QUALITY OF TEACHER EDUCATION FOR 21ST CENTURY CLASSROOMS

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ABSTRACT - Quality of training that pre-service teachers get has an impact on the quality of education our children will get from the classrooms managed by these new educators when they join the teaching profession. Experience has shown that teachers are more likely to teach the way they were taught. Therefore, poor teacher education quality is more likely to result in poor education quality in schools. The 21st Century classrooms are mostly made up of learners who are digital natives. These classrooms require educators who are well equipped with technological pedagogical and content knowledge (TPACK) for effective and enhanced teaching and learning processes. This study aims at investigating the quality of teacher education that new teachers are getting from the four year training program for 21st Century classrooms. The study employs a qualitative research approach whereby in-depth interviews and open-ended questionnaires are used to collect data from final year student teachers and their instructors. Preliminary results show that the graduating student teachers are not receiving the quality of teacher education which will suffice in classrooms occupied by digital natives. The training is lacking knowledge on effective integration of the digital technologies into curriculum delivery.

Keywords: quality teacher education; digital technologies; 21st Century classroom; TPACK

1. INTRODUCTION

There has been an outcry in country about the quality of education learners in school are receiving. According to UNESCO (2006:50) quality education is important because it is the basis of good learning outcomes in schools. However, it follows that the quality of education learners receive in schools is dependent on the initial training and preparation of teachers for curriculum delivery (ibid). In other words, teacher education quality impacts on the education quality in our schools. The teacher education in many countries today is, however, categorised into two stages viz-a-vis pre-service and in-service. According to Taylor (2015:3) "pre-service teacher education includes all the stages of education and training that precede the teacher's entry to paid employment in a school. In-service training is the education and training that the teacher receives after the beginning of his/her career". This paper focuses on the former.

The argument here is that the quality of training that pre-service teachers get has an impact on the quality of their teaching when they join the teaching profession. Research has shown that teachers are more likely to teach the way they were taught (Britzman, 1991; Chigona 2014). Therefore, poor quality of teacher education pre-service teachers may receive would be more likely to result in poor quality of classroom teaching; hence poor quality of education in many schools. It should be noted that, the 21st Century classrooms are mostly made up of learners who are digital natives (Collins & Halverson, 2009). These classrooms require educators who are well equipped with technological pedagogical and content knowledge (TPACK) for effective and enhanced teaching and learning processes (Kohler et al, 2013). Thus the teacher education institutions have the mandate to ensure the new teachers are graduating from the training with the necessary knowledge and skills to teach with new technologies available in many schools today (Chigona, 2015).

The aim of the study being reported in this paper was to investigating the quality of teacher education that pre-service teachers are getting from the four year training program for 21st Century classrooms. The questions that gave the study drive and focus were:

i. What quality of teacher education are new teachers exposed to for teaching 21st Century classrooms

ii. How do pre-service teachers perceive the quality of teacher education they receive with regards to teaching 21st Century learners?

To answer these questions, the study employed a qualitative research approach whereby in-depth interviews and open-ended questionnaires were used to collect data from final year pre-service teachers and also from their instructors. Results have shown that the graduating student teachers are not receiving the quality of teacher education which will suffice in classrooms occupied by digital natives. The new teachers feel ill-prepared to integrate new technologies into their teaching in the 21st Century classrooms. It is therefore, recommended that teacher educators should improve the quality of instructions for pre-service teachers by ensuring to equip them with TPACK. Thus, there is a need to redefine teacher training for 21st Century teachers.

2. LITERATURE REVIEW
2.1 Desired qualities of a 21st Century teacher

Teachers in this century may not be able to connect with their learners effectively if their pedagogies have not undergone a paradigmatic shift towards teaching with digital technologies (Starkey, 2012). Just before the beginning of this century, it was reported in Moursund & Bielefeldt (1999:i) study that

> "Teachers are being asked to learn new methods of teaching, while at the same time are facing even greater challenges of rapidly increasing technological changes and greater diversity in the classroom... [given such challenges] relatively few teachers (20%) report feeling well prepared to integrate educational technology into classroom instruction."

