Exploratory Factor Analysis of the Perceptions of Secondary School Heads of Departments on Teacher Trainees' Pedagogical Practices in Three Districts of Zambia

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ABSTRACT: Preparing a 21st-century classroom teacher has become necessary in teacher training and practice if considerable retains in education could be realized. While some content knowledge awareness efforts have materialized in the teachers' movement, the pedagogical aspect of training needs much to be desired. This study aimed to establish the secondary school heads of departments' perceptions of teacher trainees' pedagogical Practices. The study design used was a quantitative exploratory factor analysis to examine an eight-factor structure of the instrument and analyze the association between variables. The study population constituted of all secondary schools' heads of departments in three districts of Zambia. A total sample of (n=120) participants comprising heads of departments from 20 secondary schools participated in the study. The sampling technique used was purposive sampling to identify respondents since the study depended on researchers' sense of judgment in selecting participants from the population. The 20 schools provided all the standard criteria for the choice of participants needed for the study. The instrument used in the study was a survey questionnaire adapted from Barron (2015). A pilot study on (n=43) heads of departments conducted on heads of departments who were not part of the study. The reliability of the instrument was deemed reliable after subjecting it to SPSS and gave reliability of .930. The data were analyzed using IBM SPSS 26. The study's significant findings showed evidence of acquisition of content knowledge among trainee teachers, implying the emphasis on training, and showed a severe lack of professional ethics among trainee teachers. However, the findings showed that the various factors extracted are near related; hence, there is a close relationship between teacher training curriculum and the pedagogical skills that trainee teachers use in classrooms. Given the nature of the 21st-century learners that teachers come in contact with, the pedagogical predicament becomes paramount for emphasis in teacher training institutions.

KEYWORDS: Lifelong learning, Pedagogy, Student teaching practicum, Teacher education curriculum, Teacher education.

INTRODUCTION

While teacher education is the backbone of the world's education systems, the recent identification of challenges concerning the excellence and quality required in teachers and the programs that prepare them have resulted in responses from professional organizations that are now more widespread and intense. Universally, demand for performance evaluations of teaching to provide formative and summative evidence about the quality of teachers, teacher entrants, and teacher training programs permeate the current treatise on education at every stage (Robinson, 2011). It is arguably accurate and common knowledge that the way the teacher thinks and acts, their value systems, ideologies, and personal disposition manifest the overall pedagogic strategies and approaches adopted during teacher training. The use of various models and teaching approaches says a lot about the teacher's training and what trainers promoted during the initial teacher education (pre-training) and continuous teacher development (in-service) from the teacher training curriculum. It is worth noting that current curriculum reforms tend to have moved away from the traditional 'teacher-centered' pedagogic approaches to more contemporary 'student-teacher-centered approaches. Less explicitly and sometimes more distantly, learning theories such as behaviorism and social learning inform pedagogic approaches, (Westbrook, 2013). Educational practitioners have asserted the need for quality teacher education as the most profound aspect of education.

According to Wideen and Tisher (1990), as cited in Kooi (2008), the quality of education students acquire links to teachers' knowledge, intelligence, and professional skills directly. They add that if young people are to get the best education possible, there

must first be a provision for the best education and training to those who will teach them. Therefore, teachers' training has been an issue of significant debate and controversy over many years, with much of the discussion centered on the roles of the training institutions and the schools in providing coherent, relevant, and useful knowledge. A study by Barron (2015) proposed a constructivist grounded style to explore primary school headteachers' perceptions of how best to train primary school teachers. The study found that the headteachers believed that schools that participated in teacher training required an excellent grade, a climate, and skilled staff to support novices and strategic leadership. As part of this strategic leadership remit, the headteachers perceived it as their role to protect their schools from external pressures. They believed this gave them the autonomy to decide on their teacher training participation on an annual basis.

Nevertheless, their effort has not always been as efficacious as hoped, and evidence shows that a gap exists amid the expected outcomes of teacher training (Dembélé & Lefoka, 2007). As a result, learners may discover that they are without effective teachers or in packed classrooms with poorly skilled teachers. This kind of situation calls upon adequate teacher preparation through the pre-service teacher training programs. On the contrary, studies in more than 33 countries across the globe report that more than 75% of teachers were not skilled to the obligatory standards or lacked enough schooling for sufficient content knowledge (UNESCO, 2012). Information from three studies further showed that learners devote years of instruction in sub-Saharan Africa and South Asia with no improved outcomes, resulting from inadequate teacher preparation (Sumra, 2010). These disparities suggest that teacher's preparation needs to include strategies to meet learners from various backgrounds at the points of their needs. Practical teacher training may, therefore, be paramount for effective and quality primary and secondary education.

