Pedagogic Lapses in Problem-solving Model and the Professional Development of Secondary School Philosophy Teachers in Yaoundé VI Municipality

Kibinkiri Eric Len[1*] and Yaya Bati Faison[2]

[1]*Department of Curriculum and Pedagogy, Faculty of Education, University of Bamenda, P.O Box 39, Bambili, Cameroon.*
[2]*Department of Curriculum and Evaluation, Faculty of Education, University of Yaounde I, Cameroon.*

Authors' contributions

This work was carried out in collaboration between both authors. Author KEL designed the study. Authors KEL and YBF collected and analysed the data, wrote the protocol, managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

The professional development of teachers most especially Philosophy teachers has been a major concern of the Government of Cameroon. The ministry of secondary education has experimented several approaches and methods such as the New Pedagogic Approach and the Competence Based Approach. However, the Problem-Solving Model (PSM) could have an influence on the professional development of secondary school philosophy teachers. On this premise, this study sought to find out how the Problem-Solving Model influences the professional development of secondary school philosophy teachers in Yaounde VI Municipality. The investigation was anchored on authors like J. Dewey, E. Kant, C. S. Pierce and K. Nkrumah on their constructivist and pragmatic views. The qualitative approach with the aid of a semi-structured interview and semi-structured observation were employed. A total of ten teachers were selected to participate in this study using the non-probability sampling technique from two secondary schools; G.B.H.S. Etoug-Ebe and G.B.H.S. Mendong in the Yaounde VI municipality. Data was analyzed descriptively using tables, graphs and thematic content analysis. The results revealed that PSM influenced the

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Corresponding author: Email: kibinkirieric@yahoo.com;

professional development of secondary school philosophy teachers except for some few elements like stating the problem, contextualizing and rephrasing the problem, recalling the problem and contextualizing the solution that need to be relooked into because teacher practices do not conform to Dewey's pragmatic model. The results of this study led to the proposed pragmatic triadic model to guide teacher practices.

1. INTRODUCTION

The new National Curriculum for Philosophy in Cameroon, which came into effect in 2011, indicates that problem-solving is one of the aims for teaching and learning philosophy. This curriculum according to the Cameroon General Certificate Examination Board [1], aims to ensure that all students can solve problems by applying reason or philosophy to a variety of routine and non-routine problems and learners should "develop critical thinking skills, understand the procedures of logic and use them in problem-solving." This is aimed at attaining the sustainable development goal on quality education by 2035 (Ministry of Economy, Planning and Regional Development, [2]). Qualified human resources in problem-solving will play a major role in helping the nation to attain this goal. Building a competent workforce to attain the vision of the state will require students to start adopting problem-solving approaches that are more engaging [3] and 'developing transferrable and flexible skills necessary in an increasingly complex formatted world' [4].

The main objective of this study was to find out how the Problem-Solving Model influences the professional development of secondary school philosophy teachers in Yaounde VI Municipality. Findings show that many teachers continue to apply traditional methods of teaching. Teachers need to be empowered to adequately use problem-solving in their instructional processes and practices but since it was introduced in the Cameroon secondary school curriculum, it has been observed that attempts to reform their practices through professional development have not been successful [5]. This has been attributed to under-developed theory in the field of professional learning [6]. Wu [7] argues that teachers who are not professionally developed in problem-solve skills would not be able to lead their students to a problem-solving environments. To ensure that in-service philosophy teachers effectively adopt the new method of teaching,

Householder and Boser [8] point to the need for teachers' education programs to use problem-solving model and strategies in training teachers to teach problem-solving skills. Several studies have proven that effective teacher professional development leads to the enhancement of teachers' knowledge and skills [9]. Yoon et al. [10] affirm that effective teacher professional development contributes to pupils' improved learning outcomes. Improving students' academic achievement is the main aim of professional development. Professional development for secondary school philosophy teachers on the adoption of Problem-Solving Model in their classroom may empower them to use this approach to improve pupils' achievement and ability to solve problems.