This means the 21 Century teachers need to embrace new technologies and be able to integrate them into their curriculum delivery (Chigona, 2014). Such qualities are desired because the 21st Century learners digital oriented as they have exposure to social media. The learners are so fond of the digital tools such that most of their daytime is spent on smartphones or tablets surfing on the internet, chatting and sharing videos on YouTube (Quinlan, 2014). These digital-oriented learners need teachers with the digital knowledge and skill to facilitate their participation in a collaborative, technology-based learning culture (Bosco, 2009). The teachers should be able to facilitate and inspire learning processes and creativity so that all learners are adequately prepared to participate in the global economy (Ala-Mutka, Punie, & Redecker, 2008; Bytheway et al. 2010). It is therefore, no longer a choice but a mandate that teachers should shift their pedagogies to accommodate the learning needs of the 21st Century if they are to provide quality education appropriate for the development of good citizenry in this digital age (Patrick & Dawley, 2009; Trilling, & Fadel, 2009).

2.2 Teacher education for 21st Century classrooms

In South Africa just like many other countries globally, there have been concerns regarding the quality of teacher preparation. Teacher education has in many cases blamed for the incompetent teachers who are negatively impacting on the quality of education in schools. In the United States of America, Carroll & Resta (2010:1 citing Duncan, 2009) argue like, "

> by almost any standard, many if not most of the nation's 1,450 schools, colleges, and departments of education are doing a mediocre job of preparing teachers for the realities of the 21st century classroom. America's university-based teacher preparation programs need revolutionary change—not evolutionary tinkering."

Normally, the concern in developing countries is that the teacher education is not doing enough to prepare and/or develop educators with the skills needed to enable their learners to compete fairly in the 21st Century (Chigona & Chigona 2013). Researchers both locally and abroad have observed that teacher educators seem to be held in the past centuries where new technologies was not an issue, however, becoming aware that their student teachers are destined for classrooms occupied by

learners that have a clear vision of what a 21st Century education should provide(Carroll & Resta, 2010; Chigona & Chigona). In other words, the teacher education is not doing enough to prepare new teachers for the realities of and quality education for the century (Levine 2006).

According to UNESCO (2006:49) the 21st Century teacher education should be able to develop pre-service teachers' "general education and personal culture; their ability to educate others; an awareness of the principles which underlie good human relations, within and across national boundaries; and a sense of responsibility to contribute, both by teaching and by example, to social, cultural and economic progress". In other words, the quality of instructions the pre-service teachers receive from their teacher educators determines their effectiveness in classrooms.

Nevertheless, the question remains *how pre-service teachers can get quality teacher education necessary for 21st Century classrooms*? Researchers like Carroll & Fulton (2009) are of the opinion that teacher education assisted by government should focus its resources on preparing the pre-service teachers who would be able teach digital natives in order to meet the workforce demands of the 21st Century which are for global knowledge economy. Teacher education programs need to take a challenge of reinventing themselves to train teachers who will be able to use available 21st Century teaching and learning technologies and resources believed to develop the knowledge and skills for the global economy (Starkey, 2012). It is argued that most teacher education programs are not adequately preparing 21st Century teachers because are still today designed using Shulman's Pedagogical Content Knowledge (PCK) which is the integration of content and pedagogy in order to deliver curriculum (Finger, Jamieson-Proctor & Albion, 2010). The researchers are recommending that the teacher education programs need to move beyond PCK, towards more contemporary conceptualization of TPACK (Ibid).

According to Koehler et al (2013:2) "the TPACK describes the kinds of knowledge that teachers need in order to teach with technology, and the complex ways in which these bodies of knowledge interact with one another". For pre-service teachers to master this knowledge, teacher educators need to facilitate its development starting by introducing relatively familiar technologies to the new teachers (ibid). In other words, teacher educators need to encourage the implementation of TPACK to better prepare the new teachers for the 21st Century classrooms. Thus, teacher educators need the understanding of TPACK to effectively integrate it in the programs (Finger et al, 2010).

3. RESEARCH DESIGNS

These classrooms require educators who are well equipped with technological pedagogical and content knowledge (TPACK) for effective and enhanced teaching and learning processes. This study aims at investigating the quality of teacher education that new teachers are getting from the four year training program for 21st Century classrooms. To answer the research questions for this study, qualitative research approach was employed whereby in-depth interviews and open-ended questionnaires (Maxwell, 2012) were used to collect data from final year pre-service teachers and also from their instructors.

