervision and technical assistance.

TPD provides a platform where teachers may demonstrate their experience and competence through the use of knowledge-in-action in free collaboration with colleagues. This may be because within the framework of TPD teachers are expected to change, to improve in the professional field, as well as change, improve, and complement their pedagogical, competences, behaviour, and change as a person. Teachers process a meaningful and life-long learning with professional development. It is a process that involves the teacher's personal, professional and social dimension and represents the teacher's progress towards critical independent, responsible decision making and behaviour (Kalin (2006), Valencic Zuljan (2001), Elliot (1991).

Collaboration in curriculum development and Teachers' Effectiveness

Collaboration in curriculum development is defined as a group of at least two teachers, from the same or related subjects, working together on a regular basis, with the goal to (re)design and enact (a part of) their common curriculum (Handelzalts, 2009). This team of teachers mostly focus on improving their teaching process through professional development of the teachers as they work with other teachers and share practices, resources, and strategies, and interacting with colleagues to get other perspectives on teaching (Walter et al., 2010). Hord (2004, p. 24) encourages team work by suggesting that teacher collaboration in the form of, for example "professional learning communities" (study groups). This is because teachers often work in isolated classes without having (or taking) the opportunity to reflect together on their teaching practices, introduce new perspectives, to discuss new ideas, to give each other feedback on improvement efforts, and to jointly develop new initiatives (Agusta & Kristiawan, 2021).

Teachers' participation in development processes and in implementing the curricular products in practice can also be beneficial for teacher learning and professional development. When designing their future practice, teachers build on their current practice and adapt it in relation to their needs and wishes. Effects of teacher's collaborative design on curriculum change have been reported by several scholars (Coburn et al., 2012; Penuel et al., 2009; Penuel et al.,

2012). These effects pertain to curriculum design approaches, curriculum product, and sustainable and transferable teaching practices.

In addition, the active involvement of teachers in collaborative curriculum development can improve the harmonization of the formal and the enacted curriculum, and promote teachers' curricular collaboration (Penuelet al., 2009). Such active involvement can only be effective when teachers themselves feel the need to change their practice, are convicted that their effort will bring about that change, and that they are indeed able to promote and install that change (Becuwe et al., 2015; Morris & Hiebert, 2011). This, however, does not only make teachers enthusiastic about their jobs but equally satisfied as they are not left out on issues concerning them.

Reflective Practice and Teachers' Effectiveness

Going by Loughran (2002, p. 12) reflective practice is a process where teachers think over their classroom pedagogy. That is, analysing how something was taught and how the practice changed for better learning outcomes. Some points of consideration in the reflection process might be what is currently being done, why it is being done and how well students are learning. By collecting information about what goes on in their classroom, and by analysing and evaluating this information, they identify and explore their own practices and underlying beliefs, which might lead to changes in their teaching. Reflective teaching is a beneficial process in teacher development, both for pre-service and in-service teachers.

Jasper (2003) associates reflective teaching practice with lifelong learning resulting in the development of autonomous, qualified and self- directed professionals. Engaging in reflective practice is associated with the improvement of the quality of care, stimulating personal and professional growth and closing the gap between theory and practice. Lieberman & Miller (2000) argue that the practice of reflective teaching, reflective inquiry, and reflection-on practice, results in the gaining of personal and professional knowledge that is so important to being an effective teacher and in shaping learning, while Han (1995) states that, the process element of reflection emphasises how teachers make decisions and reflective inquiry may set the stage for learning how to be a good teacher.

Reflective teaching has been widely acknowledged by many researchers as an approach that could promote teachers' professional development and improves the quality of teaching and learning. Jacobs et al. (2011) content that reflective teaching offers teachers the opportunity to renew their practice and to understand the effects of their teaching. They further stated that reflective teaching provides information on how teachers connect with learners meaningfully thus promoting sound teaching and learning practice.

Akbari (2007) suggests that reflective teaching makes teachers question clichés that they have learn during their formative years and may also enable them to develop more informed practice. Teachers will integrate the knowledge they have gained during pre-service training with their practical experiences and make informed choices based on the situations they find themselves in. Teachers, therefore, need to question their practices and be opened to different possibilities in their teaching experiences.