2. LITERATURE REVIEW

The Problem-solving approach was introduced in the curriculum for Philosophy in secondary school since 2011. Notwithstanding Philosophy teachers have not been effectively trained on this approach. Professional development is limited to two or three day pedagogic seminars which have been in practice in Cameroon schools for the past two decades (Inspectorate General of Pedagogy, [11]). According to Dewey's Sequence Problem-Solving Model (1910), the first step in problem solving is the identification and definition of a problem. In this stage, the first Procedure involves checking for previous/background knowledge to the problem. This is what Kant in Lawhead [12] calls "a prior knowledge" or what Descartes in Lawhead [12] calls "innate ideas" which has to do with knowledge justified independently of or prior to, experience. This background knowledge does not directly give any factual information about the problem but only gives it a clue. This means that students have some inborn ideas in them and the teacher has as role to incite them to come up with those ideas from what they already know to the unknown rather than mentioning the topic directly as most philosophy teachers do on the field. Dewey recommends that to deal effectively

with problems teachers do not need to draw on elaborate value theories but rather should be drawing on past experience or experiment [13].

A second procedure for developing understanding of a problem involves stating the problem statement (Dewey in Stumpf and Fieser, [13]). One suggestion for stating the problem involves bringing out the topic to be treated in a problematic manner or in the form of asking a question which is usually a big setback to many teachers in Cameroon who find it difficult to distinguish between a problem and a problematic. This is to say that the aspect of the topic which brings out a nuance should be identified by the teacher and presented to the learners because it could help impact their problem-solving abilities. A third procedure for understanding problems is contextualizing the problem. It can be done through concrete examples because "the mind is not a fixed substance, and knowledge is not a set of static concepts and human intelligence is the ability within us to cope with our environment" (Dewey in Stumpf and Fieser, [13]). This seems to prove contrary because to some teachers, the spirit of education is non-experimental. CORD [14] recommends that contextual teaching recognizes the fact that learning with understanding (as opposed to rote memorization) involves five processes known collectively as the REACT strategies: relating, experiencing, applying, cooperating and transfer. A fourth procedure in identifying the problem involves restating or translating the problem. Teachers can ask a number of students to rephrase the problem in order to show appreciation for different perspectives on understanding the problem. This is usually not the case because most teachers lack the conceptual understanding of the subject. As a consequence, this type of teachers depends solely on textbooks as a source of relevant facts and information, lecturing without student participation in order to avoid being led into unknown territory.

Generating potential solutions is the second step in problem solving. In this stage, finding an alternative solution is the first element and depends on developing high quality alternatives because we cannot determine a near formula to determine a solution and what the best means might be for determining an end" It is in this same light that Sartre confirms that philosophy is not a fixed science and that there are philosophies and not philosophy and so it is not like a standard that is fixed [15]. In Cameroon,

the model of professional development is characterized by 'knowledge transmission rather than reflective thinking and exchange of ideas' [16]. The climate of an effective professional development should rather encourage open discussion of ideas, where minority ideas are heard and taken seriously by the majority and should use creativity and other structured techniques to generate alternative solutions to problems while taking into consideration the society or context in which they live. Practicing the use of different strategies improves learners' problem-solving ability [17].

After the selection of strategies that suit in a given context, the teacher has as task to help students operationalize the solution steps. According to Descartes in *Rules for the direction of the mind,* to get to concrete solutions, "we must begin with a simple and absolutely clear truth and must move step by step without losing clarity and certainty along the way" (Descartes cited in Stumpf and Fieser, [13]). A teacher who follows and applies these rules is likely to support his learners to an easy way of getting a solution. These principles of dividing into "many parts" and ascending "little by little" validate Descartes' second and third rules of method. As for the current Cameroon context, many professional development programs for philosophy introduce new skills and strategies to teachers in disconnected learning contexts, and some even in a de-contextualized manner and this gives them poor knowledge of pedagogy. As a consequence, tensions about the translation of knowledge into practice in the actual teaching contexts exist when teachers have no recognition about the strategies, "knowledge of learners and learning" [18].

The best test of the value of any philosophy to Dewey (cited in Stumpf and Fieser, [13]) is to ask: "does it end in conclusions which when referred back to ordinary life-experiences and their predicaments render them more significant, more luminous to us and make our dealings, with them more fruitful." Any good solution to him meets three criteria; - its content should be significant in life experiences, the solution should have an adjustment between the individual people and our environment and it is a process that fosters group harmony. Nkrumah [19], also thinks that "Sufficient Reason" is needed to get a final solution from multiple alternatives. This is in conformity with Descartes' first rule of method that we should never accept anything as true which is not certain and clear to the mind

(Descartes cited in Stumpf and Fieser, [13]). Thus philosophy teachers during their lessons with learners must be very sure of their solution steps before they validate it.

