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Pre-service Teachers' Preparedness to Teach during Teaching Practice in Tanzania

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Abstract

Teachers are vital to the success of any education system. However, concern continues to be raised about the quality of teachers' preparation in the teachers' colleges and about the quality of teachers in schools in Tanzania (Global Partnership for Educational Support in Tanzania Mainland, 2013; Mgaiwa, 2018; Makoro, 2020). In line with such concerns, this study explored Tanzania's pre-service teachers' demonstration of knowledge and skills of teaching during teaching practice. The study was conducted in three secondary schools located in Moshi rural District in Kilimanjaro region in Tanzania. It involved five pre-service teachers from one of the Diploma Teachers Colleges, five supervisors from the same Teachers' College and mentor teachers from the three home schools where pre-service teachers were placed for teaching practice. The study is descriptive, employing qualitative methods of data collection. Interviews, focus group discussions and observations were used to collect data. Drawing on Shulman's (1986) categories of knowledge, data were analyzed thematically. The findings revealed that the pre-service teachers had limited skill in lesson preparation and classroom management, which negatively impacted their learning during teaching practice. Based on these findings, the study recommends that teacher education colleges should take steps to better prepare pre-service teachers to effectively handle lesson planning, teaching, and classroom management.

Keywords: teaching practice, preparedness, pre-service teachers

Introduction

Research attention continues to be directed towards understanding the contribution of the teaching practice component of teacher education in preparing better teachers for tomorrow (Endedijk, Donche, & Oosterheert, 2013; White & Forgasz, 2016; Olmstead., 2020). This paper

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presents research which investigated pre-service teachers' preparedness to teach in secondary schools during their school experience. In this study, pre-service teachers' preparedness refers to the knowledge and skills that pre-service teachers take into the practice teaching context. More specifically, pre-service teachers' preparedness consistent with three of Shulman's (1986) categories of knowledge: content knowledge, pedagogical content knowledge and general pedagogical knowledge. A growing body of research has revealed that the learning outcomes specified for the teaching practice are often not met (Duman & Erdamar, 2018; Stenberg et al., 2016). In fact, studies show that during their teaching practice, many pre-service teachers fail to employ the teaching skills which formed the academic component of the course (Castañeda-Trujillo & Aguirre-Hernández, 2018; Süral, 2019). Different perspectives explain these results. While some views point to the quality of the support of the mentor teachers in the practice schools (Butler & Cuenca, 2012); others focus on the influence of the practicum placement (Moulding et al., 2014; Mungure, 2016), and others highlight the teaching and learning context referring to student characteristics and teaching (e.g.Le Cornu, 2015). Also, the extent of pre-service teachers' preparedness is said to contribute to not achieving learning outcomes (Großschedl et al., 2015; Hobbs & Herbert, 2014).

Despite much research reported in the literature on the importance and the efforts towards strengthening teacher preparation (Ali & Khalid, 2015; Ambrosetti, 2014; Darling-Hammond, 2006b, 2017; Grossman et al., 2009), in Tanzania there are still concerns about quality teacher preparation in the colleges and quality teachers in schools. In addition, there is insufficient empirical evidence to know the extent to which these and possible additional elements contribute to pre-service teachers' level of preparedness in learning to teach. To further explore the issues of pre-service teacher preparedness in Tanzania, Shulman's (1986) categories of knowledge informed the research reported in this paper.

Categories of Knowledge

To explore and understand pre-service teachers' preparedness for teaching practice, Shulman's (1986) knowledge categories were employed. These categories provide a way of thinking about what constitutes the knowledge necessary for teaching. In these categories, Shulman describes different types of knowledge including: "Content Knowledge (CK - also termed subject matter knowledge); Pedagogical Content Knowledge (PCK); general pedagogical knowledge (GPK); curriculum knowledge; knowledge of learners and their characteristics; knowledge of education context; and knowledge of education ends, purpose and values" (Shulman, 1986, p. 9). The work of Shulman was further extended by scholars (e.g. Darling-

Hammond & Bransford, 2007; Grossman et al., 2009) who confirmed the importance of CK, PCK and GPK as the basic components of teachers' professional knowledge. As such, many initial teacher education programs around the world recognise these three types of knowledge as the foundation for teachers' effective teaching and learning (e.g.Depaepe et al., 2018; Lancaster & Bain, 2019).