Therefore, this study aimed to establish secondary school heads of departments' perceptions of teacher trainees' pedagogical Practices. The study further sought to determine the framework and assumptions underpinning pedagogic practices in Zambia's educational system concerning teacher curriculum and teacher training in general. This study's drive was to scrutinize the current trends in teacher education curriculum and practicum concerning its role of supporting effective pedagogy among trainee teachers. The study purported to review existing evidence to inform future teacher education program design and educational systems' policymaking. The study will be beneficial to educational authorities, teacher curriculum designers, and teacher educators in helping to refocus teacher training in the area of pedagogy and create a pedagogical model that gives both the curriculum designers and teacher educators a mandatory obligation to see to it that the excellence of teacher production is well-informed and intelligently trained to handle all aspects of teaching. It could also be said that most stakeholders in education, i.e., parents and schools of practice, have, for a long time, been concerned about the quality of trainee teachers that are sent to practice in secondary and primary schools. The pedagogical practices among trainee teachers must hence be examined for the sole purpose of ensuring that educational systems through teacher training institutions produce effective teachers who can create conducive learning atmospheres for all learners to succeed. With the absence of significant studies on the perceptions of middle managers of secondary schools about the pedagogical knowledge base of trainee teachers and the knowledge forces at work, the study will attempt to answer the following research question: What are the Perceptions of Secondary School Heads of Departments on Teacher Trainees' Pedagogical Practices?

LITERATURE REVIEW

The pedagogical dilemma has always been the concern of educationists across the globe. Addressing concerns in order for teachers to effectively integrate the necessary experience, knowledge, and skills from their training in their teaching and learning repertoire is paramoutcy. Studies have shown that student teachers must be involved in meaningful and substantial learning activities to construct their knowledge and understanding about pedagogy and be prepared to apply the learned aspects in their future teaching practice. Sailin and Mahmor (2018) examined the features of meaningful learning that student teachers perceive as enabling to improve pedagogy. The study findings indicated that meaningful learning activities enhance student teachers' knowledge and skills and boost their confidence to assimilate digital pedagogy in the teaching practices. The findings also indicated that while student teachers valued their teaching practices, they experienced some anxieties regarding their dimensions in applying digital pedagogy and the pragmatism of fitting in other school environments because of some intrinsic limits. In other studies, Milton and Vozzo (2013) considered the aspect of digital pedagogy and defined it as a way teachers construct knowledge through planning for learning based on problem-solving and higher-order thinking skills, which are essential elements of the 21st-century teacher. These skills help advance students' critical analysis, metacognition, and reflection. Sailin and Mahmor (2018) opined that meaningful learning activities would expose trainee teachers to reliable experiences when merged into teacher training packages, advantageous for their

2284 *Corresponding Author: Aubrey Hibajene Mweemba   **Volume 05 Issue 07 July 2022**
Available at: ijcsrr.org
Page No.-2283-2296

continuous learning and future teaching practice. The need for teachers who can design 21st-century learning using the appropriate technology and pedagogical innovation is also consistent with the world Information and Communication Technology (ICT) agenda, which is the growth of information and communications technology, a process that is both a product of and a stimulus to, the parallel phenomenon of globalization, with the Internet as the harbinger of, perhaps the greatest revolution that humanity has ever experienced.

Field Practicum and Teacher Education

The importance of field practice in teacher education is explained by Warner and Hallman (2017), who argued that fostering possibilities for teacher candidates to learn through practical field experiences promotes growth and understanding of the teaching profession. They employed phenomenological interviews and content analysis of documents to understand a unit of teacher entrants in a pre-student teaching field experience to appreciate creative and up-to-date fundamentals of field experience that impact teacher distinctiveness and development. They concluded by endorsing ways that teacher education programs might assist candidates continuously with negotiating for conditions within field sites to allow for productive participation and growth. According to Warner and Hallman (2017), teacher applicants' principal entrance points into the professional teaching practice community are the experiences rooted within their teacher preparation programs that place them within schools, commonly referred to as practice or practicum knowledge in teacher education works. As field experiences or clinical experiences are known in the United States, teacher candidates steadily esteem this constituent of teacher education as among the most valuable parts of their preparation (White & Forgasz, 2016). In describing the importance of teacher education practices, Darling-Hammond (2006) claimed that teacher education's clinical side has been random and dependent on the peculiarities of insecurely selected appointments with little control and supervision about what transpires them and remote connection to higher institutional work. Given this simultaneous value and variance, the study was undertaken to develop a profound understanding of conditions that might lead to more productive field experiences related to their teacher education curriculum.

A study by Kabilan (2013) made an examination, analysis, and description of teaching practicum and findings disclosed that six students experienced valuable and evocative professional development during the practicum period. The study exposed the pre-service teachers to new world views, thoughts, and viewpoints of education that are dissimilar from their own and distinguished the different educational philosophies that stress the way teachers teach and how students learn in Malaysia Maldives. The contrasts and some of their knowledge and understanding of the several philosophies enhanced their knowledge, contributing to their learning, development, and growth as an upcoming teacher. In another study that designed and implemented a practicum mentoring model to support potential teachers as they learned to teach mathematics within a teacher education program, the outcomes showed that the mentoring model formed more and better chances for prospective teachers to enhance their proficiency in teaching mathematics. The study showed that the groundbreaking Mathematics and Chinese Mentoring model (MCM model) implemented during a half-year school practicum heightened the forthcoming teachers' expertise in teaching mathematics. This included designing tasks, intellectualizing lessons, understanding the space and organization of school mathematics, identifying the adaptability of using teaching materials, using suitable teaching strategies and methods, alternate assessment, and mathematics communication in the classroom (Lin & Tello, 2017). In another study by Becker, Waldis, and Staub (2019), they found that it is conceivable that student teachers (STs) are assessed more positively in the commencement of a teaching practicum as they are new and diverse to the regular classroom teacher. The finding that the development of instructional quality can be driven by a short training session for classroom teachers was relatively promising and signified perhaps the most crucial aspect of the teaching profession, and by using pupils' rating, a shared method bias could be avoided.