Yang (2009) indicates that critical reflection does not come naturally to most teachers; therefore, appropriate opportunities for reflection should be made available to teachers. This suggests that reflectivity is a skill. Being a teacher, one needs to reflect on the experiences or activities one is doing for one's growth. Teachers can deal with the needs and different issues of the learners and demand of time if they reflect on their daily teaching-learning activities for their professional growth.

Teachers' Effectiveness

Effective teachers are those who consistently achieve the goals which they set for themselves (self-selected) or which they have set for them by others (imposed). Effective teachers, however, must possess the skills (professionalism, thinking, expectations, and leadership) needed to attain the goals, and must be able to use that knowledge and skills appropriately if these goals are to be achieved. Teacher competence and teacher performance with the accomplishment of teacher goals is teacher effectiveness (Parihar, 2011).

Geo (2007) as cited in Burroughs et al (2019) defines teacher effectiveness in terms of growth in student learning, typically measured by student's standardized results. Teacher effectiveness however refers to the possession of knowledge and skills (teacher competence), and the use of knowledge and skills in the classroom (teacher performance).

It is reasonable to assume that those who are referred to as effective teachers are more often than not effective in achieving specified learning goals. In other words, there is some degree of consistency in these teachers' effectiveness vis-à-vis classroom conditions, time and goals. However, this effectiveness does not stem from rigid adherence to a standard set of behaviours, activities, methods, or strategies in all situations. Rather, teachers who are consistently effective are those who are able to adapt their knowledge and skills to the demands inherent in various situations so as to best achieve their goals. Doing whatever is necessary in order to achieve these goals, rather than doing certain things in certain ways or using certain methods or techniques, is a hallmark of an effective teacher.

Effective teachers according to Goe et al. (2008, pp 67-68), consist of the five characteristics. The first is that effective teachers have high expectations from students and help students learn, as measured by the value added or the test-based growth measures or by alternative measures. Next, effective teachers render their wholehearted contribution to positive academic, attitudinal and social effects for students such as regular attendance, promotion to the next class or level, on-time graduation, self-efficiency and cooperative behaviour.

The third characteristic mentioned by Goe et al. (2008, pp 67-68) is that effective teachers make diverse use of resources and materials to make learning fruitful; to plan and structure engaging learning opportunities, scrutinize the progress of the students, modifying instruction as required and evaluate learning making use of multiple sources of evidence. Fourthly, effective teachers focus upon not just the learning and development of the students but also on enhancing the classroom climate and schools that value multiplicity and civic-mindedness. There should be no discrimination on the bases of class, caste, gender, religion or ethnicity. Finally, effective teachers possess appropriate communication skills, they collaborate with other teachers, administrators, parents, and education professionals to ensure student success, particularly the teachers have to depict their effectiveness if they are dealing with students with special needs and those at high risk of failure.

Theoretical Review

Vygotsky's Social Constructivist Theory of Learning (1978) ties with the current research. The theory argues that knowledge is co-constructed phenomenon that individuals learn from one another. This implies that a child develops by interacting with more knowledgeable others, which enables learners move from a lower level of reasoning to a higher level through such things as clues, modelling, explanations, discussions, and team work. Crucial to it is the Zone of Proximal Development (ZPD) which refers to a "range" of tasks that are relatively difficult for an individual to master alone, but can be mastered with the assistance or

guidance of adults or more skilled peers. Another aspect of this theory is scaffolding, which entails giving the learner the right amount of assistance at the right time.

In relation to teacher professional development, this theory enables teachers observing more experienced colleagues; reconstructing this, and knowing that it represents a safe and stable practice. The constructivists believe that individuals must associate with more knowledgeable others as well as an enabling environment for learning to take place. This happens in the form of collaborative dialogue, modelling, coaching and mentoring (Zone of proximal development and scaffolding).

Empirical Review

The empirical review was carried out the research objectives which included collaborative curriculum development and reflective practice.

Collaboration in Curriculum Development and Teachers' Effectiveness

Dina and Louisa (2015) carried a study to investigate how teacher collaboration in curriculum design impacted participants' professional learning during a five-day summer training. Interview data was collected from 41 secondary school biology teacher participants in two summer institutes. Results indicated that teachers experienced shifts in their science knowledge, beliefs about science, beliefs about science teaching and learning, and in their science teaching practice. The study concluded that the curriculum design process, which can occur in a relatively short time, can foster meaningful, task-oriented collaboration. The collaboration process provides the vehicle for active learning, where teachers can reflect on their beliefs while applying new knowledge to the classroom. The study recommended that other researchers could investigate short-term change versus long-term growth by comparing the professional learning of teachers who have participated in one or several curriculum design institutes.