The significance of these three types of knowledge is based not only on the unique features and functions of each type of knowledge, but also their integrated and interconnected nature (Kind, V., & Chan, K.H., 2019). The literature shows variations on what constitutes CK (Rivera et al., 2015). However, the analysis of this literature shows that CK mainly constitutes the understanding of the content, and its disciplinary structure. Teachers are expected to understand the CK across four different levels including: knowledge of the 'what' (or declarative knowledge facts, concepts, and ideas); the knowledge of the 'how' (procedural knowledge); the knowledge of 'why' (schematic knowledge); and the knowledge of 'when', 'where' and 'how' to apply the knowledge (Bangir-Alpan & Koç-Erdamar, 2019; Vula & Kingji-Kastrati, 2018). However, the specific amount and depth of the CK that teachers should have is still debated. Despite the uncertainty of the amount of CK needed for effective teaching, it is generally argued that CK is a crucial attribute for teacher quality (Oliveira & Weinburgh, 2017).

Pedagogical content knowledge (PCK) is another type of knowledge deemed to be equally important for teachers' effective instruction. Shulman (1986) defined PCK as "the knowledge that embodies the aspects of content most germane to its teachability" (p. 9). Pedagogical content knowledge constitutes the most useful examples, demonstrations, illustrations, analogies, and the ways of formulating a subject so that it is more comprehensible and understandable to others. Moreover, teachers need a better understanding of the PCK to be able to transform the CK through ongoing preparation, re-ordering, re-arranging, and restructuring of the content knowledge for effective teaching (Chang et al., 2020; Lancaster & Bain, 2019). Teachers are expected to be able to employ different representations including metaphors, illustrations, analogies, and explanations while teaching. The use of these representations not only helps teachers to communicate easily with the learners but also helps with a better understanding of the topic by the learners through memory retention (Reitano & Harte, 2016). In more general terms, teachers' understanding of the PCK is crucial since effective teaching of the subject mainly depends on PCK which constitutes teacher's ability to

transform the content into easier chunks, organise them in an appropriate order and select appropriate representations for effective teaching of discipline content.

However, the application of content knowledge and pedagogical content knowledge is said to be challenging for many pre-service teachers. Most appear to understand the 'what' to teach but the 'why', 'when', 'how' and 'where' to apply the knowledge remains a struggle (Gess-Newsome, 2015). For example, studies have depicted pre-service teachers' poor preparation of the lesson plans as a result of poor PCK (e.g. Alanazi, 2019; Großschedl et al., 2015; Livy et al., 2016). Others have highlighted pre-service teachers' poor use of relevant representations, demonstrations and illustrations (e.g. Aydeniz & Gurcay, 2018; Çelik & Güler, 2018). Moreover, Deng et al (2018) indicated that pre-service teachers were not able to effectively communicate with students and design appropriate teaching activities to match the level of their students' understanding. It is therefore likely that the foundation of the teaching knowledge can be built from a solid understanding of CK and PCK.

Scholars also discuss the need for teachers to have general pedagogical knowledge (GPK). The conceptualization of GPK as one component of teachers' professional knowledge is based on extensive research on the methods of effective teaching and classroom management strategies (König et al., 2016; Poznanski et al., 2018). There is variation in the way GPK is defined. These variations are found to be due to a lack of clarity in the specific domains that constitute GPK. For example, Shulman (1987) asserted that GPK constitutes broad principles and strategies of classroom management and organisation that appears to transcend subject matter, as well as knowledge of learner characteristics, assessment, educational purpose and context. Similarly, Happ et al., (2016) and Voss et al., (2011) defined GPK as classroom management skills, knowledge of various instructional techniques, knowledge of classroom assessment, knowledge of learners' characteristics and the learning process. Alternatively. in the United States GPK refers to teaching methods and educational foundations, while in Germany, it denotes teacher understanding of the theories underpinning educational psychology, sociology, and history of education (Abell, 2013; Herring et al., 2016).

Generally, GPK constitutes four main components: general teaching methods; knowledge of classroom management; learning motivation strategies; and assessment strategies (Abas, 2016; Darling-Hammond, 2017). Therefore, to effectively teach, scholars suggest that teachers are expected to understand all four components that is: be able to employ a variety of teaching methods as they teach students of different groups and abilities; be able

to organise the classroom, design teaching tasks and organise students; manage the classroom, and be able to assess learners' progress during the learning process (König et al., 2015).

