

IMPEDIMENTS TOWARDS ENHANCING THE PEDAGOGICAL CONTENT KNOWLEDGE TO SECONDARY SCHOOL TEACHERS IN TANZANIA:

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Abstract

The move towards improving the quality of education delivery in schools has been an inevitable agenda across the world. The aim is to accommodate the global changes in education and market requirements. That is why the curriculum planners and developers in Tanzania could not afford to ignore to establish reforms and innovations in the curriculum. The aspect of PCK is among the crucial teachers' knowledge bases that should be emphasized in the teaching profession to flourish effective teaching, and subsequently meaningful learning. The researcher made a comprehensive literature search by reviewing policy documents, journal articles, thesis and dissertation in investigating the impediments towards enhancing PCK to secondary school teachers in Tanzania. The study reveals a number of impediments namely; qualities of student-teachers enrolled in teacher colleges, curriculum issues, tutor questions, limited college-based and teacher resource centers-based professional development, unsatisfactory teaching practice and limited school-based professional development programmes. The study recommends that there is a need to rebuild the pre-service teacher education curriculum, exercise extensive and intensive in-service professional development, improve teaching practice and promote professional associations.

Keywords: Pedagogical content knowledge, teacher education, professional development, teachers, Tanzania.

Introduction:

The destiny of education in Tanzania rests on the hands of teachers. Arguably, the quality of education provision and its product among others depends largely on the knowledge of teachers in the teaching profession. To appreciate the pivotal role played by teachers in education, scholars consider teachers as the hubs of education, and that no education can rise above the quality of teachers available (Coombs, 1970). Schools can be well equipped in teaching and learning infrastructures such as classrooms, laboratories and libraries, but if teachers are not effective; no meaningful learning will be realized.

In Tanzania, enhancing the quality of teacher has been emphasized in various policy documents including the Education and Training Policy (ETP) 1995, Secondary Education Development Plan (SEDP) (2004-2015), and Tanzania Development Vision 2025. However, the eager of the Tanzanian government and other educational stakeholders of increasing the quality of teaching in secondary schools will not be adequately achieved if there are no deliberate efforts in helping teachers improve their teaching practices. Today, among others, for teachers to be effective are indebted to possess various knowledge such as the content knowledge (CK), pedagogical knowledge (PK), curriculum knowledge, knowledge of students and pedagogical content knowledge (PCK). PCK familiarizes teachers with what to teach, how to teach, how to identify and deal with learners' disparities, how to manage, control and organize his/her class, and know the

surrounding nature of the teaching and learning. This study therefore, intended to find out the impediments towards enhancing PCK to secondary school teachers in Tanzania.

Conceptualization of Pedagogical Content Knowledge

Teaching has never been an easy venture; it is a complex one that needs the teacher to be effectively induced into knowledge that enables him/her delivers well the lesson. Based on this argument, researchers pay attention to find out how can teachers effectively teach and learners learn in schools, colleges or universities. One of the notable scholars is Shulman who developed his idea on PCK in 1987. He defined PCK as:

It represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction (Shulman, 1987: 8). In other words, PCK involves the amalgamation of pedagogy and content possessed by a subject teacher for his/her duty of teaching. The main reason for Shulman to pay much attention and interest on PCK than other categories of teacher knowledge bases is that it identifies the distinctive bodies of knowledge for teaching. It entails teachers not to rely on mastering the content of the subject (content specialist) but should go further by understanding how to organize and manage students, identify and deal with the varied learning needs.

The conception of PCK seems complex as there is no single definition for it. Jones and Moreland (2003), conceptualizes PCK as it involves teachers' understanding on materials to be learned, what to be assessed, how learners learn the subject matter, and various approaches to enhance effective learning. Other scholar sees PCK as a type of knowledge that is unique to the teaching profession and instrumental for teaching. It enable teachers to link what they know about teaching (pedagogical knowledge) and what they know about what they teach (subject matter knowledge) a specific group of students in education context (Cochran *et al*, 1991). On the other hand, Driel and Berry (2010) extends the conceptualization of PCK by including knowledge of curriculum and assessment to what has been put forward by Shulman. They see that it is important for teachers to know the educational programmes and materials, as well as how the educational programmes should be assessed.