Reflective Practice and Teachers' Effectiveness

Mathew et al. (2017) carried out a study on reflective practice as a means to teacher development. The research objectives were to find out the effectiveness of reflective practices in the development of student- teachers, and to examine how teacher educators created opportunities for student-teachers to develop their reflective practices during their practice teaching sessions. The participants were 13 students enrolled for the two year B.Ed programme at St Joseph's College of Education, Mysuru, Karnataka, India. They had opted for mathematic methods as option subject. Mixed method research approach was used for data collection through a structured questionnaire and a semi-structured interview. The study found that reflective practice is a tool for student-teachers to explore themselves and thereby leading to their professional development. The conclusion was that reflective practice is a cyclical process, because once it starts to implement changes, then the reflective and evaluative cycle begins again. Recommendations were made that as teacher, one needs to reflect on the experiences or activities one is doing for one's growth. Also, to deal and survive in the professional field, the student-teachers need to grow and bring changes in their behaviour and style, as reflection is a flash back teachers need for mediation for their growth.

It is, therefore, important to get an insight view of professional development and teachers' effectiveness in secondary schools since contextual variables may influence it.

Objectives

1. To find out how collaboration in curriculum development impacts teachers' effectiveness in secondary schools.
2. To investigate how reflective practice impacts teachers' effectiveness in secondary schools.

1.2 Hypotheses

Ho1: There is no significant impact between collaboration in curriculum development and teachers' effectiveness in secondary schools.

Ha1: There is a significant impact between collaboration in curriculum development and teachers' effectiveness secondary schools.

Ho2: There is no significant impact between reflective practice and teachers' effectiveness in secondary schools.

Ha2: There is a significant impact between reflective practice and teachers' effectiveness in secondary schools.

Methods

This study employed a mixed methods approach, specifically the explanatory sequential research design to investigate the impact of professional development on teachers' effectiveness in secondary schools.

Phase 1: Quantitative

In the first phase, a survey was conducted among secondary school teachers to collect data on their professional development activities and their perceived effectiveness. The simple random sampling procedure was used to select three (3) schools and 60 teachers from the study area of Fako Division, South West Region of Cameroon. A researcher-developed questionnaire was used to collect data on demographic characteristics, teachers' involvement in professional development activities, and their perceived level of effectiveness.

Phase 2: Qualitative

The second phase involved in-depth interviews using an interview guide with teachers and Vice principals selected from the 60 teachers surveyed.

Results Decision level: **Mean,** $\bar{x} = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$

Respondents accepted or agreed with the opinion expressed in the item if the mean score is 2.5 and above. Otherwise, they rejected or disagreed.

The table below shows the analyses for the effect of collaboration in curriculum development on teachers' effectiveness in secondary schools in Fako Division.

Table 1

Collaboration in curriculum development and teachers' effectiveness

SN	Collaboration in curriculum Development	$\bar{X}$	S	Decision
1	Teachers are central in deciding on substantial elements of educational reform.	2.98	.84	A
2	Collaboratively designing a curriculum increase teacher expertise across subject and pedagogical knowledge.	3.49	.57	A
3	Collaborating with colleagues is a fruitful means for unanimously taking concrete decisions regarding the school curriculum.	3.49	.57	A
4	The main goal of collaboratively developing a curriculum is to improve teaching processes through the professional development of teachers.	3.33	.60	A
5	Redesigning a school curriculum creates more connections between subjects in order to create more coherence in the curriculum.	3.31	.62	A
6	Curriculum development entails developing general design decisions.	3.26	.63	A
7	Teachers' main substantive consideration in the development of their curricula is the content to teach.	3.09	.65	A
	MRS	**3.28**	**.64**	**A**

MRS = Mean response score $\bar{x}$ = Mean score S = Standard deviation

The mean response score for the items measuring collaboration in curriculum development was 3.28 and the standard deviation was 0.64. This indicates that the respondents accepted that collaboration in curriculum development positively impact teachers' effectiveness in secondary schools in Fako Division.

