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Teacher Professional Development in the 21st Century

Hanan Mohammed Ali AbdulRab

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Hanan Mohammed Ali AbdulRab
Post Graduate Student: Department of English
Language, Selcuk University

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Abstract

Purpose: Professional development of teachers is a lifelong process which begins with the initial preparation that teachers receive and continues until retirement. The importance of teacher professional development stems from the fact that teachers are the most important change agents in the educational system. This paper investigates teacher professional development in the 21st Century in terms of the three theories: constructivism theory, adult learning theory and transformational leadership theory.

Methodology: This theoretical paper draws from the three theories: constructivism theory, adult learning theory and transformational leadership theory to outline approaches for teacher professional growth in the 21st century. Based on a review of literature, there are new models and chances to develop teacher professional development for 21st Century education.

Findings: Continuing professional development of teachers helps them to become better teachers by acquiring new skills and improving their competencies.

Unique Contribution to Theory, Practice and Policy: This study highlighted effective methods of teacher professional development for 21st century education and emphasized the positive impact of such methods and approaches on the growth and development of teachers in an era characterized by rapid technological advancements and changing educational paradigms. All these approaches and methods are supported by the three theories: constructivism theory, adult learning theory and transformational leadership theory.

Keywords: *Teacher Professional Development, 21st Century Skills, Constructivism Theory, Adult Learning Theory, Transformational Leadership Theory*

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INTRODUCTION

These are changing times in education systems around the world. The need for schools to produce workers with 21st Century skills is a challenge that is confronting teachers. Therefore, the professional development of teachers, namely education and training to enhance teachers' knowledge and skills, has thus become a top priority. In order to effectively foster students' development of 21st Century skills, teachers themselves must have at least a good command of these skills and be well prepared in their own capacity to impart such skills onto students. Therefore, it appears to be crucial that teacher professional development programs equip teachers with the necessary skills to achieve the expectations of 21st Century education.

The paper starts by introducing the theoretical foundation that underpins this study. Thereafter, background information of teacher professional development is presented, its definition and importance. The study then presents 21st Century skills. The following part discusses 21st Century skills teachers need to adopt. The last section is about teacher professional development in the 21st Century.

LITERATURE REVIEW

Theoretical Background

Teachers' professional development programs are based on different theories of how students learn and different theories of how teachers learn. In our study, the three theories: constructivism theory, adult learning theory and transformational leadership theory will be addressed. Their focus lies on promoting active learning, employing adult-centered methodologies, and recognizing the significance of leadership in designing impactful professional development programs for educators in a time marked by swift technology progress and evolving educational models.

Social constructivism has been regarded as one of the leading learning theories since the 1980s (Mayer 1996; cited in Chu et al., 2017, p.5). The core principle of social constructivism is that students learn best when they are able to identify problems of understanding, set and refine goals based on progress, gather information, theorize, design experiments, answer questions and improve theories, build models, monitor and evaluate progress (Scardamalia and Bereiter 2003, p. 1371; cited in Chu et al., 2017, p.6). In the context of teacher professional development in the 21st century, this theory suggests that effective professional development programs should be learner-centered, allowing teachers to engage in active learning, collaborative problem-solving, and reflective practices. Constructivism supports the idea that teachers learn best when they are actively involved in constructing their own understanding and applying it to their teaching practices.

Adult Learning Theory, also known as andragogy, developed by Malcolm Knowles, focuses on the unique characteristics and needs of adult learners. This theory emphasizes the importance of self-directed learning, relevance to real-life experiences, and problem-solving in adult learning. Professional development for teachers is a kind of adult education that places an emphasis on meeting teachers' needs in light of their different learning and teaching environments (King & Lawler, 2003). Within the context of their teaching community, the individual teacher has access to the wealth of information, resources, and knowledge of other teachers. Participating in activities and discourses related to teaching, collaborating on new ways to improve practice, and receiving feedback from more senior professionals are all opportunities to learn about teaching. (Gregson & Sturko, 2007, pp. 2-3). This, in turn, can positively impact classroom practices and student outcomes.