A study by Buranta and Kirby (2002) examined the involvement of pre-service teachers in an urban school and community-based early field experience, integrating with the fundamentals of education and general methods courses, and which took place in a southwestern city in the United States. Drawing on observations and with the use of interviews, reflective writings, and focus groups, the study surveyed the kinds and qualities [of experiences that pre-service teachers had in the course and also considered ways in which early field experiences in teacher education remain challenging and confronted and reconfigured to prepare better teacher candidates for teaching students from varied backgrounds in urban schools. The study found that early field experiences that move outside individual classrooms and are positioned in the larger worlds of urban schools and communities embrace some promise in the preparation of future teachers to teach all children, especially when these experiences are unswervingly useful to children, parents, and families and are accompanied by carefully facilitated and thoughtful examination and reflection. In other studies,

Katariina, Antti, and Jaakko (2016) offered a design supporting theory–practice reflection in teacher practicums grounded on three design principles that encourage a transformative posture towards the creation of innovative pedagogical approaches among them: (a) Shared transformation of theory and practice, (b) Co-design among oversight teachers, and (c) University lecturers and student teachers, and participating in the long-term development of pedagogical practices. The study analyzed and compared student teachers' portfolios transversely in two enactments of the teacher practicum: a thematic practicum founded on the projected design and the conventional class teacher practicum of the University of Helsinki. The results showed that the student teachers who participated in the thematic practicum used theory more recurrently in their reflections. Moreover, their theory–practice networks were more vigorous than those made by student teachers who joined conventional practicum.

Reporting on a study into student teachers' perceptions about their professional development during practicum framed within a symbolic interactionist perspective, Jeanne and Suzie (2014) examined to what extent, and how successfully, one group of student teachers was able to assimilate theory and practice during a three-week practicum of the first year of their degree. It was asserted that although there is a strong field of scholarship about the practicum in pre-service teacher education, there has been an inadequate emphasis on how student teachers themselves perceive their development during this learning period. The study further argued that notwithstanding extensive and longstanding acknowledgment of the 'gap' between theory and practice in teacher education, there are still more lessons to learn about how well the practicum empowers an amalgamation of these two dimensions of teacher preparation. In presenting three significant findings, the study addressed the inadequacies in the literature, (a) namely Participants in this study largely appreciated both the theoretic and applied components of their program, which positions in contrast to the commonly acknowledged inclination of the student teacher to privilege practice over theory, (b) Prospects to integrate theory and practice were varied, with many participants reporting the unfavorable impact of a seeming lack of clearness around stakeholders' roles and responsibilities, and (c) Participants overpoweringly reinforced the notion of linking university coursework assessment to the practicum as a means of bridging the gap between, on the one hand, the university, and the school and, on the other hand, theory, and practice.

A Reported study by Parr (2012) echoed one teacher educator's efforts to be flexible and innovative in developing a teaching practicum for Australian pre-service teachers in Johannesburg, South Africa. The study described and conceptualized the teacher's work as an educator, work together with diverse partners, and crossing several borders in the form of what is called 'border pedagogy.' The range of borders considered in the universal practicum included geographic (between Australia and South Africa), economic (between privileged and disadvantaged communities), cultural (within and between South Africa and Australia), sectoral (between schools, universities, and communities), and disciplinary (within and between the disciplines of education and community assignation, which were themselves often designated as multidisciplinary). Choy et al. (2014) examined undergraduate pre-service teachers' perceptions of their prospects, their fulfillment, and the significance of their coursework for classroom practices during three diverse practicum attachments. These aspects were assessed using questionnaires employed at the end of each attachment. The results presented significant differences in their perceptions across the three attachments. The study's findings have discoursed in light of implications for continuous program development and augmentations to the practicum component that can help bridge the theory-practice connection in pre-service teacher education and contribute to teachers' professional development aptitudes.

Pedagogy for Effective Teaching Practicum

Unquestionably, teachers must be highly knowledgeable about their content area specialty, whether they teach a specific subject matter or all content areas in any school classroom. However, effective teaching that produces academic achievement for all students requires content and child development and motivational skills. Čilić, Klapan, and Prnić (2015) contended that competence is a combination of "knowledge, skills, attitudes, motivation and personal characteristics enabling individuals to act efficiently in a certain (specific) situation" – and work on the improvement of their teaching and communication skills to become even better professionals. According to Geršicová and Barnová (2018), a class teacher's job position requires more complex professional skills than it was in the past. In the modern era, teachers must be professionals who can efficiently communicate with the young generation and keep up with their students. From a professional perspective, teachers do not develop into good class teachers immediately after starting their professional careers. This situation calls for a need for further education (Tamášová, 2015), which can also be referred to as in-service training to increase their teaching efficiency. While analyzing the Vygotskian theory, Huizen, Oers, and Wubbels (2005) claimed that contemporary teacher education should demonstrate the continued use of competency-based, personality-based, and inquiry-based approaches; these methods are generally viewed in place of alternate standards for curriculum design and

pedagogical orientation. Using this standpoint, they see this as having been considered using relating concepts related to distinct functioning and individual development to sociocultural development and settings. Such approaches may aid in providing foundations for a more comprehensive paradigm of professional development. They conclude that a teacher education setting offers backing to trainee teachers for evolving professional identity. The centrally sightsee the practice of instruction for its primary public connotation, and these meanings recount to their structures of personal gist.