3.1 Sampling and data collection

Final year pre-service teachers were randomly sampled to participate in the in-depth interviews about their perceptions on the quality of teacher education they have received during the four years of their teacher training. The pre-service teachers were randomly sampled from a teacher education institution in Cape Town. Ten pre-service teachers were sampled from a group of seventy-eight teacher education students to participate in the interviews in the study. This group of students consists of graduating pre-service teachers destined to teach foundation, intermediate and senior phases.

Teacher educators from the institution also participated in the study. Seventeen randomly selected instructors were asked to respond to an open-ended questionnaire about their integration of ICTs into the instructions for pre-service teachers and their perceived role in preparing their students for the 21st Century classrooms. Questionnaires were distributed to the respondents via e-mail. All the seventeen questionnaires were turned back with qualitative information; though some respondent were to be reminded several times through the phone to complete the questionnaires.

3.2 Data analysis and credibility

The in-depth interviews with the ten pre-service teachers took place at the institution. Semi-structured questionnaires were used during the interviews which were audio-recorded. Consent to take part in the study and to record the interviews was obtained from each of the pre-service teacher participants. The audio-recorded interviews were transcribed verbatim soon after each interview. In order to increase the credibility of the data collected (Patton, 2005) four randomly picked transcripts were sent back to the respective interviewees to check the authenticity and representation of the data. The respondents agreed with the authenticity of the data. Both the interview and open-ended questionnaire data were subjected to inductive content analysis (Elo & Kyngäs 2008). The transcripts were read over and over by the researcher, for open coding. Through the process codes were identified which were then grouped and developed into themes. Thereafter, themes which seem to be connected were grouped together to form super ordinate themes. These themes are used in the reporting of the findings and the presentation of discussion.

4. FINDINGS AND DISCUSSIONS

Findings of the study have shown that the pre-service teachers are not receiving the quality teacher education which will suffice in classrooms occupied by digital natives. The new teachers are not equipped enough for 21st Century classrooms. The findings regarding issues impacting on the quality of teacher education in this study are organised under the following themes

- Availability of resources
- teacher education programs designed
- implementation of TPACK in teacher education

4.1 Availability of technological resources

Analysis of the data collected shows that availability of resources for preparing the pre-service teachers could affect the quality of instruction the prospective teachers get. The pre-service teachers need to be exposed to and domesticate the tools they are likely to find in the 21st Century classrooms. However, it has been noted in this study that when the technological resources are in short supply, both the teacher educators and the pre-service teachers are affected; hence impacting on the quality of instructions. Many of the participating pre-service teachers in the study lamented like this respondent:

> "if I didn't have my own laptop if I didn't have my own printer it would have been terrible because you know you know let's call a spade a spade …. I think definitely, teaching with media must become the norm , … they need to make greater effort and emphasis … because there is a serious movement towards you know using technology."

The teacher educators in the study also showed concern about the availability of the technological resources available in the faculty for training the new teachers. The fact that many of the teacher educators are digital migrants and others are still migrating; the short supply of the resources is affecting the integration of the new technologies into the instructions. According to the participants, the ideal in terms of the resources would be to have all the necessary equipment mounted in each venue for instructions. In this regard, some of the teacher educators complained like:

"It's not easy to book equipment and have it set up for your class, when you are done take it back to the IT office. The process wastes a lot of time. It is especially cumbersome when you have two or three classes in a row but in different venues".

"As digital immigrants, it is no use being trained in something when you do not have the facilities to practice so you can master it before taking it to your students".

From the quotations above, it is evident that there is inadequate availability of technological resources which hampers the teaching with technologies in the teacher education. However, it is argued in literature that despite a lack of sufficient resources that teacher education institution might be experiencing, the instructors are mandated to ensure that the pre-service teachers are exposed to as many practical applications as possible (Condy, Chigona, Chetty & Thornhill, 2010). Similarly, Finger et al, (2010) are of the opinion that teacher education faculties should take challenges of developing technological skills of the instructors; and of being resourceful to ensure quality training for new teachers.