Dewey's problem-solving model also emphasizes the importance of the evaluation stage. At this stage, solutions are considered hypothesis that need to be tested and the essence of a method is to ensure results and so when solutions are implemented, their impacts are evaluated and used to determine their effectiveness and to identify further actions that need to be taken (William James cited in Stumpf and Fieser, [13]). The knowledge gotten enables the learner to apply conceptual knowledge, or transfer, to occur [20]. In the same light, to Nkrumah [19] for the teachers and learners to evaluate a circumstance or a solution is part of the analysis of the facts and events, and to do an analysis of the facts, there must be a "starting point to the inquiry" before checking the generalizability of the solution.

After the recall of the problem has been done, there is need for the implementation of the solution by the students and teacher. It is not useful to agree on a solution that cannot be implemented as ideas become true in so far as they help us to make successful connections amongst various parts of our experience (William James cited in Stumpf and Fieser, [13]). This process of self-assessment helps the learners to be able to check the workability of solutions and attempt to fit human life. According to Nkrumah [19], workability has to do with an understanding of human society and an analysis of facts and an attempt to see how they fit in human life and how they make up human experience. From these concrete problems, the learner forms an abstract principle or concept and attempts to apply that conceptual knowledge to a new, never before experienced problem [20]. Nkrumah views this as transfer and says: "practice without thought is blind; thought without practice is empty" [19]. To him, when we think we must put it into practice.

3. PRINCIPLES OF AN EFFECTIVE PSM

According to Foshay & Kirkley [21], PSM should consist of: modeling a useful problem-solving method by showing students how to be patient and persistent and how to follow a structured method; teaching problem-solving skills in the specific context in which they will be used by using real-life problems in explanations and exams. It is worthwhile for teachers to avoid the teaching of problem-solving as an abstract skill; when planning a lesson, budget enough time for understanding the problem and defining the goal individually and as a class; dealing with questions from you and your students; making, findings, and fixing mistakes; and solving entire problems in a single session and ask questions and make suggestions. This may help them to develop analytical and deductive thinking skills. Also, ask questions and make suggestions about strategies to encourage students to reflect on the problem-solving strategies.

Similarly, Savery and Duffy [22] also reviewed literature focusing on the principles that guide teacher practices of teaching and the design of learning environments; anchor all learning activities to a problem, support the learner in developing ownership for the overall problem, design an authentic task, which is consistent with the cognitive demands in the environment for which the learner is being prepared, design the task and the learning environment to reflect the complexity of the environment they should be able to function in at the end of learning, encourage testing ideas against alternative views and alternative contexts; and provide opportunity for and support reflection on both the content learned and the learning process.

In the same perspective Mayer and Wittrock [23], think that teachers and students need to have five kinds of knowledge in order to be successful problem solvers: Facts: Knowledge about characteristics or events; concepts: Knowledge of principles, or models; strategies: Knowledge of general methods; procedures: Knowledge of specific procedures and beliefs: Cognitions about one's problem-solving competence about the nature of problem and belief in solving it. To them, facts and concepts are useful for representing a problem, strategies are needed for planning a solution, procedures are needed for carrying out the plan, and beliefs can influence the process of self-regulating.

From the literature reviewed, it can be discerned that an effective PSM should be characterized by, identifying and defining a problem, generating potential solutions and evaluation which has to do with contextualizing the solution. In this regard, three key theories come into play. Firstly, the constructivists' framework for understanding the problem can provide solid background knowledge for teachers to teach using PSM. Dewey [24] suggests that experience is the cornerstone from which new knowledge is

created, promoting authentic learning and meaningful experiences that foster new knowledge growth. Widely accepted in the educational community, constructivism describes learning as a process whereby learners actively construct or build new ideas, concepts, knowledge and objects based upon existing understanding. In the same light, Kant (cited in Lawhead, [12]), views constructivism "as the claim that knowledge is neither already in the mind nor passively perceived from experience but that the mind constructs knowledge out of the material of experience." Teachers are invited to engage in a fictitious problem occurring in a simulated real-world environment. Vygotsky [25], a cultural psychologist theorized that language and conceptual development are linked to understanding, concepts, social phenomena and cultural contexts. Bandura [26], in his social cognitive theory, provided a model for self-regulated learning where personal, contextual, and behavioral factors interact to give learners an opportunity to control their learning.