Despite some variations in the conceptualization of PCK, almost all scholars put emphasis on the content and pedagogy as instrumental knowledge bases for teachers in effective teaching. Teachers should have an understanding on philosophy, principles, and concepts underpinning the subject matter, as well as being able to select the topic area to teach, approaches for teaching and strategies for assessment, and select appropriate teaching/learning materials. It is important for teachers to posses all the two key concepts of PCK so that they can determine and make decisions regarding the teaching/learning process. Teachers will also determine the better means to teach a particular subject topic or overcome some learning problems that impedes students (Shulman, 1986, cited in Kitta, 2004).

Teacher Education

Basically, the concept of teacher education is inevitable in discussing issues that surrounds the teaching profession. However, as for now, let us conceptualize what is teacher education. The conception of teacher education (TE) encompasses both pre-service and in-service training. Lukanga (2013), views TE as the process in which both prospective and in-service teachers are

given knowledge, attitudes, skills and behaviors in performing effectively their classroom teaching. Chadiel (2013) defines TE as training for initial or continuing professional development of teachers. According to Nakpodia and Urien (2011), TE refers to nurturing of pre-service teachers and updating in-service teachers' knowledge, skills and attitudes through professional development programmes (as cited in Kitta & Fussy, 2013).

Prospective teachers may acquire academic, professional and pedagogical competencies in either teacher colleges, universities or university colleges. While in-service teachers may be given short courses, seminars and workshops to update their teaching skills, knowledge, behaviors and attitudes to cope with new curriculum innovations. Through TE, teacher educators are expected to impart PCK to teachers' trainees and help them teach effectively and efficiently in schools. This promotes quality of education since it is argued that effective teacher education programmes lays the basis for quality education provision (Lukanga, 2013:4). Similarly, anangisye (2011) asserts that quality professional development is indisputably central to building, improving and sustaining the quality of teacher professionals who can deliver what is expected by the society.

For the purpose of this paper, the researcher focuses to diploma and degree holder teachers who are eligible to teach in secondary schools. Importantly, it should be noted that diploma teachers are supposed to teach at ordinary secondary education, while bachelor holders may teach at both levels of secondary education. This has been recommended by the Ministry of Education and Culture in the 'Education and Training Policy' (ETP) document of 1995 (URT, 1995). However, experience from Tanzania shows that a considerable number of degree holders teach at ordinary secondary education. One of the reasons for that is to meet the shortage of teachers in such education level.

History of Teacher Education in Tanzania

Globally, teachers are very important variables in education provision. They plan what to teach, how to teach, how and when to assess, determines the way learners learn, identifies the learning needs and interests to mention a few. Based on the indispensable roles of teachers, teachers' training programmes are inevitable. The programmes for teacher preparation in Tanzania are not new; they were established since the colonial era (then Tanganyika). According to Meena (2009), Germans established teacher education in 20th century at Tanga School in which apprenticeship was emphasized. He further points out that the growth and development of teacher education in Tanzania was realized soon after attaining independence following the Dar es Salaam University College (now the University of Dar es salaam) as part of the University of East Africa to introduce training for secondary school teachers. The curriculum for teacher education was revised to include African content and abolish elements of colonial legacy. Today, teacher trainees are taught professional, academic and methodology courses. For instance, the diploma for secondary education takes professional courses such as curriculum and teaching for secondary education (CT), foundations of secondary education (FOE), psychology, guidance and counseling for secondary education (PGC), research, evaluation and measurement (REM). While, academic and methodology courses includes academic content knowledge (ACK) and pedagogical content knowledge (PCK), without forgetting the block teaching practice (BTP) (TIE, 2009:11).

Role of Teacher Education in Promoting PCK

Teacher education has a lot to do with respect to teacher preparation. According to the Education and Training Policy (ETP) of 1995, emphasizes that the main purpose of teacher education in Tanzania is to provide opportunities for teacher trainees to acquire essential knowledge, skills and

attitudes so that graduates can join the world of work professionally (TIE, 2009). With reference to the ETP policy 1995, the following are the objectives of teacher education and training in the country;

- To impart teacher trainees theories and principles of education psychology, guidance and counseling;
- To impart to teacher trainees principles and pedagogical skills of creativity and innovation;
- To promote an understanding of the foundation of the school curriculum;
- To sharpen the teacher trainees', teachers' and tutors' knowledge, and mastery of selected subjects, skills and technologies;
- To impart the skills and techniques of assessment and evaluation in education;
- To enable both teacher trainees and serving teachers and tutors to acquire leadership and management skills in education and training (URT, 1995:7-8).