Teaching Practicum, Teacher Education, and pedagogy
Concerning the association between teaching practicum, teacher education, and pedagogy, Grossman and McDonald (2008) examined two distinct but closely related fields, studies on teaching and teacher education. Notwithstanding its roots in teaching research, they observed that scholarship on teacher education has developed in seclusion both from conventional research on teaching and from research on higher education and professional education. A robust connection to research on instruction and teaching does enlighten the likely content of teacher education, with a stronger connection to studies that have to do with public organizations and policy implementation, concentrating on considering organizational settings in which the work takes form. The authors argue that for any research in teacher education to advance, a reconnection with various fields to address both teachings' intricacy as a practice and teachers' preparation is needed. The study suggests that it may be time to coming back to a deeper understanding of the density of teaching and more robust tools for seizing instructional practice. In this search for common factors, both researchers and teacher educators need to take the relational aspects of teaching practice more seriously. Like clinical psychology, social work, clergy, and other professions of human improvement, claims have been made that teaching tends to hinge relatively centrally on the quality of affiliation between the professional and client, in this case, teacher and student and proposed that the intermediate field experience, an often-ignored feature of teacher education programs, can be a potential site for undertaking professional work. About communities of practice and teaching practicum, Warner & Hallman (2018) claim that theoretically framing such field experiences could offer robust experiences that are intended to serve as transition points into professional teaching practice. As teacher education reiterates a commitment to prepare teachers to teach diverse groups of students, it is essential that this move beyond rhetoric and into the spatial and temporal contexts in which we live.

Areas for Effective Pedagogy
Among the many areas for consideration in effective pedagogy, which should be the teacher educators' concern, is classroom management. A study by Emmer and Stough (2001) contended that scholarship on classroom management is studied with stress on inquiry lines initiated in educational psychology with inferences for teacher education. Preventive, group-based methods to management offer teachers a basis to plan and establish classroom activities and desirable behaviors. Scholarship on teacher expertise and effect can substantially offer further perspective on teacher development and management influences. Also, cooperative learning activities and attachment of children with special needs exemplify contexts that may affect management. Application of classroom management spheres in educational psychology areas in teacher preparation has been a crucial area of discussion, and several books have been published. Research conclusions have been practical to in-service and pre-service teacher preparation programs, including teacher assessment and evaluation. Classroom management has also shown a significant aspect of the teacher's pedagogical knowledge and is often found as a component of taxonomies and descriptions of core knowledge for educators. Studies further suggest that novice teachers may need to reach a minimum level of management skills competency before they can develop in other areas of instruction (Emmer & Stough, 2001).

According to Darling-Hammond (2006), teachers' considerable content to succeed in their profession is indiscernible to lay observers, leading to the opinion that teaching involves the diminutive formal study and frequent disparagement for teacher education programs. The author claimed that the weakness of commonly used teacher educational program models, especially those that are a collection of principally unconnected courses, reinforces this low repute and, hence, argued that we had learned a great deal about creating stronger, more effective teacher education programs. The study outlines the three critical mechanisms of such programs that would include constricted, consistent, and integration among courses undertaken and between course work and teaching practicum in schools, wide-ranging and profoundly supervised practicum, which could be cohesive with course work using emerging pedagogies that link the theory and practice aspects. It is also assumed that a hands-on relationship with immediate schools that serve diverse learners efficiently and develop and model good teaching would also be valuable among trainee teachers. The study further contended that institutions that have an opportunity to train teachers should resist pressures to soften teacher

preparation, which eventually would weaken the preparation of would be entering teachers, the standing of schools of education, and the strength of the profession. This is even though habitually, the "practicum side of teacher education that has been somewhat chaotic, depending on the habits of loosely selected situations with slight guidance about what ensues in them and little connection to university work" (p. 308).

Teacher Education Curriculum

In a study analyzing the general trends in the teacher education curriculum, Mahabeer (2018) explained that with several years of democracy and commitment for a fundamental transformation in the education spheres, education systems continue to approve and acclimatize international requirements and settings in pursuit of first world standings. Paradoxically, it has been noted that ideas of localization of the curriculum have become likable words of the day. In the wake of such movements, a reconsideration of the teacher education curriculum for tomorrow, and the way one reason and speak about the curriculum, has come to the forefront. Through several methods of curriculum, studies have validated curriculum decision-makers' rationalization about decolonizing the curriculum. While other curriculum decision-makers continue with the Western ways of thinking about the curriculum, others swing in their thinking towards an appropriately sustainable approach to the curriculum. The study sustained that curriculum decision-makers are representatives and are neither self-satisfied nor at the clemency of Western familiarity and ideologies. Apprehension on curriculum matters and disorder rooted within taken-for-granted philosophies has continued to impact the teaching profession. Emphasizing the need for quality teacher orientation, Ertmer and Ottenbreit-Leftwich (2010) indicated that to be able to fulfill the needs of 21st-century learning and to facilitate meaningful learning; teachers must understand how to use technology so that they can help students to hypothesize and construct deep and connected knowledge that can be applied in real situations. They further argued that it is the teacher educators' responsibility to prepare their student teachers to become effective 21st-century teachers capable of integrating digital pedagogy in their classrooms. That teacher educators should warrant that the necessary sustenance and improvement for digital pedagogy are essential aspects of the teacher preparation course.