The rationale behind engaging learners in a constructive process of learning is that we cannot impose ideas on learners and achieve understanding. Mewborn [27] summarized the relevance of engaging teachers in professional development programs as "…one cannot expect teachers to change their teaching practices simply because they have been told to do so."On the other hand, learning during professional development programs is contextual; learning occurs through dialogue, discussion, and interaction; that learners must be actively involved; that a variety of models be used; and that learners be engaged in reviewing, critiquing, and revising one another's work [28]. Constructivism was used in this study as one of the theories to guide the design of the content of identifying and defining a problem in PSM and recognizes the fact that problems are easily understood from a relationship confidant with other learners and individual efforts.

Secondly, the Gestalt psychology by Wolfgang Köhler which originated between 1914 and 1917 is very useful for this study. The underlying principle of this psychological perspective requires productive thinking because it is characterized by gaining deep insight into the relations of the given problem constituents and their role in the given task, and the resulting solution. Restructuring to him was the basic mechanism for resolving problems and teachers should encourage their students to discover the relationship of the elements that make up a problem, incongruities, gaps, or disturbances are essential stimuli in the learning process. This theoretical perspective enables teachers to restructure the given information of a problem for better understanding. This is because through restructuring, the fundamental structure of the problem is revealed and so helps in the identification and definition of the problem.

Thirdly, pragmatism is one of the most appropriate theoretical frameworks that support PSM. Dewey [24] suggested that knowledge takes place within human experience, interaction between man and his environment. In the same light, Williams James' pragmatic view reports the theory of truth (cited in Stumpf and Fieser, 2003) [13]. To him, man is a social being and therefore truth is a social product. This social product has to do with accumulated practices, practitioner and administrator knowledge, the findings from previous research and the views expressed by the public [29]. Pragmatism not only rejects the narrow confines and structures of absolutism but also offers an approach grounded in the emerging conversation that supports a diversity of viewpoints about the phenomena [30,31]. This view is further confirmed by Morgan [32] who upholds that there are no pre-conceived, final, fixed and immutable strategies to solving a problem as advocated by positivistic theorizing.

It is important for teachers to emphasise utility of the best strategies during problem-solving that suit a given situation and organize activities and experiences that are useful to the present needs of the learners' problem and that meet the future expectations of adult life. Pierce (cited in Stumpf and Fieser, [13]) looks at pragmatism as a philosophical movement that stresses practical consequences and values as standards by which concepts are to be analyzed and their validity determined. In pragmatism knowledge is considered to be true and valuable only to the extent of its contribution to a specific context as "practice without thought is blind and thought without practice is empty" [19]. This philosophical thought enables teachers to teach in a specific context and examine the practical cash value of knowledge by focusing on the results (William James cited in Stumpf and Fieser, [13]).

4. RESEARCH METHODOLOGY

The study employed a qualitative research methodology. It targeted 39 secondary school philosophy teachers teaching in 14 schools in the

Table 1. Socio-demographic characteristics of the participants

Participant	sex	Diploma	Teaching experience	Branches of philosophy thought	Age School
Anna (A)	Female	DIPES II	12 years	Logic/textual study	40 Etoug-Ebe
Bella (B)	Female	DIPES II	08 years	Logic/ western	36 Etoug-Ebe
Carol (C)	Female	DIPES II	12 years	Logic/western/African	40 Etoug-Ebe
Dan (D)	Male	DIPES II	15 years	Logic /African	45 Etoug-Ebe
Ella (E)	Female	DIPES II	07 years	Systematic/ logic	35 Etoug-Ebe
Frida (F)	Female	DIPES II	21 years	Systematic/ logic	32 Mendong
Gael (G)	Female	DIPES II	09 years	Logic/ Systematic	38 Mendong
Hilda (H)	Female	DIPES II	08 years	Logic/Western	35 Mendong
Ida (I)	Female	DIPES II	10 years	Logic/systematic/western	37 Mendong
Jane (J)	Female	DIPES II	07 years	Logic / textual study	33 Mendong

Yaounde VI municipality. This site was chosen because it had more English schools considering the fact that many English persons reside in this area GBHS Etoug-ebe and GBHS Mendong were selected for the study based on the numbers of teachers in these schools.

To select participants for the study, we applied a judgmental non- probability sampling technique which deals with cases as proposed by Amin (2005:241). The researchers adopted purposive sampling technique because the study aimed at understanding the process to get sufficient and relevant information on teachers' actual practices on problem solving. The sample constituted ten (10) teachers drawn from the two (2) schools selected in the Yaounde VI municipality. Observation of five (5) teachers was done in Etoug-Ebe during which each teacher was observed 5 times giving a total of 25 lessons observed while interviews were conducted in Mendong with 5 teachers. Teachers' pseudo names were used. The sample had more women because in Cameroon, the teaching core is made up of mostly women. Table 1 presents the socio-demographic characteristics of the participants.