Based on these objectives, teacher education is highly indebted to cherish teachers' PCK as they prepare them to begin exercising teaching in schools. Teachers being the hearts of classroom teaching, their effectiveness among others, depend on academic (subject matter) and pedagogical (pedagogy) competence which are acquired at the college, university or through other forms of teacher professional development. Prospective and in-service teachers may get an opportunity to explore new roles, develop new instructional techniques, and refine their practice both as educators and as individuals (Komba & Nkumbi, 2008:70). The influence of teacher education on PCK is also revealed by Cochran *et al* (1991), who argues that early history of TE was basically focused on teachers' content knowledge, however, for the past few decades, TE research expanded its scope by looking at the effectiveness of teaching pedagogy such as the teacher's use of questions, the design of assignments and curriculum, and the assessment of student performance.

To date, both content knowledge of the subject matter and teachers' pedagogical knowledge are amalgamated in TE curriculum in most countries rather than viewing TE from the perspective of content or pedagogy. According to Shulman (1987), TE programmes should combine the content knowledge (CK) and pedagogical knowledge (PK) bases for effective and meaningful teacher preparation. To cement this assertion, it has been argued that among others, TE promotes PCK by addressing teachers' subject matter knowledge and their educational beliefs, and providing them with opportunities to gain experience in teaching as well as giving specific workshops to serve as an immediate measures in developing competent and experienced teachers (Driel & Berry, 2010). Furthermore, teacher educators are required to ensure that teacher trainees understand the concept of CK and PK; and show their relationships in the teaching process. For instance, teacher trainees may be taught how the content knowledge influences one's teaching pedagogy (Segall, 2004). Similarly, it is argued that the role of teacher educators is to enable the teacher trainees to understand the subject matter knowledge and how to teach. By doing this, student teachers will understand how these two teacher knowledge bases (CK and PK) interact in the teaching and learning process (Meena, 2009:47). Therefore, in discussing about PCK among secondary school teachers in Tanzania, we cannot afford to ignore the influence of TE. Nonetheless, the tricky question is how much TE promotes PCK to secondary school teachers in Tanzania. This question has been raised since basically TE is responsible in preparing teachers academically and pedagogically for all levels of education as directed in various policy documents including the ETP of 1995.

The quality of secondary school teachers in Tanzania

Politician, educational experts, international organizations such as the *United Nations Educational, Scientific and Cultural Organization* (UNESCO) and other educational stakeholders, are all aspirant in achieving quality education in schools. Among others, the quality of a teacher who is the main implementer of school curriculum cannot be forgotten or ignored in this agenda. Thorough discussion is inevitable for the sake of serving the fate of education in the country; as it is argued that 'no education can rise above the quality of teachers' (Coombs, 1970; Kitta & Fussy, 2013). Also, it has been asserted that:

“There is evidence that teacher quality is highly related to learning outcomes. While physical inputs (such as classrooms, textbooks, exercise books, libraries, etc) are a necessary condition for effective learning, on their own they do not ensure high learning achievement. Over and above these, it is the desired attributes of the teachers that also contribute to Learning” (Chadiel, 2013:14).