Studies indicate that pre-service teachers experience difficulties in applying different aspects of GPK. For instance, in the work of Cavanagh et al. (2019) and Gan and Lee (2016), pre-service teachers demonstrated inadequate student assessment skills such as questioning techniques and developing appropriate rubrics. Other studies revealed that pre-service teachers' choice and application of teaching strategies were generally poor which limited their instructions (Castañeda-Trujillo & Aguirre-Hernández, 2018). Similarly, other scholars reported pre-service teachers' inadequate ability to manage the classroom (Girardet & Berger, 2018; König et al., 2016). Various reasons have been suggested as to what limits pre-service teachers' ability to apply the three types of knowledge during their teaching practice including: not having enough exposure and training of this knowledge during their coursework; lack of teaching resources in the practice schools; insufficient time spent in teaching practice; and insufficient support from the supervisors and mentor teachers (Lancaster & Bain, 2019; Lucero & Roncancio-Castellanos, 2019). Generally, the work of Shulman has been fundamental to the principles and content of many teacher education programs around the world including Tanzania, as outlined in the following section.

Tanzanian Teacher Education Curriculum

To better understand pre-service teachers' preparedness for their teaching practice experience, it is helpful to have an overview of the subject content and the knowledge categories evident in the Tanzanian College curriculum. The two-year, Diploma in Secondary Teacher Education, specifies that pre-service teachers study five professional subjects. These include: Curriculum and Teaching; Education Foundations; Educational Psychology Guidance and Counselling; Educational Research, Measurement and Evaluation; and Educational Media and Technology. These courses are purposively designed to equip pre-service teachers with general methods of teaching, classroom management, assessment, and motivation strategies: that is, Shulman's GPK.

The structure of the curriculum requires that pre-service teachers complete one major and one minor academic subject. Academic subjects include both Science and Arts subjects such as History, English, Geography, Chemistry and Physics. These subjects are meant to equip pre-service teachers with an understanding of the knowledge of a subject (the what) and the purpose of teaching the subject (the why) of content. In line with each academic subject, pre-

service teachers also take methodology subject units. The methodology subjects include curriculum and teaching, education psychology and education foundation. They are meant to equip pre-service teachers with appropriate methods, illustrations, models, and the techniques of teaching the academic subject. For example, the subject History is taught along with units in the methodology course called methods of teaching history. Therefore, the College subject and methodology courses are consistent with Shulman's three categories of knowledge (CK, PCK, GPK).

Methods

This study explored pre-service teachers' preparedness for their teaching practice. It was guided by cognitive constructivist theory which assumes that knowledge is constructed based on existing mental structures (prior experiences) by engaging learners in authentic tasks and acting on the real objects (Huitt & Hummel, 2003). The theory was deemed relevant since this study explored the knowledge and skills pre-service teachers bring into the teaching practice component of their study. To understand the phenomena as it occurs in its natural context, a qualitative approach informed by a case study design was employed (Yin, 2015).

Participants

The study involved participants from one Diploma Teachers College and three public secondary schools in Moshi rural, Kilimanjaro region of Tanzania. Once the participating secondary placement schools were confirmed, the pre-service teachers posted to those schools were invited to participate. Five of these pre-service teachers (two males and three females) from across the social science subjects (History, Geography, Swahili, English and Civics) agreed to participate. Each pre-service teacher was mentored by a teacher in their respective subject/s making a total of five participating mentor teachers. Five College tutors, referred to in this study as supervisors, who assessed the participating pre-service teachers were purposively selected. Heads of each school also participated in the research. Therefore, data were collected from a total of 18 participants.

Data Collection

Data collection was conducted during the eight weeks of pre-service teacher teaching practice in schools. The reported data were collected through interviews, focus group discussions, document analysis and informal observations. There were three interview sessions for each pre-service teacher conducted at the beginning, middle and at the end of their teaching practice. These different interview sessions helped the authors understand pre-service teachers'

consistency or variations in perceptions, feelings, and actions over the period of their teaching practice. Each mentor teacher, college supervisor and Head of School was interviewed once near the end of the placement period. Following the completion of interviews, one-hour focus group discussions of five participants each, were conducted in the key stakeholder groups: pre-service teachers, mentor teachers and College supervisors. These homogeneous group discussions were to obtain a collective voice, shared views, feelings, opinions, and suggestions about the phenomenon under study.

The curriculum for the Diploma Teachers Education was used to obtain information about various courses that pre-service teachers in Diploma Teachers College studied before they started teaching practice. Their schemes of work, lesson plans, lesson notes, and teaching aids provided data on the extent to which they were able to prepare these documents in accordance with what they learned in the College. In addition, the document analysis reviewed supervisors' assessment and feedback forms, and subject textbooks and supplementary books at each school. Analysis of the documents was completed after the individual interviews, observations, and focus group discussions to validate the self-reported behaviours of the participants. Analysis of these documents assisted in crosschecking the authenticity of the data obtained through other methods (Bryman, 2016).

Non-participant observation was also employed throughout the teaching practice period to help gain an understanding of the duties performed by the pre-service teachers. Observation helped to cross-check the self-reported behaviours as described during interviews and focus group discussion (Creswell & Creswell, 2017). These informal observations also helped the authors capture various contextual elements such as availability of teaching and learning materials, classroom and class size and staff facilities that would have contributed to the pre-service teachers' experience.