Looking at the analyses from the table above, the respondents agreed that teachers are central in deciding on substantial elements of educational reform, and collaboratively designing a curriculum increase teacher expertise across subject and pedagogical knowledge; that collaborating with colleagues is a fruitful means for unanimously taking concrete decisions regarding the school curriculum; that the main goal of collaboratively developing a curriculum is to improve teaching processes through the professional development of teachers; that redesigning a school curriculum creates more connections between subjects in order to create more coherence in the curriculum, curriculum development entails developing general design decisions, and that teachers' main substantive consideration in the development of their curricula is the content to teach. Conclusively, collaborative curriculum development affects teachers' effectiveness in secondary schools in Fako Division.

Interview of Vice Principals on collaboration in curriculum development

Table 2

Interview of Vice Principals on collaborative curriculum development

Theme	Response	Explanation
1. Does the school consider curriculum development to be a task for specific heads of service or for every teacher?	Yes	"Curriculum development is for every teacher. The school cannot employ some teachers and leave out others. As such, they get to share ideas, deliberate on alternative opinions, learn from colleagues, and being able to properly implement what they took part in developing."
2. If for every teacher, how can you rate their participation?		**"**We rate their participation based on the reports they write at the end of seminars they attend. When teachers attend seminars sponsored by the school, they write and submit reports to the HOD to ensure effective participation. The HOD in turn submits to the administrative board of the school (principal, vice principals, HODs) who go to class to follow up and evaluate teachers on the some of the aspects taught or introduced in the seminar. Also, at some point teachers are compelled to participate in curriculum development because not all teachers see the need or importance, but those who have been part either once or twice realizes the importance**"**
3. How beneficial is it for teachers?		**"**Working as an individual cannot be as effective as in a group, as such, no teacher has monopoly of knowledge. Some people have a better mastery of some aspects, ideas that when shared with others, it helps upgrade by serving as a form of evaluation and learning for teachers or colleagues.**"**

The vice-principals indicate that curriculum development is a task for every teacher in the school and not just for specific heads of department. They further explain that the participation of teachers in curriculum development is monitored and followed up through reports submitted after seminars and classroom evaluation by the administrative board. The vice-principals also highlight the benefits of collaborative curriculum development,

indicating that it allows teachers to share ideas, learn from each other, and improve their teaching through the process of evaluation and feedback.

Interview of vice principals also revealed that collaborative curriculum development has an impact on teachers' effectiveness in secondary schools in Fako Division in the South West Region of Cameroon.

Ho_1: There is no significant impact between collaborative curriculum development and teachers' effectiveness in secondary schools in Fako Division.

Table 3

Summary of Computerised analysis for $\chi 2$ collaboration in curriculum development and teachers' effectiveness

N	120
Chi-Square	58.421
Df	6
Asymp. Sig.	.000

a. Friedman Test

The results from the Friedman test indicate a chi-square value of 58.421 with 6 degrees of freedom. The p-value associated with this test statistic is 0.000, which is less than the chosen significance level of 0.05. Therefore, the null hypothesis is rejected, and we conclude that there is a significant impact between collaborative curriculum development and teachers' effectiveness in secondary schools in Fako Division.

The table below shows the analyses for the effect of reflective practice on teachers' effectiveness in secondary schools in Fako Division.

Table 4

Reflective practice and teachers' effectiveness

SN	Reflective Practice	$\bar{X}$	S	Decision
1	Alternative teaching methods are provided following students' different learning styles.	3.28	.79	A
2	Teaching practices are adjusted to current situations as well as develop a long-term plan.	3.32	.70	A
3	Provision is made for differentiated instructions to address students' individual needs.	3.03	.77	A
4	Teaching methods and strategies are adjusted based on student's relative performance, and seek ways to connect new concepts to students' prior knowledge.	3.35	.69	A
5	The Impact of task structures, such as cooperative learning groups, partner, peer or other groupings, on students' learning is analyzed.	3.16	.64	A

6	Teachers are commitment to continuous learning and improved teaching practices.	3.38	.75	A
7	Alternative ways of representing ideas and concepts to students are identified by recognizing the complexities of classroom dynamics.	3.23	.76	A
	MRS	3.25	.73	A

MRS = Mean response score $\bar{x}$ **= Mean score S = Standard deviation**

The results show that the overall mean response score for reflective practice is 3.5, indicating that the teachers agree that reflective practice has a positive effect on their effectiveness. The standard deviation of 0.73 suggests a relatively low dispersion in the responses, indicating a high level of consensus among the teachers on the positive impact of reflective practice on their effectiveness.