It should be taken into account that teacher quality can be measured in different areas such teachers' pedagogical and subject matter competence, attitude, behavior and conduct (Anangisye & Barrett, 2005). For the purpose of this study, teacher quality is measured in terms of how teachers blend the pedagogical and content knowledge in teaching. Arguably, teachers' effectiveness and efficiency in the teaching career largely depends on his/her competence academically and pedagogically (Komba & Nkumbi (2008). However, literature shows that the quality of teachers for secondary schools is even worse; since there are complaints that most teachers in Tanzania do not deliver well the lesson on the contrary to majority expectations. Anangisye (2010: 139) reveals that for so long now, schools have been places for teachers who are not professionally competent and effective in undertaking teaching. Further studies shows that despite the introduction of competence based curriculum in secondary school since 2005, most teachers fail to teach appropriately using approaches such as group work, questions and answers, case study and demonstration. This implies that the knowledge and skills among teachers about the use of the recommended methods is superficial and theoretical (Paulo, 2014). Similar observations on how teachers fail to blend teaching pedagogy with the subject matter content is be revealed in studies conducted by Nara (2011), Mpate (2012), Tilya and Mafumiko (2010), Kitta and Fussy (2013). They report that teachers rarely use the participatory methods in the implementation of competence based curriculum, and once they opt to use, are poorly used in teaching the subject matter content. Teachers are not capable of putting the two teachers' knowledge bases together in the teaching process. This means that some teachers are competent in either the subject matter content or pedagogy of teaching the subject matter; or they are competent of none. On the other hand, it is reported that licensed teachers who spent only six months on teacher training then certified to teach in secondary schools have more problems on PCK, particularly in teaching the learner-centred curriculum since they did not receive sufficient teaching packages during the short course training (Anney, 2013). Above all, for decades now, the country has been experiencing mass failures of students in the secondary schools national examinations. Among others, teacher quality is named to be one of the reasons for this worsening performance. From this stand point, the researcher was eager to find out what exactly impedes enhancing of PCK to secondary school teachers in Tanzania.

Impediments in enhancing PCK to secondary school teachers Qualities of student-teachers enrolled to teacher colleges

The eligible students to be enrolled for diploma teacher education in Tanzania are those with at least two principal passes and a subsidiary in the form six national examinations results. However, studies shows that this regulation has been violated as some colleges enroll students with the lowest performance. For example, students with just one principal pass and a subsidiary have been enrolled in colleges such as Butimba Teacher College in Mwanza (Luwavi, 2012, as cited in Fussy & Kitta, 2013). Similarly, Anangisye (2011) reports that there is a big question on student-teachers joining at various teacher colleges in Tanzania, since majority of them are enrolled without meeting the set qualifications. The tendency of enrolling unqualified teachers in teachers colleges may be attributed by high demand of teachers in secondary schools as there are complaints that teachers are not enough. It is quite obvious that even if the teaching/learning environment at the teacher college is supportive, a student-teacher with low performance will be very difficult to develop his/her content and pedagogical competences as compared to a student with the highest performance in the form six national examinations. With this regard, it has been difficult to produce graduate teachers with good mastery on PCK. Thus, weak candidates in teacher colleges amongst others have led to the production of incompetent teachers who cannot merge the CK and PK in teaching. Consequently, there is poor deliver of education in most secondary schools in Tanzania which is very embarrassing indeed.

Curriculum issues

Dynamisms of the curriculum to cope with the needs of the on-going changes in the world market are inevitable. There are many innovations and changes taking place in the school curriculum, hence require teacher education to incorporate such changes. This enable tutors to impart adequately to the student-teachers new innovations and reforms such as learner-centred approaches, competence-based curriculum and PCK. However, literature shows that little has been introduced in teacher education curriculum which impedes student-teachers to acquire meaningful knowledge and skills related to the named reforms. A study conducted by Anangiye (2010) on 'developing quality teacher professionals' reveals that colleges for teacher education in Tanzania use the outdated curricula which does not accommodate new innovations and reforms in education. Similarly, it is reported that in some universities such as the Open University of Tanzania (OUT) prepare teachers for secondary schools using a transmissive teacher-centred pedagogy (Anney, 2013). On the other hand, it has been claimed that in pre-service teaching education there is no balance of time devoted in teaching the academic and methodology courses. Arguably, too much time is spent in teaching academic disciplines than courses that equips prospective teachers to deliver/present the materials in the classrooms. In other words, the methodology courses are taught in a superficial manner, hence, teachers are not effectively induced into teaching foundations (Kitta, 2004). As a result, most teachers graduating from teacher colleges in Tanzania and enter into the world of market do not live up the expectations of the students, society and country at large.