Two methods were used to collect more valid information to meet the purpose of the study. A semi-structured interview and semi-structured observation guides were used. Observation was chosen because it is one of the most common ways of finding out about things and it is used in almost all of our daily activities [33]. It provided us with first-hand information which is more valid. Interview guide and an observation checklist were elaborated on the basis of the variables, criteria and indicators of the conceptual framework defined at the start of this work. Data was analysed according to the themes treated in the study. Tables, figures, frequencies and percentages were also used.

5. FINDINGS OF THE STUDY

Table 2 presents the overall analysis of observation on Problem Solving Model practices carried out by teachers in their classrooms.

Table 2 summarizes the three main constructs of Problem-Solving Model that were observed. The results of these three elements of the model are presented in the Fig. 1.

Fig. 1 revealed that of the three variables observed the highest function of problem-solving that influenced the professional development of philosophy teachers was generating potential solutions with a percentage of 43% and the least function was evaluation with 23% while identification of problem stood at 33%. Each of these themes are analyzed below. Theme one (1) which was based on problem identification had four sub-variables namely; checking for previous knowledge, stating the problem, contextualizing the problem and rephrasing the problem. The results of observation are shown on Fig. 2.

Looking at theme 1, most of the teachers carried out the activity of rephrasing the problem giving a percentage score of 9.33%. This was so because out of the 25 lessons observed, teachers effectively carried out rephrase in 14. The least activity under this theme that was carried out by teachers is contextualizing the problem with a percentage of 7.33%. This was closely followed by stating the problem with 8%.

As for the second theme (generating potential solutions), the activities observed included the use of multiple strategies, operationalizing solution steps and validation of best strategy.

Table 2. Observation result on PSM and teacher professional development

| Theme	Activity	Frequency occurrence					Total frequency	Percentage	Total percentage	Remarks
		Anna	Bella	Carol	Dan	Ella				
1- Identification of problem	Checking previous knowledge	3	3	3	2	2	13	8.67	33.33	Out of twenty-five lessons problem identification stands at 33.33%
	Stating the problem	3	2	2	2	3	12	8		
	contextualizing the problem	2	2	3	2	2	11	7.33		
	Rephrasing the problem	2	3	3	3	3	14	9.33		
2- Generating potential solutions	Using multiple strategies	5	5	3	5	4	22	14.67	43.34	This is the most occurred activity with 43.34%
	Operationalizing solution steps	4	4	4	5	4	21	14		
	Selection of best solution	4	4	4	5	5	22	14.67		
3- Evaluation	Recall the problem	2	3	2	3	1	11	7.33	23.33	This is the least occurred activity with 23.33
	Check workability of solution	3	3	3	4	3	16	10.7		
	Contextualize solution	1	1	2	1	3	08	5.33		
TOTAL		29	30	29	32	30	150	100	100	
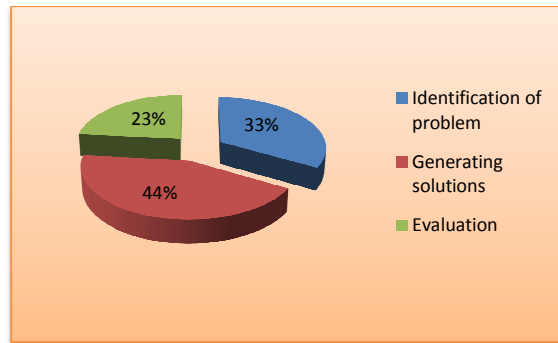
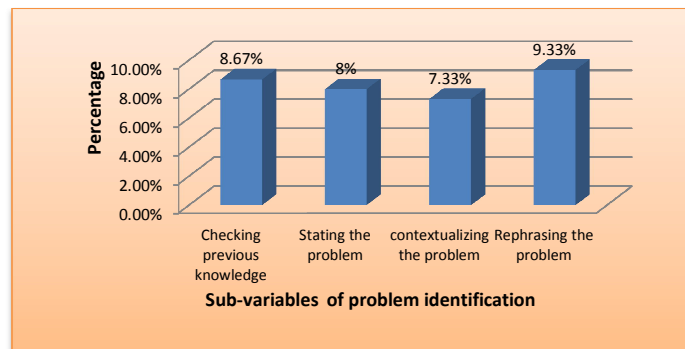**Fig. 1. Results of problem-solving model**
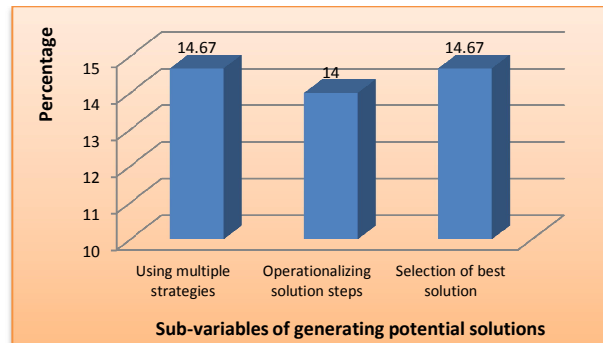