The collected data were thematically analysed. First, data from interviews and focus group discussions were transcribed. The transcripts, observation notes and documents were read several times to gain an overview. Three coding cycles were conducted from which a data map was created. Various categories emerged from the data and key concepts identified and considered in terms of Shulman's (1986) knowledge categories. From these categories, findings were interpreted, discussed, and considered in light of current literature.

The research had ethics approval from the [university to be named in final version] Ethics committee (#15077) and the authors report there are no competing interests to declare.

Results

From analysis of the data, two main skills were identified as under-developed among pre-service teachers. These skills were lesson preparation and classroom management. In addition, the College curriculum and course structure were identified as factors contributing to the pre-service teachers' experience.

Lesson Preparation

The participating pre-service teachers referred to different aspects of lesson preparation that they found to be challenging. These areas were: preparation of lesson plans, scheme of work, lesson notes, teaching aids, and setting appropriate lesson objectives. In this study, scheme of work refers to the structure and organisation of the curriculum content into a deliverable unit which can be implemented over a period of three weeks, a term or semester and a lesson plan is a teacher's daily lesson guide of what will be taught and how. While a scheme of work is extracted from the curriculum, a lesson plan is extracted from the scheme of work. Three of the five pre-service teachers could not prepare their own scheme of work and lesson plans. These pre-service teachers requested their mentor teachers' scheme of work and lesson plans so that they could use them as examples while trying to prepare their own. For example, one pre-service teacher reported: "*I just wanted to see how he* [mentor teacher] *prepares his own lesson plan so that I can learn something because we never prepared lesson plan at the College"* (MF, I, 1). However, two of the five pre-service teachers prepared their own scheme of work and lesson plans without requesting any assistance from their mentor teachers. They explained that they learned about lesson plan preparation during the College coursework. One pre-service teacher confirmed: *I made my own scheme of work and lesson notes. We learned on how to prepare them before we came for teaching practice* (K, I,1).

Data from document analysis further revealed pre-service teachers' insufficient skill in preparation of schemes of work and lesson plans. During the eight weeks pre-service teachers spent on teaching practice, only two schemes of work existed and were collected from two of the five pre-service teachers. Moreover, thirteen lesson plans were collected from all five pre-service teachers. An examination of the organisation and the content of the collected scheme of work and lesson plans revealed some deficiencies. For example, although the general objectives and the competence statements were well phrased in the schemes of work, the competence statements were unsatisfactorily stated in ten of the thirteen lesson plans collected. The following extracted general objectives and lesson competence statements illustrate:

Scheme of work 1: General objective - "At the end of the course student should be able to show an understanding of the composition of the Earth geological time scale, structure and force that affect the earth and their economic importance" (Geography subject scheme of work, collected from MF, examined on 21/4/2017).

Scheme of work 2: General objective - "To understand the process of establishing colonial rule in Africa." (History subject scheme of work, collected from R, examined on 5/5/, 2017). According to Tanzanian secondary school curriculum requirements for stating general objectives, these objectives were satisfactorily stated. The general objective is normally a broad statement with a general behaviour term such as understand, know, appreciate, apprehend, and appraise (Tanzania Institute of Education, 2011). The general objective is stated in such a way that it aims to attain the desired behaviour at the end of the lesson, topic or course rather than at any point along the process of teaching and learning (Tanzania Institute of Education, 2011).

However, in both schemes of work and the thirteen lesson plans collected, the competence statements and the specific objectives were not in line with the secondary school curriculum format. According to the secondary school curriculum, the competence statements should show what the student will be able to practice in real life situations after learning a sub-topic. This was not the case with the stated competence examined as evident in the following extract *"students should demonstrate agriculture*" (History subject lesson plan from K, examined 11/5/2017). A more satisfactory competency statement could be: *By the end of the sub-topic, students should be able to understand and apply the concept of irrigation farming in their daily activities.*

