WHY DO TEACHERS EDUCATORS NOT PRACTICE WHAT THEY BELIEVE: ICT INTEGRATION GAPS

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Abstract

No one better than a teacher educator knows the importance of effective integration of Information and Communication Technology (ICT) into teaching and learning and its role in enhancing learning, both in school and at home. This study investigates how teacher educators (TE) integrated ICT in their teaching and how they support PT to integrate ICT in their practice lessons during their practice teaching time. The case study method was used for this study. The researcher spent two weeks with nine TE of three different teacher education colleges. The researcher gathered information from TE and PT using a questionnaire about their beliefs and practices regarding ICT integration. The TE were observed teaching and a lesson observation form was used to record observations. The TE believed that it was important to integrate ICT to better communicate content to students but their practices did not show this belief in action. The PT felt themselves poorly prepared to choose appropriate technology in their teaching as they did not view TE using ICT creatively and effectively in their classrooms. The study recommends TE to use creative teaching and assessment strategies that could support PT in exploring different ICT devices and learning their effective use.

Keywords: teacher education, ICT, technology integration, teacher educator belief, teacher educator practices.

1 INTRODUCTION

The teacher educators (TE) and policy makers started researching and exploring a new approach to teacher education at the conclusion of 20th and beginning of 21st century [1] [2] [3] and this conversation has resulted in many changes in the teacher education programmes (TEP) across the world. Many ideas emerged about what education in general and teacher education in particular should look like in the 21st century. The fast pace of new technological innovations emerging globally has become a force in shaping the contemporary teaching learning places. The ideas about 21st century education and teaching learning places have influenced all aspects of teacher education, from academic, completed in Teacher education institute (TE) to practice teaching, completed outside TEI. Pakistan, for the first time in its 60 years' history started reviewing its TEP in the beginning of the 21st century. The long exercise of reviewing TEP was made possible with the financial support of international donors such as United States Agency of International Development (USAID); Canadian International Development Agency (CIDA) and European Union (EU) with technical assistance from UNESCO Pakistan. The review and evaluation process produced new documentation such as The Status of Teachers in Pakistan [4]; Situation Analysis of Teacher Education: Strategic Framework for Teacher Education And Professional Development [5]; National Professional Standards for Teachers [6]; National Standards for Accreditation of Teacher Education Progams [7] and Curriculum of Education B. Ed (Hons.) Elementary /Associate Degree in Education [8].

The Situation Analysis of Teacher Education [9] identified nineteen problems affecting the quality of education in Pakistan in general and teacher education in particular and among them were TE "core competencies" (p. 48). The TE of the selected TEI were given training how to use modern teaching pedagogies and assessment strategies under the Pre-Service Teacher Education Program also known as Pre-STEP [10]. This programme was funded by the USAID and author was member of the implementation team of this project. The researcher observed changes in teacher educators' beliefs about ICT as their ICT skills improved. The TE were also facilitated by the professional development team to improve their ICT skills and practice them in simulated classrooms, integrating the subject content knowledge and pedagogical content knowledge and with ICT skills. The research also observed higher level of exposition to ICT integrated teaching and learning amongst those TE with advanced level of ICT skills as compared to those with novice and intermediate ICT skills level. This research is aimed at (a) to find out to what extent ICT integration practices of TE are based on their pedagogical beliefs and (b) how they support PT during their practicing teaching part of the course, especially in ICT integration in their practice lessons.

2 RESEARCH METHODOLOGY

The research used multiple ways to collect data from TE and PT. The first step was to collect date from TE about their beliefs about ICT integration and for this purpose a survey questionnaire was designed that that covered different aspects of teaching and learning such as classroom management, resource management and assessment of PT learning. The second step was to collect data from TE real classrooms by being there as an observer. A Classroom Observation Form (COF) was designed to record what TE and PT did in the classroom. The COF focused on how TE used ICT in their teaching and assessment of PT. The researcher spent two weeks with two teacher education institutes (TEI), observing 9 TE from each TEP, both full-time and visiting faculty. The number of PT enrolled in these two TEP in the year 2015-2016 was around 40 in their one year Bachelor of Education (B. Ed) programme and 10 in Master of Education (M Ed) programme. A separate survey form was designed for PT to find what they think of ICT and how it can help in their mastering the skills required for real classroom teaching. The PT were also asked about their experiences of mentoring by TE with special focus on ICT integration in the practice lesson they planned to teach as requirement to complete the required number of practice lessons in their subject. There was a focused group discussion with the TE and PT at the conclusion of 2 weeks observation time. The discussion tried to explore further what promote or hinders ICT usage in their everyday teaching and learning activities. The responses received through questionnaires and COF were processed and analysed using SPSS while the data from interviews were codified the responses and their pattern.