In other studies on teacher education curriculum, Sailin & Mahmor (2018) argued that higher institutions of learning should consider including pedagogy for technologies as a subject in designing their teacher education program and emphasized that such a move would help teachers learn innovative teaching strategies which in turn, could build their confidence in incorporating digital pedagogy in their future teaching practice. They also state that meaningful learning activities should be incorporated into teacher training programs to expose teachers to trustworthy experiences, which will be valuable for their learning and future teaching practice. The authors concluded their study by suggesting that teacher educators should be furnished with the skills to coach and design meaningful learning using digital technologies so that the desired learning outcomes for their charges will be successfully achieved.

Lifelong learning for teachers

One other aspect that has been at the center of research on teacher education is lifelong learning. Lifelong learning is said to be a basic requirement in each trade and profession, and that teacher trainers should be seen as role models for practicing teachers and future teachers and that the concept of teachers' professional development in the career system is linked to education (Szűcs, 2018; Tamášová, 2015). The lifelong learning approach is an educational phenomenon that includes all life processes from birth to death and all activities that aim to develop individuals' knowledge, skills, and competencies. It has also been described as a process that includes a rapid change through which individuals acquire competencies in different areas during their lives and that every individual needs lifelong learning for both their occupational and individual needs; they also indicated that changing world conditions and developing technology makes lifelong learning essential for all individuals (Kaplan, 2016). Teachers' ongoing professional development can be described as a regulated process and is essential for teachers' renewal of the basic practices taking place at a given time. Studies have shown that it is the teacher educators' responsibility to prepare their student teachers to become effective 21st-century teachers who can integrate digital pedagogy in their classrooms. That teacher educators should ensure that the needed support and augmentation for digital pedagogy become an integral aspect of teacher preparation in the 21st-century (Sailin & Mahmor, 2018). In line with an attempt to ensure lifelong learning for teachers, Peet, Lonn, Gurin (2011) and Boyer, Matney, Marra, and Daley (2011) developed the Integrative Knowledge Portfolio Process Model (IKPP), which enhances learners' ability to identify, integrate and synthesize their emergent knowledge, skills and identities over time and across contexts. They further argued that through IKPP, students develop a sense of personal agency and the capacity to respond to complex social issues.

METHODOLOGY

The study design used was a quantitative exploratory factor analysis to examine an eight-factor structure of the instrument and analyze the association between variables. Quantitative studies rely on the gathering and analysis of mathematical data to describe, explain, predict, or control variable quantity and phenomena of interest. Studies have shown that one central fundamental tenets of quantitative research are a philosophical belief that the world we live in is relatively stable and uniform, such that we can measure and understand it and make broad generalizations about it (Mertler, 2018). Factor analysis is a statistical technique that allows the researcher to focus on reducing data to combined variables (variates) or underlying ideas/ concepts/constructs. The study examined the perceptions of Secondary School Heads of Departments on teacher trainees' pedagogical practices in Zambia.

The study population consisted of all the secondary schools in three districts. Each high school has six heads of departments from each discipline. A purposive sampling technique was used to identify respondents. This is a sampling technique in which dependence is on one's judgment when selecting the population to participate in the study. Therefore, the sample size was (n=120) drawn from twenty schools. The instrument used in the study was a questionnaire, adapted from Barron (2015) consisting of two sections, the demographic information and forty items for the respondents on a four-point Likert scale (4-Very Satisfied, 3- Satisfied, 2- Dissatisfied and 1- Very Dissatisfied). The initial instrument did not have demographics and consisted of 46 items. Printed questionnaires were distributed to the sampled schools, and a letter of explanation attached. The procedure for completing the questionnaires was explained during contact with the respondents. Although the instrument was a self-reported questionnaire, respondents could ask questions to ensure their understanding as they filled in the questionnaire, including items' meaning.

Since the study measured data that already existed and the number of respondents was not too large, the descriptive correlational method and chi Square were employed to determine the mean scores with subsequent Standard Deviations (SD) to ascertain the extent to which Teacher Trainees' used the Pedagogical Practices in Secondary Schools in the perception of Heads of Departments. The analysis results were reported in a discussion forum, and the eigenvalues provided information about how much percent of the variance was accounted for by the EFA. The descriptive statistics and EFA was used for the only research questions under study. The statistical treatment of data gathered was done by coding and analyzing using SPSS v26.

The validity of the study was sought from experts' judgment by critically looking into the research instruments' content against the research question. Corrections were made accordingly to suit the need of the research question. A pilot study was conducted on (n=43) heads of departments who were not part of the study sample. Reliability test for 40 items that measured the extent to which trainee teachers used pedagogical skills was ran using Statistical Package for Social Sciences version 26 (SPSS) to ensure that the questionnaire items were highly reliable. Reliability measures indicated the relationship between the instrument items, identified participant populations, and the tool's application context (AERA et al., 1999). Using the Crombacks Alpha method, the reliability coefficient was executed, giving reliability coefficiency of .930.