Furthermore, the specific objectives were not clearly stated in most of the collected lesson plans. According to the National Secondary School Curriculum (United Republic of Tanzania, 2018) clearly stated specific objectives should have the following characteristics: the target audience, for example, Form one students - with this characteristic denoted by the letter 'A'; a set of behaviours to be developed such as; list, define, draw, interpret, evaluate, with this characteristic labelled with the letter 'B'; the condition on which the behaviour is going to be shown such as a map, a piece of paper, or a drawing, with this designated by the letter 'C'; and the degree of performance of the behaviour can be either an adverb, such as clearly, briefly or a number showing a repetitiveness or extent of comprehensiveness such as: *list 3 characteristics* or *outline 4 behaviours* of... and this character is denoted by the letter 'D'. From the examined lesson plans, 10 the 13 lesson plans either had few or none of the mentioned characteristics. For example, see the following statement of specific objectives extracted from

one of the lesson plans: "*Within the period of 40 minutes student* (A) *should be able to understand the definition of trans –Saharan trade"* (History lesson plan from R, examined 27/4/2017). This specific objective lacks the following important characteristics: First, it does not show the specific behaviour to be attained at the end of the lesson, hence it cannot be measured. The word "*to understand*" as used in the statement is broad and thus cannot be tested within a lesson of 40 minutes. Second, the statement does not show the degree of performance of behaviour (the D aspect). Third, the statement does not provide the condition on which the behaviour will be demonstrated (the C aspect). The correctly stated specific objective could be: By the end of the lesson, a Form One student (A) should be able to clearly (D) define (B) and outline on paper (C) the five key characteristics of Trans –Saharan trade.

From two collected schemes of work and eight the thirteen lesson plans, the planned learning activities, teaching resources and the assessment activities appeared to lack student interaction, and higher order thinking skills. The learning activities were teacher-centred and incapable of involving students in active learning. See the following extracts of the planned learning activities as written in four different lesson plans.

i. To guide students to mention all the things found in the soil;
ii. To list all the things found in the soil profile;
iii. Students to write down the soil horizon;
iv. Observing learners and correcting them.

Preparation of lesson notes was another challenge for the pre-service teachers. In this study, lesson notes refer to a layer of the content to be taught during a lesson with the appropriate activities, illustrations and demonstrations. Four of the five pre-service teachers demonstrated limited skills in the preparation of lesson notes and teaching aids. The lesson notes were reported to contain a lot of detail as they were directly copied from the textbook: "*I use to directly copy the lesson notes from the book"* (S, I, 2). Pre-service teachers reported an inability to extract important points from the textbook and prepare appropriate summary notes for the lesson. *"I have prepared my detailed notes and I don't know how I shall make them summaries"* (K, I, 1). However, the examination of the five copies of lesson notes from five pre-service teachers showed some improvement between the lesson notes prepared in the first three weeks (beginning of teaching practice) and those prepared in the last four weeks of teaching practice. The lesson notes collected at the beginning of teaching practice showed poor organisation of the concepts, with few or no illustrations and activities planned within the notes. This was completely opposite to the school curriculum requirements. The later lesson notes

showed improvement in terms of the way they were organised. The main points of the lesson notes were clearly outlined followed by the minor concepts, some clear demonstrations, drawings and activities were included, and the notes were brief and meaningful.

Furthermore, four of the five pre-service teachers expressed how they faced difficulties in the selection and designing of relevant teaching aids to suit the school context. In the context of this study, teaching aids are defined as representation of true objects that used to facilitate teaching: for example, pictures, drawings, a model, videos and charts. One pre-service teacher confessed that she could not make a connection between the knowledge she had and the context in which she was supposed to apply the knowledge. She explained: "*Although I learned how to prepare the teaching aids at the college, the school environment contradicted me as I could not relate and design the exactly teaching aid to help me teach"* (S, I, 2). To triangulate this information, two teaching aids (the only ones available) were collected from two pre-service teachers and examined. The teaching aids collected were 'manila sheets' with illustrations related to the topic being taught.

One teaching aid was found to be meaningful in the sense that it related to the essence of the concept being taught. For example, one Geography pre-service teacher was teaching the sub-topic of soil profile and its characteristics. He prepared a diagram showing soil layers on a large manila sheet displayed on the side of the blackboard. The diagram showed different zones of the soil from the deepest to the top surface layer. He coloured the zones differently reflecting the important activities happening in a zone. This teaching aid was simple, easy to construct, relevant to the topic, and could be seen by all the students in the class during the lesson. Another teaching aid examined was an illustration on the sub-topic of Letter Writing. The aid was not interesting and was no different to the pre-service teacher writing the content on the blackboard. The manila sheet was badly rolled and to straighten, took several minutes. This teaching aid was not big enough to be seen by all the students in the classroom. Generally, the preparation of lesson plans and aids was a challenge for most of the pre-service teachers.

Classroom Management

Classroom management was identified by most of the pre-service teachers as an area of difficulty. Student misbehaviour was a significant challenge for pre-service teachers where they were posted for their teaching practice. All five pre-service teachers indicated they faced difficulties in dealing with those misbehaviours. One pre-service teacher explained that her classroom comprised of students who had low motivation for learning, while some were

frequently talking and asking unnecessary questions just to try test her (pre-service teacher) temper.