3 LITERATURE REVIEW

There are many studies as suggested by Chen [11] arguing that a teacher is a crucial factor in making teaching and learning interesting and purposeful and in successfully integrating ICT into classrooms. Many studies and reports [12] [13] [14]; Partnership for 21st Century Skills,[15]; OECD [16] have also led to the increase in investment in TEP by countries all over the world. The changes were not restricted to revision of TEP curriculum and provision and up-gradation of the ICT facilities in TEI but also included professional development of TE in the area of ICT skills and its integration at different aspects of classroom teaching and learning, from planning to assessment of PT. Pakistan, with the financial and technical support from international donor agencies such as United States Agency for International Development (USAID), UNESCO, Canadian International Development Agency (CIDA) and European Union (EU) brought about many changes in its TEP, that included curriculum revision, professional development of TE, provision and up-gradation of physical facilities of different universities offering TEP and a scholarship programme. [17] [18] [19].

The TE play an influential role in shaping PT beliefs about teaching and learning, classroom teaching and assessment practices and ICT. There are various approaches and models suggested and being applied in TEP [20] [21] [22] and these are influenced by the works of organizations such as UNESCO [23] [24] [25] Partnership for 21st Century Skills [26] and OECD [27]. The models suggested for the 21st century classrooms are developed keeping in mind the changing needs of learners, learning environment, learning places and latest innovation in technology. These models have made ICT an integral part of classroom teaching and learning process and suggest a new set of skills for newly graduating teachers and for TE. These skills are no longer consisted of learning the subject matter (content) but go beyond to its relevance in each learner's environment, enabling them to learn the application of the learned content and skills. This approach is known as social-constructivist [28] which is aligned with the 21st century knowledge and skills. ICT integrated teaching and learning environment is a place where TE support PT in constructing their content knowledge along with the pedagogical content knowledge and using ICT during the teaching learning process and mastering the ICT integrated classroom teaching.

There are not many studies investigating TE perceptions regarding ICT integration and researching how TE integrate ICT in their teaching and support PT during practice teaching, though there are a large number of studies focusing teachers in schools, their perceptions and practices of ICT integration. The studies conducted in the West found that though TE have access to all the technology they needed in their classrooms but they just use it in place of the old teaching aids (overhead projector, video cassette recorder, tape recorder). The studies by Bransford [29] Yildirim & Yildirim [30] [31] and Fu [32] noted that the ICT use by TE did not contribute in the emergence of a whole new pedagogy. The lack of emergence of a new ICT integrated pedagogy reveals the teaching tendencies of teachers in schools and TE in TEI and universities offering TEP. These tendencies have not been replaced by the new TEP or the revised TEP by integrating ICT in them. The replacement of old

tendencies with new ones requires a new approach that is, a new TEP programme that reshapes TE and PT existing attitudes of ICT usage in their everyday life, as a learner and as a teacher, from merely finding and gathering information to constructing pedagogical content knowledge.

An experimental study [33] conducted in an Australian University with PT aiming to prepare them to use different technologies in classrooms reported resistance from PT in integrating in their classroom teaching and assessment. The students wanted to learn only about those technologies that were available and allowed in schools thus leaving out the mobile phone and tablets as they were not allowed in classrooms. This study also highlighted the fact that TE teach about different educational technologies, increasing their technical competency and not a tool as noted by Jonassen & Reeves [34]. There are other studies from other countries that have similar findings. A study from Singapore [35], India [36] [37], Turkey [38], China [39] and Vietnam [40] also reported finding that were aligned with the above reported studies from Australia.