Tutors question

Tutors play a fundamental role towards helping student-teachers acquire academic, professional and pedagogical excellence at the teacher collages. They are hearts in shaping and advancing students' understanding on topics or modules stipulated in the curriculum, as well as familiarizing with different curriculum reforms and innovations. The expectation is to see tutors exercising teaching, possess the required qualities so that they can produce the anticipated product. According to the curriculum for diploma in teacher education programmes in Tanzania, the eligible tutor to teach at

diploma teacher colleges should specialize on Bachelor of Education in Arts (B.ED.Arts) or Bachelor of Education in Science (B.ED.Science). Also, a tutor should possess a master degree in teacher education (TIE, 2013). However, literatures show that the qualities of most tutors at both public and private teacher colleges in Tanzania are doubtful. For instance, there is evidence that some teacher colleges are taught by tutors who are principally prepared to teach in secondary schools. This category of teachers pursues Bachelor of Arts with education (B.A.Ed) and Bachelor of Science with education (B.Sc.Ed) (Kitta & Fussy, 2013). The problem with B.A.Ed and B.Sc.Ed programmes is that they have few course packages on teaching methodology; instead, more courses are devoted in teaching the contents of the subjects of specialization. As a result, teachers pursuing such courses have little expertise in teaching methodology which impedes them to effectively teach PCK to student-teachers at the teacher colleges. The other thing that poses a question on the quality of tutors is that most of them are bachelor holders on the contrary to the recommendation of teacher education curriculum which requires a master degree holder to teach the diploma teacher education. It is necessary for tutors to possess a master degree since methodology courses pursued may enable them improve their pedagogical knowledge. For instance, at the University of Dar es salaam there are master courses such as the 'advanced curriculum' (CT 607) which prepares teachers in designing the course packages for teaching. In this case, tutors teaching without meeting the requirements, makes it difficult to comply with the curriculum innovations and reforms related to the use of PCK in teaching.

Limited college-based and teacher resource centers-based professional development

Since teaching is a lifelong learning process like other professions; it requires in-service teachers to undergo further training for the purpose of updating their pedagogical knowledge, content knowledge and professional skills. This training enables teachers cope with new curriculum reforms or innovations the fact that school curriculum keeps changing from time to time. Based on the importance of in-service training, the ETP of 1995 emphasizes that in-service training and re-training shall be compulsory for teachers to ensure their quality and professionalism. The most notable in-service training provided to secondary school teachers in Tanzania are in a form of short courses, subject panels, workshops and seminars conducted at teacher colleges and teachers' resource centres (Jidamva, 2012). However, literature shows that the training provided are considered of little impact on teachers' PCK. Arguably, the programmes are not extensive and intensive; and do not help teachers to explore important issues (Lukanga, 2013). Similarly, Meena (2009) argues that although seminars and workshops have importance, the way are provided do not have a significant impact on teachers since the training is not regular. In the same vein, Kitta (2004) asserted that mathematics teachers in secondary schools in Tanzania are not provided an effective and efficient in-service training to enhance their PCK due to organizational challenges and lack of funds which depends on the foreign agencies and donors. That means few teachers are being provided these workshops and seminars while majority of them do not receive any kind of training for several years in their career. The study conducted by Laddunuri (2012) on status of school education in present Tanzania, reveals that 77% of teachers involved in the study did not attend any in-service training pertaining academic knowledge and pedagogical knowledge. The implication is that since the first appointment as secondary school teachers, they did not update their PCK through workshops, seminars or any other form of training at work. Their teaching solely depends on what they were taught at the teacher colleges/universities where the literatures shows that training provided largely does not help teachers acquire sufficient knowledge and skills academically and pedagogically. On the other hand, HakiElimu one of the notable civil society organizations in the country, shows that a five-year plan formulated by the Ministry of Education and Vocational

Training 'Teacher Development and Management Strategy' (TDMS) carried out from 2009-2013 did not achieve its goals. The plan aimed at providing regular and effective in-service training in teachers' colleges, zonal college centers, and teachers' resource centers (TRCs) so that teachers at different levels of education could update their profession and improve the quality of education in Tanzania. However, despite such policies and plans of the Ministry of Education and Vocational Training in collaboration with the United Nations Children's Emergency Fund (UNICEF), they have not been able to implement effectively (HakiElimu, 2011). With all these observations, it is rather clear that the development of PCK to secondary school teachers in most schools has been a big challenge.