Transformational leadership theory, developed by James MacGregor Burns, highlights the role of leaders in inspiring and motivating their followers to achieve higher levels of performance. Litz (2021) states that, “transformational leadership can be well suited to education as it empowers individuals and provides them with hope, optimism, and energy as it defines a vision of productivity as they accomplish goals” (p. background). In the context of teacher professional development, this theory suggests that effective leadership can positively impact the growth and development of teachers. Leaders who exhibit transformational qualities, such as vision, inspiration, and support, can create a culture of continuous learning and improvement among teachers which contributes significantly to the enhancement of teaching quality and, consequently, student achievement.

Previous Studies

Teacher professional development is a very important factor for improving teachers' beliefs and practices, students' achievement and educational reforms. Many studies have investigated different aspects of teacher professional development. According to DeMonte (2013), teacher professional development can improve teacher subject knowledge and skills and strengthen practice in classrooms. Teachers are the most effective factor in the educational system. The more professional knowledge teachers have, the higher the levels of students' achievement. Teacher professional development is one of the significant methods for addressing instruction and student outcomes (Borko & Putnam, 1995; Yoon, et al., 2007). According to Villegas-Reimers (2003), when the goal is to increase students' learning and to improve their performance, the professional development of teachers should be considered a key factor, and this at the same time must feature as an element in a larger reform.

Teacher professional development can be thought of as a process designed to enhance the quality of teaching. According to Soe (2018), the teachers who completed teacher professional development can implement more effectively than those who didn't complete the teacher professional development such as teacher training, teacher induction program and mentoring program.

In addition, ongoing professional development for teachers is required to keep them in touch with the rapid educational changes and demands. According to Chu et al. (2017), teachers' professional development helps them meet new expectations to facilitate the development of 21st century skills in student-centered learning. The researchers present a number of strategies that help teachers acquire 21st century skills. Yue (2019) concludes that effective teacher professional development methods can address teacher learning and practice. These methods include: need assessment of TPD, peer-mentoring, building collaboration, create positive school culture, develop 21st century skills, instructional strategies for active learning, embedding core values, continual professional development, research-based projects and integrated ICT teaching.

Finally, Koh et al. (2015) address the issue of teacher professional development through a model based on the ability of teachers to design lessons that generate students' 21st century skills. The researchers provide some initial evidence that professional learning can be achieved through design-driven development processes. This study attempts to investigate teacher professional development in terms of the three theories: Constructivism theory, Adult Learning theory and Transformational leadership theory.

Teacher Professional Development: Definition and Significance

"Teacher development is the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically" (Glatthorn, 1995, p. 41). Haßler (2014) highlights "teacher education" or "teacher professional development" is better than "teacher training". Teacher learns how to learn, how to put theory into practice to advance student development (cited in Villegas-Reimers, 2003, p.11). According to Ganser (2000), Professional development includes formal experiences (such as attending workshops and professional meetings, mentoring, etc.) and informal experiences (such as reading professional publications, watching television documentaries related to an academic discipline, etc.) (cited in Villegas-Reimers, 2003, p.11). This conception of professional development is, therefore, broader than career development, which is defined as "the growth that occurs as the teacher moves through the professional career cycle" (Glatthorn, 1995, p. 41), and broader than staff development, which is "the provision of organized in-service programs designed to foster the growth of groups of teachers" (Glatthorn, 1995, p. 41).

For a long period of time, the only form of "professional development" available to teachers was "staff development" or "in-service training", usually consisting of workshops or short-term courses that would offer teachers new information on a particular aspect of their work. Only in the past few years has the professional development of teachers been considered a "long-term process that includes regular opportunities and experiences planned systematically to promote growth and development in the profession." (Villegas-Reimers, 2003, p.12). Based on the fact that teachers learn over time, it is perceived as a long-term process; resulting in an effective series of related experiences enabling teachers to relate prior knowledge to new experiences (Cohen, 1990; Ganser, 2000; Lieberman, 1994; Dudzinski et al., 2000; cited in Villegas-Reimers, 2003, p.13).