The courses designed by TE focused on learning the functioning of hardware and software rather than its integration with the different pedagogical practices. Another common element that can be found in the studies mentioned above is TE beliefs and its connection with their competency of using ICT in their classroom teaching, poorly preparing them to use ICT in their classrooms [41] [42]. The TE belief that ICT plays an important part in students learning is transmitted to PT and this shows up in the courses designed and taught in TEP. Higher Education Commission, Ministry of Education, Government of Pakistan approved the "Computer Literacy (Compulsory)" (pp, 94) [43], course that focuses on learning to use ICT "as a tool for communication & collaboration" (p. 94) [44] and prepare "lesson plans, result sheets" (p. 94), [45] and "personal & professional growth" (p.94) [46]. The other approved course "Information and Communication Technologies (ICTs) in Education (Professional)" (p. 159) [47] also focused on learning how to use different equipment such as digital camera, multimedia projector, Desktop/Laptop computers, internet, different office management programme and how to search information. The former course is taught as a compulsory course and the latter one is taught as a professional course, focusing on developing PT professional skills. The pedagogy courses approved by the HEC [48]) are "Teaching of English" (p 192) [49], "Teaching of Mathematics" (p. 201), [50] "Teaching of Social Studies" (p. 216) [51] and "Classroom Assessment" (p. 180) [52]. The content of these courses does not mention ICT as a tool to be used in teaching and assessment of learners. The recommended courses shows a discrepancy between what PT are learning and its irrelevance in 21st century classrooms. These courses focus on teaching ICT as a source of finding information to prepare lesson plans and use it as audio visual teaching aids, PowerPoint presentations, pictures, videos and audio but does not focus on integrating ICT as a core pedagogy of each of the pedagogy course taught. ICT as an assessment tool is completely ignored as TE neither use it in their classroom nor teach PT how to use it as an assessment and feedback tool.

The TEP offered in Pakistan stated in their objectives that PT will become proficient in technology integration in their classrooms. The courses designed and offered to PT have integrated the framework (TPACK) developed by Mishra and Koehler [52] and Mishra, Kereluik [53] which TEI used in their TEP. The interplay of pedagogical content knowledge (PCK), technological content knowledge (TCK), and technological pedagogical knowledge (TPK) have proved useful in TEP as it helped both the TE in preparing next generation of teachers. There are many studies Niess [54], Cox and Graham[55] and Chai, Koh, Tsai, & Tan [56] that have found a positive connection between the TPACK, a good TEP and improved classroom teaching and assessment practices of TE and PT. The pedagogy courses offered in the subject specialization areas such as mathematics and sciences have included ICT as an important teaching tool. For example the course on Teaching of Mathematics states the objectives as "Build a variety of instructional techniques with clear purposes" and "Learn ways to engage students in mathematical thinking through interactive activities" (pg. 110) [57]; the course on Teaching of Science is asking PT to "Design science investigations around core concepts", "Provide their students with exciting science experiences that extend their natural fascination" and "help them learn the science skills and concepts they will need in later schooling and in life" (pg. 151) [58]. These objectives require advanced levels of ICT skills by TE. There are a number of studies suggesting that TEP does not equip PT with the skills to use ICT in instructional settings though all the TEP providers have made ICT related courses as core courses [59] [60] [61] [62] [63]. These ICT related core courses are designed to develop PT technology literacy skills and not their skills to integrate technology in different instructional settings [64] [65].

TEP has a field base component embedded in it which is known as practicum or teaching practice. The approved curriculum outline has recommended a 15 credit hours teaching practice in the last year of the 4 year education degree (p. xxviii) [66]. The PT are asked to "critically select and use

appropriate technology" (p. 170) [67] that they would use in their practice lessons and TE are suppose to be their mentors and guide them in the process of planning practice lessons. The TEP outline also suggested a seminar where PT reflect on their classroom experiences and under the guidance of the TE plan their next set of lessons (p. 171) [68]. A study by Kajder [69] highlighted how ICT integration practices of PT are influence by the beliefs of their mentors (TE in this study.) There are other studies too that have identified factors such as peers, teachers in school and PT beliefs that influence PT usage of ICT during their practice teaching time in schools. There is a link between positive exposition towards ICT leading to an effective and ICT integrated lessons being taught during practice teaching time as was found by Aslan, Zachmeier, Glazewski, & Ottenbreit-Leftwich [70] in their study. It is true that PT future beliefs about ICT integration and its future use is shaped during their practice teaching time in schools, positive experiences make PT to think positively about ICT and its impact on classroom teaching and learning.

4 FINDINGS AND DISCUSSION

The questionnaire for TE was designed to find out their views and beliefs about ICT and its impact on different aspects of teaching and learning such as classroom management, resource management and assessment of PT learning. The responses were analysed using SPSS are shown in the Table 1. The second set of questions in the survey questionnaire asked TE how they use ICT and Table 2 has the synthesized information.