Unsatisfactory Teaching Practice (TP)

Teaching practice is an important element during the pre-service training for teacher education programmes. Basically, a student-teacher is given a potential platform to exercise the art of teaching prior to officially getting into the real world of the teaching profession (Kasanda, 1995 as cited in Kiggundu & Nayimuli, 2009). It introduces a teacher trainee an experience in actual school and classroom situation on how to implement his/her content knowledge, pedagogical knowledge, pedagogical content knowledge and professional ethics. The Block Teaching Practice (BTP) for diploma teacher education in Tanzania is conducted for 16 weeks (two months) in the second term for each academic year (first and second year) (MoEVT, 2013). On the other hand, student-teachers in most universities and university colleges are given teaching practice in the first and second academic year of teacher education programmes. Despite the importance of providing TP to prospective teachers, there are complaints that the exercise in Tanzania has been facing a number of challenges which affects its quality. The challenges may include the miscommunication between the university/college with the host institutions such as on the school calendar, accommodation, readiness to host student-teachers and number of students required. Also, some student-teachers are not given sufficient periods to teach per week due to overcrowding of student-teachers from different universities/teacher colleges, some students does not practice well teaching since soon after assessment runs away from schools before the end of the programme, and there is limited close supervision the fact that the number of supervisors/assessors posted at TP centres does not afford the large number of student-teachers as a result of increase in enrollment rate at universities/university colleges than ever before (Mahende & Mabula, 2014). In the same vein, the effectiveness of TP in most developing countries including the Sub-Saharan Africa is diminishing. Arguably, the programme face various challenges such as the geographical distance (remoteness) between the teacher colleges /universities and the TP centres, low and uneven levels of teacher expertise, lack of teaching resources as well as a lack of discipline/ethics among of learners and educators (Marais & Meier, 2004, cited in Kiggundu & Nayimuli, 2009:345). In this case, the agenda of enabling student-teachers develop their PCK seems to depend largely on lessons taught at the teacher colleges, universities, and university colleges. Hence, the mastery of PCK is not guaranteed and in the long run threatens the production of competent teachers in this area.

Limited school-based professional development programmes

In-service teachers are supposed to be given training programmes at the school context to sharpen their PCK since not all teachers can be given an opportunity to attend seminars, workshops and short courses at teachers' resource centres and teacher colleges. Also, the school-based programmes are inevitable the fact that pre-service training is argued not enough in enabling teachers grasp materials on PCK. Boaduo (2010) argues that the teacher professional development programmes should begin at school where the teaching and learning processes takes place, subject curricular and

teaching approaches are developed and needs of education at different levels are revealed. In this case, the school heads and teaching staff have this shared responsibility. The school-based training includes team teaching (collaborative teaching), coaching and mentoring (Hardman, et al., 2012, cited in Jidamva, 2012). Traditionally, a more experienced teacher or more skilled teacher helps another teacher to understand how to go about in the teaching profession. A teacher may get to know the nature of the subject, teaching materials/resources, teaching approaches, nature of students, how students learns and school environment. The mentor or coach serves as a role model, teaches, encourages, counsels, and befriends a less skilled or less experienced teacher for the purpose of promoting ones professional skills at work (Galanouli, 2010). The school-based programmes are considered more effective since they are face-to-face activities between the mentor or coach and the teacher to discuss the intended behavior change (Dembele, 2005). For example, the study conducted by Kitta (2004) on enhancing PCK to mathematics teachers in secondary schools in Tanzania, shows that teachers demonstrated a promising change in their PCK after attending a comprehensive school-based professional development. Albeit the role played by school-based professional development to in-service teachers, there are evidence which shows that most teachers in secondary schools in Tanzania have not benefited the fruits of the programmes. The reason behind this argument is that schools heads and teaching staff have not been able to effectively realize the potential of learning PCK and other professional skills from their colleagues at school setting. Most often a subject teacher does everything on his/her own without any help or mentorship from the colleagues at the school such as preparing the schemes of work, lesson plans, lesson notes, selecting and designing teaching/learning materials, and teaching. Among others, ineffectiveness of school-based professional development has been attributed by lack of sufficient information on the importance of running the programmes, lack of support from other stakeholders, lack of competent mentors or trainers, schools have no clear policy in addressing the programmes and shortage of resources (Boaduo, 2010). Similarly, a pilot study conducted by Kitta (2015) on mathematics teacher continuous professional development (MTCPD) programmes in Tanzania, reveals that schools heads and district educational officers claimed that there is no fund to run the school-based programmes on regular basis since the main source of funds is solely from the central government. Consequently, mathematics teachers lack training to enhance their PCK in teaching the subject in secondary schools.