Fig. 2. Problem identification

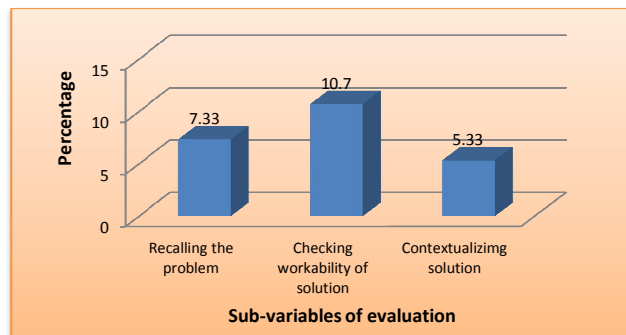**Fig. 3. Generating potential solutions**

Fig. 4. Results of evaluation

Looking at theme 2, most of the teachers carried out the activity of using multiple strategies and selection of best solution giving a percentage score of 14.67% respectively. The least activity under this theme that was carried out by teachers is operationalizing solution steps with a percentage of 14%.

As for the third theme (evaluation), the activities observed included recalling the problem, checking workability of solution and contextualizing solution.

Concerning theme three (3) contextualization of solution was the least activity carried out by teachers with a percentage of 5.33%. Out of the twenty five lessons that were observed, teachers contextualized the solution in only eight (8) lessons. Checking the workability of solution scored the highest with 10.7%.The function of recall stood at 7.33%.

Overall, the results of observation showed that evaluation was the least construct of problem solving model mastered by philosophy teachers while generating potential solutions is the function that was carried out most of the time. However, problem identification, stating the problem and contextualizing the problem caught our attention Theme three on evaluation also caught our attention for the fact that recalling the problem and.

6. FINDINGS OF INTERVIEW ON PSM AND PROFESSIONAL DEVELOPMENT

Theme 1: Identification of the Problem

In this study, identification of the problem was defined by checking previous knowledge, stating the problem, contextualizing and rephrasing the problem. Three teachers (G), (J) and (I) follow the classical method when checking learners' previous knowledge by just announcing the new topic. (I) for example affirm: "*From revision of past lesson, I announced the new topic of the day.*" On their part, (F) and (H) start from what the learners already know to discover what they are expected to do. When asked about verification of learners' background knowledge, (F) responded*: "I asked what they will do if they discovered they got pregnant as students, till the point where someone suggested an abortion.*" As concerns stating the problem, (J) and (H) go by the classical way of writing just the topic on the board instead of the problem. (J) declares: "*After the correction of assignment; I then announced*

and put the topic of the day." *(*G), (I) and (F) do problematize the topic as (F) says*: "then I notified them the topic and the issue at stake which was to determine if abortion is morally justifiable.* Only one teacher (I) assisted the students to understand the problem contextually when she says: "*I asked the students some of the rights of women that are violated and if these violated rights are justifiable.*" (I) helped students to understand the problem clearly when she says: "*the issue at stake was to find out if there is any need to advocate for the rights of women.*"(F), (H), (J) and (G) focused on definition, types and characteristics instead of contextualizing the problem.