The data shows a pattern of ICT usage by PT that is not different from the school teachers and this is already being studied by Earle, [71]; Zhao and Frank [72]; Yildirim, [73]; Goktas, Yildirim & Yiuldirim [74] Balanskat et al., [75] and Chigona & Chigona [76]. The use of ICT for the pre-teaching and during teaching is higher for the before and during teaching than after teaching, that is for assessment purposes. The reason for this as identified by Tiene [77] suggesting that education authorities are "overly ambitious and overly optimistic" (p. 90) about ICT integration in classrooms and ignore the link between curriculum and assessment design and ICT integrated curriculum and assessment plan and this is also identified in other studies by Cheng and Townsend [78]; Cheng [79] and Cheng & Tam [80]. Though TE beliefs strongly support their intention and desire to integrate ICT more in their classroom teaching and supporting PT in their practice teaching lessons but keeping in view the existing technology structure and facilities in TEI, both the TE and the PT find it difficult to transform their strongly held beliefs about ICT and its impact on their teaching and learning into classroom practices. The other reason for not using ICT in a constructive way during and after teaching is lack of trouble shooting skill of TE as TEI do not have any system in place and trained personnel to support TE whenever there is trouble while using the equipment or the software. This discourages TE from putting into practice technology integrated teaching and learning ideas for PT and this reason was also highlighted as one of the hindrances of ICT integration in classrooms in studies by Tien [81] and Khokhar & Javaid [82].

The semi-structured interviews with the TE further elaborated the reasons why they do not use ICT as they believe it should be used. The TE identified many constraints affecting their use of ICT during and after teaching such as hardware (unavailability of sufficient number of computers on the campus for the students and at home) and appropriate software's (and websites) as these are subscribed services and the subscription cost is high. The TE also struggled with trouble shooting the problems occurred while using the hardware or the free software and websites as TEI have not recruited a trained personnel to support TE. The reasons given by the TE are similar to the reasons given by school teachers who participated in a study conducted by Khokhar & Javaid [83] in school settings. The TE use of ICT after teaching is minimum as 70% of those who participated in this study said they do not need ICT to assess students while 83% of them found ICT a very helpful tool in communicating course related information to PT using Google services such as Google Email and Google sites. The author asked about using free services, such as free learning management system (LSM), and website hosting services. The TE said they do not find the Google classroom and other freely available LSM helpful as these contains bare minimum features and there was problem of availability of computer to TE and PT on campus and at home. Many of the TE never tried to search and find alternate LSM and course hosting website services and thus their use of Google sites and Google classroom was minimum. Google sites to post course related reading material while google classroom was used to communicate with students. This highligths the lack of professional development of TE and least interest shown by the TEI in developing TE skills in finding alternate free resources available and using them. The professional development of TE is a one-time activity and not a continuous one and this is also not supported by the availability of a trained IT prersonnel on the campus. The training of

TE will not produce the desired effect of making TE lifelong learners in thinking, making creating and teaching ICT integrated lessons and creating material for PT and for other TE and PT in Pakistan and in other parts of the world.

Table 1 – TE perceptions of ICT

Focused area	Cannot do without ICT	ICT is very helpful	ICT is helpful	ICT is least helpful	Can do without ICT
Classroom management	2	20	8	10	60
Resource management	10	40	35	10	5
assessment	0	15	10	25	50
The responses are recorded in %					

Table 2 – TE use of ICT

Focused area	Cannot do without ICT	ICT is very helpful	ICT is helpful	ICT is least helpful	Can do without ICT
Planning teaching ◦ finding resources ◦ sharing resources with PT	70	25	5	0	0
During teaching ◦ communicate information ◦ make teaching concepts live and interactive	65	10	8	8	9
Assess PT ◦ Assessing PT online. ◦ Creating online assessment tasks ◦ Using already existing online assessment resources ◦ Support PT during practice teaching	10	10	10	30	40
The responses are recorded in %					

The Ministry of Federal Education and Professional Training (MFEPT), Government of Pakistan initiated the current policy revision process and consulting different stake holders, gathering opinions about the existing education policy, its successes and failures and seeking suggestions to make the new policy better than the previous one. The present study will support this policy making exercise as this study has identified the resources needed by TEI and requirements of TE and PT, from provision of hardware and software to professional development of PT. The author and the participants of this research also suggested that more resources for TEI should be allocated to improve the existing computer labs and setting up new labs with better faster computers and networking and internet devices. The Federal government is working with the provincial governments to ensure that there are trained teachers in classrooms. The PT joining TEI are equipped with the skills to merge their subject matter content with pedagogical content knowledge and using ICT create resources for themselves, for other TE and for PT.

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