Conclusion and Recommendations

Enhancing the provision of quality education in schools is one of the agendas in various policy documents including the Tanzania development vision of 2025. However, we cannot talk of quality education without looking at the quality of teachers on the aspects of PCK. It is important to discuss the teachers' PCK since they largely determines the effectiveness of teaching in the classrooms. The fact that this study reveals several impediments in enhancing PCK, one of the important attributes for effective secondary school teachers in Tanzania, deliberate efforts is required to ensure that teachers exercises effective and meaningful teaching by incorporating the requisite knowledge under discussion. Therefore, this study recommends the following steps to be carried out for the purpose of solving the challenges:

Rebuilding the pre-service teacher education curriculum

As it is pointed out earlier in this paper, teacher education plays a pivot role in building teachers' PCK. It is where a student-teacher forms a basis or foundation in his/her profession and how to practice it. However, the fact that the curriculum is criticized for being too theoretical and outdated, it is a high time for the curriculum makers to adequately accommodate new reforms in the teacher

education programmes and put into practice rather than being in the policy documents only. The Tanzania Institute of Education (TIE) has a responsibility in ensuring that teacher education at diploma level responds to new curriculum reforms and innovations to enable student-teachers acquire important professional knowledge and skills on how to combine CK and PK during micro-teaching, block teaching practice (BTP) and latter apply the knowledge when they enter the actual world of work.

Exercising intensive and extensive in-service professional development

Since teaching is a lifelong learning profession, there is a need for the government through the Ministry of Education Science Technology and Vocational Training to embark on in-service training which is more detailed and widespread so that teachers in secondary schools can get an opportunity to acquire new knowledge and skills related with the use of PCK in the teaching process. The ministry can run the programmes on regular basis by allocating more funds in its budget; since to conduct short courses and college-based training such as workshops and seminars more often require expenses. When teachers continue relying on the knowledge acquired during the pre-service training, are most likely to stick on old-fashioned teaching methodologies on the contrary to the current curriculum reforms. As it is asserted that:

Practicing teachers should be provided with regular in-service training opportunities to keep them abreast with contemporary knowledge, technology and discoveries in the teaching profession. Such training assists them to acquire the needed skills. Indeed, they should be encouraged to enroll for post-graduate studies to enhance their professional development (Kitta & Fussy, 2013: 37).

Improving the teaching practice

The colleges and universities which offer the teacher education programmes are indebted to improve the teaching practice to provide a worth practical experiences to student-teachers. They need to ensure that every student-teacher is provided with a sufficient teaching package. For example, the University of Dar e Salaam and its constituent colleges offering teacher-education programmes, requires a student teacher to teach between twelve (12) to twenty (20) periods a week in the subject (s) of specialization. When all students are assigned this package to teach for more than fifty (50) days, are expected to develop effectively various teaching skills including PCK. Other strategies which can help student-teachers develop their PCK during the teaching practice, is through exercising mentoring and team teaching. These programmes allows a veteran or experienced teacher to provide a professional support to student-teachers as it is clear that beginning to teach in actual classroom situation have never been easy, rather, a very challenging endeavor.

Promoting professional associations

There are different professional associations of teachers in Tanzania, among others; they include Chama cha Kitaalamu cha Walimu Tanzania (CHAKIWATA), Mathematical Association of Tanzania (MAT), Historical Association of Tanzania (HAT), Tanzania Chemistry Society (TCS) and Geographical Association of Tanzania (GAT). Basically, when these academic or subjects associations are effective, plays an indispensable role in enhancing teachers improve their professional skills including the application of PCK in the teaching process. Specifically, the roles of these associations includes uniting teachers based on their disciplines, promoting professional growth to teachers, suggesting alternative ways of teaching topics in a particular subject, producing publications and documents for educating and updating teachers, as well as organizing seminars and workshops for teachers (Anangisye, 2011). However, since it is argued that these associations have

not been effective in helping teachers refine their profession, it is a high time for the government to make these associations more effective and efficient by introducing a clear policy stipulating implementation of these associations, and supporting them materially and financially when required.

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