Theme 2: Generating Potential Solutions

Generating potential solutions in this study was defined by selection of strategies to solve the problem identified, operationalizing the solution steps and finally selecting the best solution. Concerning selection of the best strategies, Four teachers (G) (F). (H). (I.) responded that they carry out this process. (G) for example *said: "I go ahead to state the ways through which HIV could be contracted and some general ways of prevention.*" Contrast to G, (J) after identification of the problem move straight to searching the solution. All the five teachers answered the question of operationalization of the solution steps correctly. This is evident when Jane stipulates that: "*As they get to differentiate between the two, we then start by recalling the parts, constructing universal and particular proposition, then representing them in to symbols. This is usually a step by step process.*" All the teachers actually validated the solutions. For example Jane affirms: "*This is usually a step by step process of selecting and eliminating solutions done on the board by the students till we get to the best.*

Theme 3: Evaluation

Evaluation in the study included recalling the problem, checking workability of the solution and contextualizing the solution. Two teachers, (I) and (G) responded that they do a recall of the problem when Gael stipulates: "*I asked them to recall the problem statement.*" (J), (H) and (F.) responded that they carry out a summary of the lesson without recalling. Jane for example affirms: "*I ask them to recall all what we have been doing throughout the lesson.*" Concerning workability of the solutions, two of the teachers (F) and (G) carry out this process. (F) for

instance asserts that: *"after definition of abortion we conclude that abortion is morally condemned."* Three others (I), (H) and G) affirmed that they do a summary work as (I) declares: "*After the recall I give them home work on the lesson for the next class*". As for contextualization of the solution, two teachers, (F) and (H) answered that they did contextualize their lessons as Helen says: *"I ask them what they will do in a capitalist system of government where the rich grow richer while the poor grow poorer."* (J), (I) and (G.) responded that they adopt the traditional teaching method of dictating notes.

From the results, it can be established that practices on generating potential solutions were good as most of them accomplished their entire task. Looking at the theme one, identification of problem*;* stating the problem, contextualizing the problem and rephrasing the problem caught our attention. This is because teachers did not do what is expected during this stage. In evaluation,

two of the indicators caught our attention, recalling the problem and contextualizing solution was not frequently used by the teachers as most of their practices do not conform to the PSM. This means that these indicators did not really determine their professional development.

7. DISCUSSION

The results showed that, PSM influenced the professional development of secondary school philosophy teachers. Based on the initial findings and aspects of literature review, from the background knowledge, the teacher brings out the problem statement which should clearly bring out the nuance of the topic because it helps in reaching a solution. It appears therefore that through checking for previous knowledge and rephrasing the problem as teachers' acts conform to Kant's constructivism and pragmatism that students should construct meaning by drawing on past experience and experiment (Dewey cited in Stumpf and Fieser, [13]).
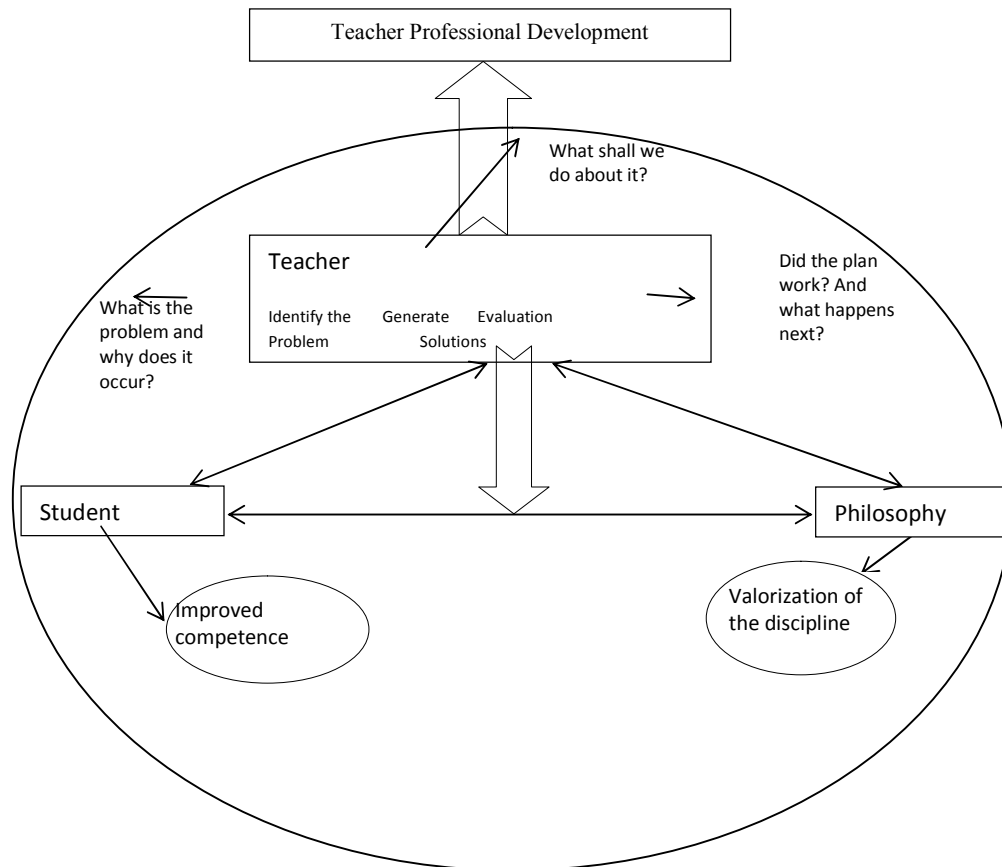