> *I observed that students are not motivated to learn. There were also some students who were talking to others while I was teaching. Others asked the questions while knowing the answers. I did not know what to do especially when you find those stubborn students are also academically leading in the class.* (D, FGD, 1)

Another pre-service teacher affirmed that he faced dilemmas in wining students' trust. This pre-service teacher believed that students were used to their subject teacher and therefore, trusting and adapting to the teaching style of the pre-service teacher was difficult. However, he expressed a sense of readiness to face and deal with the situation. He said: "*I know students are used to their teacher and sometimes it may be difficult for them to understand me, but I will try my best"* (K, I, 1). It was further reported that three of the five pre-service teachers faced difficulties when trying to discipline disruptive students. Mentor teachers indicated this may be due to the physical appearance of some of the pre-service teachers in that they looked too young to be teachers. Therefore, students refused to respond to disciplinary measures employed by pre-service teachers. In such cases, pre-service teachers were compelled to involve their mentor teachers for assistance. This is evident in the pre-service teacher's comment:

> *I teach a class with a lot of disruptive students. Some will talk while you are teaching, others will leave the class before the end of the lesson and cause a lot of interference. I try my best to employ some disciplinary measures to keep them in order but most of them do not respond. When situation like this happen, I normally involve my mentor teacher to assist me.* (R, FGD, 1)

Similarly, another pre-service teacher reported the same scenario: "*The problem was when they misbehaved and when I tried to discipline them, they refused. I felt so bad and did not know what to do next*" (S, I,2).

Three of the five mentor teachers confirmed pre-service teachers' limited skills for classroom management as the following quotes indicate:

> *It is quite challenging when a pre-service teacher tries to employ some discipline to some of the students who always misbehave. Some of these students refuse to take the tasks given as part of disciplining them. This is because most of the pre-service teachers look young physically. Some of them look even younger than some of the students.* (MT1, I,1)

> *Nowadays we have very young pre-service teachers coming for teaching practice. Well, they may have good ability to teach but a lot of them have low confidence to control our classroom during the lesson. We have a huge number of students with various behaviours. Some are cool students and others are disruptive. Pre-service teachers need enough time to develop confidence and strategies to appropriately deal with these kinds of students.* (MT3, FGD,1)

Pre-service teachers' limited classroom management skill was also reported by four of the five supervisors who went to assess them. However, two supervisors said that these skills developed throughout the teaching practice:

> *Yes, at the beginning they struggled a lot with managing the students' behaviours, but the situation was different when I went for the second assessment. They were so much improved and it seems like they just needed to couple with the classroom environment.* (S2, 1, 1)

However, another supervisor added that she observed pre-service teachers struggling with classroom management and there was not much improvement over time. She commented that a lot of effort should be invested towards enabling pre-service teachers' classroom management skills. She acknowledged that:

> *Indeed, there is a lot of problems with our pre-service teachers' ability to control the classroom. I could not see much improvement in that area even after visiting them a couple of times for assessment. I think we really need to focus on helping them towards developing these skills since it can have severe consequence in their learning*. (S3, FGD,1)

Classroom management is one of the important skills that can facilitate smooth interaction during the teaching and learning process (König & Blömeke, 2012). Given classroom management was identified as a challenge for most of the pre-service teachers, their inability to manage the class limited their own development and likely the learning of the students.

College Curriculum and Course Structure

The data show that the structure and the curriculum of the College course contributed to the pre-service teachers' under-developed lesson preparation and classroom management skills. It was reported that before they were sent for their teaching practice, pre-service teachers were taught more units of the academic subjects (what to teach) than the methodology units (how to

teach. These subjects were designed to equip pre-service teachers with the necessary skills of planning and managing a lesson, managing the classroom, and dealing effectively with students' behaviours. The teaching of these methods courses was deemed inadequate by the students in the sense that, there was little practical application to the classroom. For example, pre-service teachers were exposed to lesson preparation in a theoretical way during a brief seminar that was convened only a few days before they went to their teaching practice. In the words of one PST:

> *I learned many units in my academic subject almost four. We did also some few units in courses of teaching methods curriculum and teaching and Educational Foundations. However, the units of preparation of the scheme of work and lesson plan were insufficiently taught. We were taught about lesson plan preparation in a brief seminar shortly before coming to the teaching practice.* (R, I, 1)

Three of the five supervisors confirmed that they taught many units of the academic subjects and few of the methodology subjects. Although they recognised that more methodology subjects were needed before pre-service teachers were sent for their teaching practice, it was the requirement of the College curriculum that in the first semester, pre-service teachers were exposed to more academic subjects. Supervisors further reported that they used their own initiative to teach some important methodology subjects so that they enabled pre-service teachers' skills of lesson preparation.