Permission was sought from the headteachers in the sites to administer the survey instrument from heads of departments and, after being allowed, solicited for voluntary participation from study the head of departments. After obtaining the consent from the site and the participants, they were then given a brief explanation about the study's purpose after filling consent forms. They were made aware of the freedom to withdraw, deception, protection from physical and psychological harm, confidentiality, anonymity, and academic integrity. Primary data was therefore generated through the instrument administered, while secondary data was through journals and books.

Presentation of Results

Data were collected from a total of 120 heads of departments. The variables collected included gender, school establishment, and department. The demographic data collected on the three variables included 64(53.3%) males and 56(46.7%) females. In terms of school establishment, 78(65%) heads of departments who participated in the study were from public secondary schools, while 42(35%) were from grant-aided secondary schools. The departmental representation constituted 40(37.5) from the languages department, 38(31.7%) from mathematics, 12(10%) from the department of social sciences, and 6(5%) were from the department of practical subjects. Others were 5(4.2%) from the business studies department and 14(11.7%) from natural sciences.

Descriptive statistics showed the mean scores and the standard deviation for each factor. The normality test was conducted on all the variables, and it was revealed that all of them were normally distributed. The mean values for each factor ranged from 2.2 to 3.0. The communalities tell us how much variance of a variable was captured by the components, giving us a variance of .556. Initial

Eigenvalues showed how much of the variance was extracted from the 40 items. Items with eigenvalues of 1 or more indicated the maximum components that could be extracted. The first two components accounted for 27% of the variance, while the first eleven accounted for 62%. The entries in the component's matrix are the correlations between the variables and the components for all the better than 1.00 (in which case there are thirteen components as highlighted).

Principal Component Analysis (PCA) with Promax (Oblique) rotation

The principal component analysis (PCA) showed analysis taken to completion with maximum components = total variables (40) and 100% of variance = 30 units. Further, the extraction phase was identical to the preliminary phase, so the two-factor solution accounted for the same as in the preliminary phase (26.727%) and the components were correlated at .330. Streiner, Norman & Cairney (2015) recommended varimax (orthogonal) rotation for correlation <= .3, but the option was to keep oblique rotation because the axis of the factors was closer together than an orthogonal rotation could make them. The variable 1 ("Apply a range of different approaches to ensure that all learners make the expected progress") correlated most strongly with component 1 at .656, variable 2 ("Demonstrate flexibility and adaptability by changing pace, approach and teaching method in a lesson in response to what learners say and do") correlated next most strongly at .641. The last variable correlating more strongly with component 1 than component 2 was variable 19 ('Can practice professional ethics towards pupils and fellow teachers') at .178. We can also see an analogous pattern for component 2. The variable having the highest structure coefficient for that component was variable 20 ("Can discuss in detail individual learners' progress as well as attainment/achievement") at .708, then variable 21 ("Show knowledge of how to promote learners' understanding and exploit the potential provided by social and cultural diversity") at .671 and so on. It should be noted that the structure matrix items can only be associated with component 1 because it is higher than its coefficient for component 2. The rule is that in order to name each component, the researcher needs to focus on the items that are most highly associated with it.

Six-dimension PCA solution

Table 1 below shows the PCA Matrix. As shown, some correlations are not correlated, but there is a considerable correlation between others.

Table 1: Component Correlation Matrix

Component	1	2	3	4	5	6
1	1.000	.220	.249	.105	.108	-.108
2	.220	1.000	.070	.114	.076	-.030
3	.249	.070	1.000	.083	.190	-.135
4	.105	.114	.083	1.000	.120	.018
5	.108	.076	.190	.120	1.000	-.085
6	-.108	-.030	-.135	.018	-.085	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

The output further showed the common factor analysis matrix. There are some discrepancies between the common factor analysis and PCA table. This is because factor numbers are sometimes twisted up in the rotating component. However, we are more concerned with variables that are strongly associated with the components or factors.

Rotation Method: Promax with Kaiser Normalization and ULS Analysis with A Promax Rotation

The results further showed a six-component PCA solution, accounting for 37.1% of the total variance, and some items were most strongly correlated with each factor. Results also showed the ULS factor 1 is correlated at .061 with component 2 and .067 with component 3. Factor 4, 5 and 6 are correlated with 1 at .301, .104 and .082 respectively. Others correlating with factor 1 include component 7 at .021, component 8 at .216, component 9 at .436, component 10 at .305, component 11 at .161, component 12 at .077 and component 13 at .141. This shows that the rotating components of factor numbers can sometimes get twisted up in rotation if we compare. However, the interest in this case instead is to check on the most strongly associated variables with the component or factor. For the principal axis factoring as an extraction method, the solution accounted for 52.6% of the total variance. The first principal axis factor appears to subsume, ordered by the strength of the structure coefficients, Items 26 (.718), 21(.709), 24(.689),

29(.644), 30(.606), 23(.531), and 25(.462). This can best be explained in table 3, giving us the structure of the pedagogical practice inventory resulting from the factor analysis and reliability analysis. The scales can be seen to have been built based on the analysis.