Fig. 5. The Pragmatic Triadic model (Len and Faison, 2020)

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But from the interview results, rephrasing was not eminent in most teachers as some of them were not aware of what they actually did during their observed lessons and so professionally, they did not know what it entailed. Most teachers as well failed in contextualizing the problem and this practice did not conform to the pragmatist view that the problem situation should be contextual by proposing a significant task to students. It is meaningful for teacher to pay particular attention to stating the problem, contextualizing and redefining the problem.

Generating potential solutions influenced significantly their professional development as their practices conform to those of the pragmatists which stipulate that in selecting a solution, we cannot determine a near formula to determine a solution and what the best means might be for determining an end (Dewey cited Stumpf and Fieser, [13]). Again their practices correspond with the idea that to get the best solution is to ask, "does it end in conclusions which when referred back to ordinary life-experiences and their predicaments, render them more significant and more fruitful" (Dewey cited Stumpf and Fieser, [13]). The teachers and learners go by the use of "Sufficient Reason to select the best solution" step by step depending on the practical consequences they have on them [19].

Most teachers during the evaluation step failed to recall the problems and contextualize the solution. These practices showed that from the beliefs and attitudes of these teachers, they did not really give concrete and deep explanations to students. To this effect, they conform to Nkrumah's pragmatic criticism that: "practice without thought is blind; thought without practice is empty" [19]. This shows that, most philosophy teachers still practice the traditional method of teaching by encouraging thinking without practice. Findings showed that evaluation influenced philosophy teachers professional development but for recalling and contextualizing solutions that still need more attention as teaching out of context will only promote rote memorization and not transfer.

8. DIDACTIC IMPLICATIONS OF THE STUDY

It is important for teachers to constantly carry out personal research on the problem-solving approach which is at the basis of their curriculum regardless of the short term three days organized seminars. It is also necessary to bear in mind that during teaching, there is need to place greater emphasis on the competence, the problem, reasoning, deduction, connections between taught and practice and higher order thinking in lessons [34].

The results of the study revealed that Philosophy teachers in Cameroon do not take note of some of the indicators that were adapted from the pragmatic model of Dewey. To this effect, we proposed a model that secondary school Philosophy teachers can follow in their practical activities in order to be professionally developed. Some principal guiding questions that could direct the practice of teachers and professional development programs in Cameroon on what they need to do at every stage have been added.

The above model shows the relationship between the teacher, the student and the discipline of philosophy. The teacher is at the top level because he is a facilitator who helps students to establish a link with content by giving them tasks. Helping them to accomplish their tasks means the teacher should have a mastery of the problem-solving skills like identification of the problem, generating potential solutions and evaluation. When a teacher masters all these and applies them properly, the students might have improved competences and might be able to transfer knowledge. There will also be the production of improved competency on the part of the students and the valorization of philosophy on the other hand. When the students valorize the discipline, it builds them up as critical thinkers as they look at things from a holistic perspective when solving their problems. When a teacher is able to execute all these tasks, it renders him fit or professionally developed.

9. CONCLUSION

Generally, the findings of this study showed that PSM influences the professional development of secondary school philosophy teachers. Nevertheless, teachers need to pay particular attention to defining the problem, contextualizing and rephrasing the problem; recalling the problem and contextualizing the solution as their teaching practices in these constructs do not conform to Dewey's pragmatic model. The study led to the pragmatic triadic model that can guide teachers in their teaching practices. The model offers many benefits to the teachers and the learners. It can help teachers to overcome many challenges they faced with the learners in the

classroom. Nowadays, students come from homes that are highly equipped with a variety of technologies and learn a lot on their own. To overcome some of the challenges faced in the teaching of philosophy, it is important for teachers to study and effectively implement the proposed model of teacher professional development. It will help the students as well to become competent problem-solvers. In addition to seminars, teachers can improvise personal strategies to master the Problem Solving Model.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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