> *Sometimes it is upon a tutor him/herself to make good decision on which unit should come first. For example, teach them about classroom management and preparation of lesson is important before sending them to practice. However, the college curriculum recommends otherwise, that is, more units of the academic subjects and I don't think it helps.* (S2, I, 2)

Discussion

From the findings, it is evident that pre-service teachers entered teaching practice with limited skills in their pedagogical content knowledge (PCK) and general pedagogical knowledge (GPK). As per Shulman (1986), pedagogical content knowledge constitutes the most useful examples, demonstrations, illustrations, analogies, and the ways of formulating a subject so that it is more comprehensible and understandable to others. In this study pre-service teachers had limited ability to prepare instructional plans (scheme of work and lesson plans), content

organisation (lesson notes preparation), design appropriate instructional resources and select appropriate teaching methods.

At least sixty percent of the participating pre-service teachers could not prepare their own schemes of work and lesson plans and therefore sought assistance from their mentor teachers. These pre-service teachers did not have, or doubted their skills. The remaining forty percent believed that they had skills to prepare schemes of work and lesson plans and so they did not seek assistance from their mentor teachers. However, examination of all the collected pre-service teachers' schemes of work and lesson plans demonstrated that most of these documents were not up to the standards and requirements of the secondary school national curriculum. Even though some pre-service teachers relied on the skills they believed they had from the College while others relied on their mentor teachers' guidance, they all struggled to prepare lesson plans and schemes of work to the required standard. Considering that schemes of work and lesson plans are the roadmaps to classroom teaching (Back, 2012; Windschitl et al., 2020), pre-service teachers' inability to effectively prepare schemes of work and lesson plans was likely to result in inadequate classroom teaching.

Through document analysis of scheme of works and lesson plans, it was evident that pre-service teachers could not effectively identify and unpack the big ideas to be taught in their subject. The organisation and sequencing of the ideas was problematic for them. It was further revealed that pre-service teachers had inadequate skills of selecting the key ideas from books, match them with the objective of the lesson, organise and structure them appropriately. This resulted in lesson notes so detailed that classroom instruction time was always insufficient. This reflected poor knowledge about the most important content to be taught.

It was further evident that pre-service teachers could not appropriately choose and plan teaching strategies to match the content they were teaching. These results align with those revealed by Kleickmann et al. (2013) who reported that due to insufficient PCK, pre-service teachers were uncertain of the methods to be employed when teaching content. It was evident from this study that most of the pre-service teachers planned to use teacher-centred methods (passive) and did not employ learner-centred methods such as group discussion, role play, question and answer, regardless of the nature of the content and the level of the class they taught. Although teacher-centred methods are common and a useful strategy to use in teaching (Sever et al., 2013), this was not always the best method to deliver the content pre-service teachers planned. For example, one pre-service teacher planned to teach the subtopic of soil profile and characteristics. The teaching activity was to ask the students to identify elements in

the soil profile. Since the activity was non-interactive, it was difficult for students to conceptualise; especially those without prior knowledge of soil characteristics. Use of a more learner-centred activity may have been better suited to the task. This is consistent with scholars such as Aydeniz and Gurcay (2018), and Schneider and Plasman (2011) who contend that to successfully help learners understand concepts, teachers require knowledge of the range of strategies appropriate to help learners build on their pre-existing knowledge.

It was evident that due to insufficient PCK, the pre-service teachers could not design proper representations of their content which created difficulties in their teaching and eventually in students' learning. For example, pre-service teachers employed teaching aids which although they matched the cognitive level of the students, were not attractive, not well improvised, small, not easily accessed by all students and thus not realistic. These kinds of teaching aids had little chance of assisting pre-service teachers to effectively convey the intended messages during the lesson and enhance student learning.

Moreover, the data showed that pre-service teachers had insufficient GPK illustrated by the pre-service teachers' struggle with classroom management. Classroom management is cited in the literature as one of the pedagogical concerns for most beginning pre-service teachers (König & Kramer, 2016). In this current study, most of the pre-service teachers faced difficulties in managing student behaviour. For example, they reported disruptions including students' inattention, sleeping during the lesson**,** disturbing others by talking, frequently going from the classroom, and asking unnecessary questions. Given the pre-service teachers were not able to manage these classroom behaviours, they experienced a loss of control and increased anxiety. Pre-service teacher anxiety resulting from poor skills in managing student behaviours is well documented (eg. Oral, 2012; Reupert & Woodcock, 2011). It was evident from the findings that when a student misbehaved, pre-service teachers took them to the staff room for their mentor teachers to help plan and administer a punishment. This implied that pre-service teachers in this study did not have sufficient skill or confidence to address classroom management issues on their own. As such, student misbehaviours were intensified and created a difficult and unpleasant environment for their teaching. These results are similar to those reported by Yuan and Lee (2014) who suggested that pre-service teachers' inability to deal with student behaviour was due to a gap in their knowledge of classroom management strategies.