4.2   Design of teacher education programs

Up until few decades ago teacher education programs were designed to ensure pre-service teachers are equipped with pedagogical content knowledge (PCK). This knowledge characterized a good teacher hence teacher education programs were designed using PCK. However, with the onset of digital technologies in classroom PCK may not be adequate to teach 21st Century classrooms. Thus, the teacher education program needs to be redesigned to ensure pre-service teachers leave the program well equipped to teach the digital natives. Finger et al (2010:114) recommended that the designing of teacher education in the 21st Century should "move beyond PCK, towards more contemporary conceptualization of TPACK". This type of knowledge will enable the teachers to integrate digital technologies in to curriculum delivery effectively. When asked if the teacher education has prepared the graduating pre-service teachers; most of the responded like:

"Pedagogy and content yah…yah... was good …we were taught the most part…so I am lacking in technology perhaps in some parts but now I'm learning on my own".

"when it comes to content and pedagogy knowledge, it was structured... lesson planning and all these ...but with technology you had to learn by yourself by asking students hey how do you do this again, and again".

"yeah I think there are some of the lecturers are probably not from technological age, so they do not realise the impacts its having, I mean they had been in classrooms years ago. So yah i think they need to re-emphasise the importance of it in the classroom and perhaps try to prepare the students and show them how they can integrate many strands may be pedagogical sort off, pedagogy must be developed with the use technology...it will be beneficial".

Teacher educators in the study also agree that there is a need to reinvent the program to fully equip the new teachers for the realities of the century. They understand that this is their responsibility. One of the teacher educator respondents agreeing with the argument said:

"It is a must, we need to teach the students and show them how things can be done … It is our job to prepare them for the realities of teaching which is now and then undergoing change with the availability of ICTs. They [students] should be exposed to as great a variety of ICTs as possible, so that they can grow with the changes".

As argued earlier on, institutions offering teacher training courses need to take a challenge of reinventing themselves to equip teachers with knowledge and skills that would enable them to integrate the available 21st Century teaching and learning technologies and resources into curriculum delivery (Starkey, 2012).

4.3   Teacher educators need to facilitate TPACK development

While it is recommended that the teacher education should move beyond PCK, to ensure that the program is informed by TPACK, instructors are therefore required to have the understanding of the knowledge - TPACK. They need the understanding of the knowledge so they can facilitate its development in the pre-service teachers (Finger et al, 2010). The institutions need to ensure the instructors are embracing the technologies and use them when modelling the pre-service teachers. However, the draw back here is due to some instructors' technophobia coupled with laziness to learn more about new technologies and how they could be integrated into teaching. Some instructors in the study suggested forcing all teacher educators would help reinventing the instruction delivery for the pre-service teachers. They said:

> "forcing lecturers to use it, will enable them to experience the advantages of ICTs and force them to become familiar with the programs which in turn will help them to overcome their fear of technologies".

> "… while encouraging the lectures to use the technologies for teaching, a tailor made support system should be in place so as to see to the individual needs and abilities of lecturers".

The pre-service teachers also believe that the teacher educators need to be well trained so they can effectively facilitate TPACK. They need to teach by examples on how 21st Century learners should be taught. On recommending TPACK training for the instructors, the participating pre-service teachers in the study said:

> "they need more training … training on technology on the latest technology, how they can use them like for instance workshops, how to use the latest technologies to enhance their teaching".

> "I think [the faculty] needs to do a better job in training on technology, you see technology is not something …its need to be practical you know …The use of technology needs to be improved".

Since the pre-service teachers in the study did not receive the training they needed to be able to teach with technologies available in schools, most of them resort to teaching one another on how to use the technologies available in public school classrooms. The absence of TPACK in the teacher education has compromised the quality of the teacher training they received.

5. CONCLUSION

Teacher educator need to have the understanding of the 21st Century and have the knowledge on how such classrooms could be handled. Quality teacher education today can therefore be achieved if the teacher education program is redesigned to be informed by TPACK. However, such reinvention requires that teacher educators must have the understanding of TPACK so they can effectively facilitate its development among pre-service teachers.

In a nutshell, therefore the quality of teacher education in the study leaves a lot to be desired. It is not adequately preparing pre-service teachers for the challenges of the 21st Century. The pre-service teachers perceive the training they have received in the four years not enough to build their

confidence to teach the 21ˢᵗ Century learners, hence they resort to teaching themselves on how to use digital technologies in classrooms because they realise that quality teaching may not be possible without integration of digital technologies into curriculum delivery.

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