In terms of specific aspects of reflective practice, the teachers agree that they provide alternative teaching methods following students' different learning styles (mean = 3.28), adjust teaching practices to current situations and develop long-term plans (M = 3.28, 3.32 respectively), provide differentiated instructions to address students' individual needs (M = 3.03), adjust teaching methods and strategies based on students' performance and connect new concepts to prior knowledge (M = 3.28, 3.32, 3.03, 3.35, respectively).

The analyses from the table above, the respondents agreed that alternative teaching methods are provided following students' different learning styles and teaching practices are adjusted to current situations as well as develop a long-term plan; that provision is made for differentiated instructions to address students' individual needs; that teaching methods and strategies are adjusted based on student's relative performance, and seek ways to connect new concepts to students' prior knowledge; that the impact of task structures, such as cooperative learning groups, partner, peer or other groupings, on students' learning is analyzed; teachers are commitment to continuous learning and improved teaching practices; and alternative ways of representing ideas and concepts to students are identified by recognizing the complexities of classroom dynamics.

Table 5

Interview of Vice Principals on reflective practice

Theme	Response	Explanation
1. How beneficial is it for teachers to alternate their teaching methods?		"Learning is evolving that is from the content base (teacher centered) to the competency-based approach (learner centered). Also, not every learner in class for example is a fast learner, there are those who grasp what is taught just once and vice versa, there are those who learn faster when listening, watching or listening and watching. So it is very important for teachers to fluctuate or employ different teaching methods with regards to different classroom activities which in turn benefit every learner"
2. Are teachers usually oriented on the importance of reflective practice either before or after teaching?	Yes	"Definitely yes! When new teachers are being recruited into the school, there is what we call modeling. The HOD models these new recruits on how to function in that particular environment because the school is interested in what they teach or has to offer in the form of staff meetings held at the beginning of the school year and experts invited to oriented teachers on the pedagogic skills expected of every teacher. As the school year evolves, teachers are observed to see if these expectations are met."
3. In your opinion, is reflective teaching a beneficial process in teacher development, both for pre-service and in-service teachers?		"It is a beneficial process as it does not only empower the teachers but the students too. This is because when you reflect on your methods of teaching, you realize your short comings and improve on them. This gives room for effective participation by the learners."

The analyses from the interviews with Vice Principals show that they acknowledge the benefits of reflective practice among teachers. It was revealed that reflective practice helps teachers to alternate their teaching methods to cater for the different learning styles of students. The Interviewees also indicated that teachers are oriented on the importance of reflective practice at the beginning of the school year and are observed throughout the year to ensure they put it into practice.

Lastly, the Vice Principals unanimously agreed that reflective practice is a beneficial process for both pre-service and in-service teachers as it empowers them to identify their strengths and weaknesses, thereby improving their teaching effectiveness.

Overall, the findings from the interviews corroborate the quantitative results on the positive effect of reflective practice on teachers' effectiveness in secondary schools.

Ho_2: There is no significant impact between reflective practice and teachers' effectiveness in secondary schools in Fako Division.

Table 6

Summary of Computed analysis for χ2 reflective practice and teachers' effectiveness

N	**120**
Chi-Square	**31.606**
Df	**6**
Asymp. Sig.	**.000**

a. Friedman Test

The results from the Friedman test show a chi-square value of 31.606 with 6 degrees of freedom and a p-value of 0.000. Since the p-value is less than the significance level of 0.05, we reject the null hypothesis and conclude that there is a significant impact between reflective practice and teachers' effectiveness in secondary schools in Fako Division.

This finding is consistent with the views expressed by the Vice Principals in the interviews, who acknowledged the positive impact of reflective practice on teacher effectiveness.

Summary of Findings

Per the research objectives, the following findings were arrived at during the study:

1. Collaboration in curriculum development impacts teachers' effectiveness in secondary schools in Fako Division. Teachers in secondary schools in Fako Division engage in reflective practice, including providing alternative teaching methods, adjusting teaching practices to current situations, developing long-term plans, providing differentiated instructions, adjusting teaching methods based on student performance, and connecting new concepts to prior knowledge.
2. Reflective practice has a significant positive impact on teachers' effectiveness in secondary schools in Fako Division. Vice Principals recognize the benefits of reflective practice, indicating that it helps teachers cater to different learning styles, provides orientation on reflective practice, and is a beneficial process for both pre-service and in-service teacher development.