Table 2. Reliabilities for the Eight Scales

Item Sets from ULS/Promax	Cronbach Alpha
Content knowledge	.754
Teacher Creativity, innovation & ICT use	.697
Special education awareness	.668
Student Assessment	.666
Teaching thinking skills	.661
Structures and Techniques	.655
Teaching Professional Ethics.	.645
Communication skills	.601

Table 3 below shows the eight scales developed. The item structure, as seen, is comprised of the scales supported in the analysis carried out. The basing of the item sets is on ULS/Promax solution earlier done to comprise the structure above, except for items 27,28,32 and 34, as the reliability test could not support them, giving less than .60 threshold as seen on table 3 below. The decision made was to set another reliability test to include them in other factors. This, therefore, means that we have developed eight scales for the items on the instrument, namely, Content knowledge, Teacher Creativity and innovation, Student Assessment, Special education awareness, Structures and Techniques, Teaching thinking skills, Communication skills, Teaching Professional Ethics which fit in the data set for a new tool altogether. The reliability analysis is summarized on the inventory in Table 2 above.

Table 3. The structure of the pedagogical practice inventory

Content knowledge	Eigenvalues	Cronbachs Alpha
Demonstrate an understanding of the range of professionals that contribute to learners' overall development and their place in the 'bigger picture'.	.921	
Innovative approaches to the integration of Every Child Matters, and social and cultural diversity.	.718	
Are able to discuss in detail individual learners' progress as well as attainment/achievement	.584	
Show knowledge of how to promote learners' understanding and exploit the potential provided by social and cultural diversity.	.575	.754
Can give examples of lessons, and individual/groups of learners, to illustrate this – including the identification of barriers to learning and how these were/can be overcome	.442	
Are able to use their depth of subject-specific pedagogical understanding to explain in detail why they use particular teaching approaches and why these are likely to be more successful than others	.423	
Teacher Creativity and innovation		
Lessons feature debate between learners and between learners and the teacher	.704	
Apply a range of different approaches to ensure that all learners make the expected progress	.599	.697
Show innovation within the constraints of a scheme of work/curriculum	.585	
Fully exploit possibilities to promote learners' understanding and appreciation of social and cultural diversity.	.473	
Student Assessment		
Monitor learners' progress to evaluate quickly how well they are learning so that they can change the approach during the lesson if necessary,	.757	.666.

Demonstrate the ability to apply their own depth of subject knowledge to support learners in acquiring understanding and skills, often showing understanding,	.715	
Demonstrate flexibility and adaptability by changing pace, approach and teaching method in a lesson in response to what learners say and do	.593	
Provide detailed feedback and targets to individual learners that are focused well to ensure further progress	.521	
Special education awareness		
Teach lessons that invariably capture the interest of learners, are inclusive of all learners	.747	.668
Have a rapport with learners – high-quality dialogue and questioning, guiding learning, with attention to individuals and groups	.474	
Describe the stages in progress through a topic/set of ideas and concepts/sequence of teaching – explaining what they would look for in learners	.463	
Display review, and critical analysis and reflection, taking full account of feedback from trainers and other professionals they work with.	.386	
Show high-quality self-evaluation with clear focus on learners and	.369	
Structures and Techniques		
Use of these (on number 14) to plan 'steps in learning', their teaching, dealing with barriers to learning, and through this demonstrate depth of subject knowledge and subject pedagogy	.845	.655
Provide evidence of monitoring and recording learners' progress and how the outcomes are used in subsequent planning, with a clear focus on groups and individual learners	.723	
Teaching thinking skills		
Ensure that all learners make progress to fully achieve challenging intended learning outcomes	.872	.661
Teach learners to be able to explain how the teaching helped them to make progress	.477	
Make links with other aspects of learners' development and understanding (for example, linking to work in other subjects)	.429	
Show innovative and creative thinking – lateral thinkers	.668	
Demonstrate, or show the capacity to develop, leadership and management skills	.502	
Have the clear capacity to become outstanding teachers	.483	
Communication skills		
Demonstrate a clear and deep understanding of how to plan for progression – stages in learning, different rates of progress, identifying clear 'strands of progression' .	.800	.601
Inspire and communicate their enthusiasm to learners	.598	
Take risks when trying to make teaching interesting, are able to deal with the unexpected and 'grab the moment'	.427	
Teaching Professional Ethics		
Are able to practice professional ethics towards pupils and fellow teachers	829	
Show innovative and creative thinking – lateral thinkers	668	
Have ability to take and evaluate appropriate actions – they are able to learn from their mistakes	899	
Demonstrate clarity of links between learning objectives, teaching approaches and assessment strategies – 'what I want learners to learn, how they will learn, and how I know that they have.	358	
Take full responsibility for their own professional development	809	.645
Have the ability to reflect critically and rigorously on their own practice to inform their professional development.	833	
Are highly respected by learners and colleagues and, where appropriate, parents/carers and employers	590	
Have an intrinsic passion for learning	477	

Have ability to take and evaluate appropriate actions – they are able to learn from their mistakes	.899	
Are highly respected by learners and colleagues and, where appropriate, parents/carers and employers	.590	