Reflecting on the data from the supervisors, it is possible to associate the problem of pre-service teachers' insufficient knowledge of teaching (Shulman, 1986), with the preparation

they had in the College coursework. This was apparent in the curriculum sequencing where most of the units taught during the first semester were focused on the 'what' (CK) rather than the 'how' (PCK) to teach. This raises questions about the Diploma curriculum: it's content organisation, and/or timing of teaching practice. In addition, GPK development for the pre-service teachers was limited in the school context as a result of insufficient guidance from the mentor teachers (Author, Author, Author., 2021; Darling-Hammond et al., 2020).

Conclusion

In this study, it was clear that the pre-service teachers did not have adequate preparation to meet the challenges of the classroom. While there was no evidence the pre-service teachers were lacking in content knowledge, there were clear gaps in pedagogical and general pedagogical knowledge. With regard to PCK, Nilsson and Loughran (2012) revealed that content representations design (CoRe) enhanced pre-service teachers' articulation of their PCK as they could develop an understanding of the important ideas to be taught and why they should be taught. Therefore, CoRe design could be a useful addition to curriculum to strengthen pre-service teachers' PCK. As in the findings of this study, literature reports the pre-service teachers experienced difficulties applying different aspects of GPK. Their choice and application of teaching strategies were generally weak which limited, for example, their capacity to give clear instructions (Castañeda-Trujillo & Aguirre-Hernández, 2018; Chien, 2015). Scholars researching these issues reported pre-service teachers' inadequate ability to manage the classroom (Coles et al., 2015; Girardet & Berger, 2018; König & Kramer, 2016). To enable pre-service teachers to understand different aspects of lesson planning and classroom management (GPK) prior to their school experience, teacher educators need to ensure there is both attention to and time for, building GPK within the teacher education course.

The study highlights the potential benefit of revisiting the organisation of the College curriculum to find a balance of courses taught, to enhance the pre-service teachers' development of CK, PCK and GPK prior to the school experience. When the teacher education curriculum has a balance of the categories of knowledge, students are better prepared for the challenges of their school practice (eg. Darling-Hammond et al., 2017). Regular and ongoing course review informed by the three knowledge categories is required.

The study suggests that while the College should build a solid foundation of pre-service teachers' knowledges before teaching practice, the mentor teachers also have a role in guiding, orienting and strengthening pre-service teachers' ability to teach (Duman & Erdamar, 2018).

In this study, however, it was evident the mentor teachers were themselves lacking in skills and therefore not able to provide timely and meaningful support. The mentor teacher's knowledge, skill and engagement are well documented as an important feature of teacher education classroom placements (see Zikhali et al., 2018). Mentor teachers also require awareness and understanding of Shulman's categories of knowledge in order to adequately support the pre-service teachers. If mentors lack these skills, the College has a responsibility to provide opportunities for professional learning to enable them to fully support the pre-service teachers in the classroom.

Change is not an easy task and it may take time to address issues related to College curriculum and the teaching and learning practices embedded within such change. A large body of global research indicates the need to implement a curriculum that prepares pre-service teachers before they begin their teaching practice. The literature also highlights the importance of the skills and guidance given by mentor teachers.

This study provides a deeper understanding of the challenges faced in preparing pre-service teachers in Tanzania, particularly regarding attention to Shulman's (1986) knowledge categories. While the study involved a small sample in a developing country, the findings have relevance for teacher education more broadly.

Authors Contribution

- **Dr Hawa Mpate** is the first author of this paper. She contributed to the conceptualisation of the research, was the sole collector of data, and contributed to the data analysis. She filled the primary role of drafting the paper once the content and structure were agreed by the authors.
- **Prof Glenda Campbell-Evans** contributed the initial conceptualisation of the research, interpretation, and representation of data. Determining the content and structure of the paper was a major contribution along with feedback and edits on multiple drafts.
- **Prof Jan Gray** contributed to the initial conceptualisation of the research, interpretation and representation of data. Determining the content and structure of the paper was a major contribution along with feedback and edits on multiple drafts.

Data availability

- Data used in this research was part of large research study submitted for PhD award at Edith Cowan University, Western Australia in 2020.

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