Discussion of the Findings

Discussions of research findings were done based on the research objectives.

Collaboration in curriculum development and teachers' effectiveness

From the analysis on Table 1, the result revealed that collaboration in curriculum development has a significant impact on teachers' effectiveness in secondary schools. The finding corroborates with the works of Lewis, Perry, & Hurd (2009) who affirmed that the common premise in teacher and curriculum development practices is that collaboration in curriculum development positively affects both professional development of teachers as well as curriculum implementation. With the teacher as the main link in the chain, there are two initial starting points for promoting curriculum development. On one hand, teacher professional development is seen as the primary aim. The production and enactment of curriculum materials is considered more of a means, and the designs are by-products, such as the case in lesson study.

On the other hand, the emphasis is on curriculum innovation, and here professional development is considered a conditional process (Coburn et al. 2012). From both perspectives, it is believed to be necessary to continually and actively engage teachers in the process of learning to become effective in curriculum development in order to contribute to their professional development. These effects pertained to curriculum design approaches, curriculum product, and sustainable and transferable teaching practices.

Voogt el al. (2011) support this view by saying that teachers' collaboration in curriculum development contributes to the professional development of teachers in areas such as subject matter and systematic curriculum design skills. Further, according to Abraham Maslow's Hierarchy of Needs Theory, people have needs which are arranged in five hierarchical order and if these needs at each level are not met, it might result to dissatisfaction or undesired outcome. Aside physiological and safety needs, teachers equally have social/love needs which entails belonging to a group and associating with others. This means that designing a curriculum should involve the participation of all teachers, as this elevates their self-esteem (esteem needs) with respect to confidence, recognition and appreciation, making them aspire the need for growth and self-fulfilment (self-actualization or self-fulfilment). This however allows room for effectiveness, efficiency, ands excellence in the teaching profession as teacher.

Reflective practice and Teachers Effectiveness

From the analysis on Table 4, the result concludes that reflective practice has a significant impact on teachers' effectiveness in secondary schools. The findings tie with the research carried out by Pandey (2012) which revealed a positive relationship between reflective practice and teachers' effectiveness as reflective practice enhances teaching skills and bring changes in instructional practices. It recommends that teachers have to think, act and reflect tenaciously. As a result, the instructional process is activated and improved. As such, reflective practice enhances the professional development of teachers. The result also moves in accordance with Albert Bandura's Social Learning Theory which states that social behaviour is learned through observation and imitating the behaviour of others. Reflective practice by teachers sits quite well with the four mediational processes (attention, retention, reproduction, and motivation) that help determine whether new behaviour is acquired. All the four mediational processes involve some cognitive thinking skills (reflection) which at the end determine if the behaviour or practice is worth retaining or emulating. This however

gives teachers the room to think, sort, and deal with their weaknesses in the teaching learning process.

Conclusion and recommendations

The study investigated professional development on teachers' effectiveness in secondary schools.

Two specific research questions were raised and translated to specific hypotheses. The results showed that;

1. Collaboration in curriculum development significantly impact teachers' effectiveness in secondary schools.
2. Reflective practice significantly impacts teachers' effectiveness in secondary schools.

The magnitude of the impact between the variables of interest and teachers' effectiveness were determined. The variables with the highest significant impact on teachers' effectiveness were reflective practice with a standard deviation of 0.73, followed by collaboration in curriculum development with a standard deviation of 0.64. This undoubtedly, means that professional development greatly influences teachers' effectiveness in secondary schools.

From the findings from the current study, it is recommended that there should be more and better team work be introduced for effective teaching. Next, the Ministry of Secondary Education should regularly support and provide avenues for both new and practicing teachers to collaboratively design a standard and harmonised curriculum. This would improve their pedagogical knowledge and skills as well as expertise.

The school board should create opportunities and avenues for professional development activities such as peer observation, mentoring, and reflective practice or gain insights, and views from more knowledgeable others.

It would be good for teachers to be trained to develop the spirit of autonomy to enable them become reflective in their practice. Teachers should see the need and relevance of attending and participating in professional development activities and programmes as a means of learning, re-defining, modifying and upgrading their pedagogical knowledge, skills and attitude. Moreover, professional development should be extended to include school-based and subject-based and not merely regional or divisional.

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