DISCUSSION

An exploratory factor analysis of 40 items of trainee teachers' pedagogical practices was performed on the data from 120 heads of departments. Before running the analysis with IBM SPSS 26, the data were screened by examining descriptive statistics on each item, interitem correlation, and multivariate assumption violations. From this initial assessment, all variables were interval-like, with a normal distribution, and all the cases were independent of the other. Comparing the small sample size with the number of items on the tool, though not very adequate, could allow for the data analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy was .718, implying that the present data were suitable for principal components analysis. Also, Bartlett's test of sphericity was significant (p< .001). This shows a sufficient correlation between the variables to proceed with the analysis. Building on Barron's (2015) work, this study tends to contribute to the existent study of teacher pedagogy by creating a survey tool with eight scales drawn from the forty items of the original survey instrument. Heads of departments were able to identify pedagogical areas in which trainee teachers have challenges, as shown in table 5, with items with eigenvalues less than .6. A total of thirteen factors had eigenvalues greater than 1.00, cumulatively accounting for 52.60% of the total variance. The pedagogical practices index can be said to have eight scales that were developed. As displayed with their respective reliability levels, the extraction of the sets of factors showed eight scales extracted accounting for 67.0% of the total variance in the ULS solution. Many of the correlations between pairs of factors were more than .30, somewhat suggesting some level of appropriateness of the oblique rotation strategy; hence Promax rotation was used in conjunction with other extraction techniques. The internal consistency of each factor was examined by coefficient alpha, showing good internal consistency.

According to the study, trainee teachers' pedagogical practices range from Content knowledge application, Creativity and innovation, Student Assessment, Special education awareness, Structures and Techniques, Teaching thinking skills, communication skills, and Teaching Professional Ethics in that order. However, the findings showed that the various pedagogical practices by trainee teachers are closely related (homogenous). The study suggests that trainee teachers tend to show strength in Pedagogical Content Knowledge (PCK) more than the other areas of pedagogy. This is in contrast to Halim et al. (2002), who found that trainee teachers' PCK for encouraging concrete understanding was inadequate and that they were deficient in transforming their understanding of rudimentary concepts required to teach. It is also said that while teacher knowledge is certainly a component of teacher professionalism, professional competence involves more than just knowledge. Skills, attitudes, and motivational variables also contribute to the mastery of teaching and learning. Another study by Özden (2008) showed that student teachers had basic knowledge, few misconceptions, and certain inadequacies at a conceptual level and had difficulty understanding the relationship between concepts affected by their previous experiences. The study agrees with the current study's findings that most student teachers display consistent content knowledge, emphasizing that content knowledge positively influences pedagogical content knowledge and influences effective teaching practice.

The other seven factors have shown evidence of inadequate emphasis on teacher training curriculum. However, it should be noted that all the factors are closely linked to teachers' strategies for coping with challenges in their daily professional life and their well-being and shape students' learning environment and influence student motivation and achievement (Thoker, 2017). Notably, this study concludes that much of what is lacking among trainee teachers is General Pedagogical Knowledge (GPK), which constitutes techniques, strategies, teaching approaches, and general teaching ethics. Moreover, general pedagogical knowledge has not been the object of many research studies, even though several studies indicate that it is essential for developing quality teachers. Guerriero(n.d). For Patterson (2020), developing general pedagogical skills is insufficient for preparing teachers, as is having teachers acquiring only content knowledge and argues that the knowledge base of teaching rests at the intersection of content and pedagogy.

CONCLUSION

By implication of this study, teacher training practices common in most institutions may seem to be flawed, even counterproductive, to build teachers' pedagogical practices. At the center of effective and life-long teaching is the teachers' pedagogical content

knowledge. If improvement in quality teaching and learning should be appreciated, there is an urgent need to resist old traditions that are detrimental to teaching professional learning. Instead, we should acknowledge and expand the insights of experts who develop competence in subject matter teaching and other general pedagogical practices. Systems should also commit to high-quality professional development and orienting trainee teachers in professional ethics to develop this expertise. When we do this, we support the teacher's growth as a person and a professional who can expertly lead a student to academic success. Concurrently, we will contribute to realizing the goals and priorities of the classroom and the school system. As defined by Patterson (2020), "pedagogical content knowledge" is the teachers' elucidations of subject-matter knowledge in the framework of enabling student learning and thereby enabling teachers to transform the subject matter of a specific discipline to make it available to learners. It includes acknowledging what makes specific topics problematic to learn, and the conceptions students convey to the learning of these concepts, the need to generate teaching strategies tailor-made to specific teaching conditions. It should be noted that to teach all students according to the 21st-century ideals; teachers need to understand their subject matter intensely and amenably so that they can help students plot their ideas, recount one idea to another, and readdress their thinking to create powerful learning. Today's teachers also need to see how ideas link across fields and to everyday life. These are the building blocks of pedagogical content knowledge. Therefore, when teaching subject matter, it is important that the teachers' actions should be determined largely not only by the depth of their pedagogical content knowledge but also by the general pedagogical knowledge and that it is imperative to ensure that pedagogical content knowledge should be subject-specific.

RECOMMENDATIONS
Based on the findings, this study recommends the following:
- Teacher Training institutions should incorporate professional ethics in teacher training syllabus as a key course for teacher trainees to orient them of the various theories of choices.
- There is a need to ensure that those who train teachers have the necessary pedagogical skills for ease of transfer of learning and model practice.
- General pedagogical knowledge should be a key component of teacher training to ensure balance with pedagogical content knowledge.

RECOMMENDATIONS FOR FURTHER STUDY
Future research is needed to explore the eight established factors using the development tool and a much larger sample of participants to facilitate a more robust analysis.

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Cite this Article: Aubrey Hibajene Mweemba, Risper Awuor (2022). Exploratory Factor Analysis of the Perceptions of Secondary School Heads of Departments on Teacher Trainees' Pedagogical Practices in Three Districts of Zambia. International Journal of Current Science Research and Review, 5(7), 2283-2296