Professional development should be viewed in terms of a framework of social, economic and political trends and events (Woods, 1994; cited in Villegas-Reimers, 2003, p.15). "The uniqueness of the individual setting will always be a critical factor in education. What works in one situation may not work in another... Because of the enormous variability in educational contexts, there will never be 'one right answer'. Instead, there will be a collection of answers, each specific to a context (Guskey, 1995a, p. 117).

In order to allow professional development to play an effective part in educational reform, policies must be supportive of the changes that teachers are asked to make (Darling-Hammond and McLaughlin, 1995; cited in Villegas-Reimers, 2003, p.27). In Villegas-Reimers' (2003) words:

These policies must address, for example, the need to create new structures and institutional arrangements that support the role of teachers as lifelong learners; they must also help to create new structures and opportunities, both outside of schools (for example, teachers' networks, inter-professional partnerships, etc.) and within schools; they must also support new systems of evaluation, accountability and promotion (p.27).

According to Little (1992), teacher professional development requires growth in knowledge, skills, judgment (classroom-related), and the contribution teachers make to a professional community (cited in Villegas-Reimers, 2003, p.68)., On the other hand, the programs which promote professional development should focus on the following (adapted from Leithwood, 1992; cited in Villegas-Reimers, 2003, p.68):

- Developing survival skills.
- Becoming competent in the basic skills of teaching.
- Expanding one's instructional flexibility.
- Acquiring instructional expertise.
- Contributing to the professional growth of colleagues; and
- Exercising leadership and participating in decision-making.

21st Century Skills and Teacher Professional Development

21st Century Skills

As a consequence to globalization and modernization, the world is rapidly changing, toward becoming more knowledge-based, geographically mobile, and collaborative in nature (Dunning, 2000; cited in Chu et al., 2017, p.8). This change imposes challenges to individuals and communities. According to Levy and Murnane (2012), the labor force is now hiring people for jobs that require more analytical thinking, digital skills, and sophisticated communication skills (cited in Chu et al., 2017, p.8). So, students' need for new learning skills in the 21st century is an undeniable challenge to them and therefore to teachers as well. 21st century skills are internationally categorized into four broad categories (adapted from the Assessment and Teaching of 21st century Skills project; cited in Schleicher, 2012, p. 34):

1. *Ways of thinking*: Creativity, critical thinking, problem-solving, decision-making and learning
2. *Ways of working*: Communication and collaboration
3. *Tools for working*: Information and communications technology (ICT) and information literacy
4. *Skills for living in the world*: Citizenship, life and career, and personal and social responsibility.

In the 21st century, success is represented in the ability to communicate, share and use information to solve complicated problems, the ability to adapt and innovate in response to new requirements and changing circumstances, the ability to mobilize and expand the power of technology to create new knowledge, and in the expansion of human capacity and productivity (Schleicher, 2012).

Because of the changes in the demand for skills in the 21st century, teachers themselves need to acquire new competencies in order to effectively teach 21st century skills to their students, which will be our discussion in the following section.

Teachers' Adoption of 21st Century Skills

The development of competencies known as 21st century skills is receiving increasing attention as a means of improving teacher instructional quality which, in turn, leads to effective 21st century learners. Trilling and Fadel (2009) argue that it is necessary to prepare students with life-long learning skills both in work and lives. The following discussion will be limited to 21st century skills that many teachers are particularly lacking: information technology literacy, information literacy, media literacy as well as digital collaboration skills.

Information Technology Literacy

Information technology (IT) literacy is the most fundamental among the set of digital literacies. IT literacy is the first skill teachers must acquire in order to master all the three skills under the umbrella of digital literacy. This is because the search for and organization of information is

largely supported by technology nowadays, as well as the creation and utilization of media (Barone, 2012; Safar & AlKhezzi, 2013; cited in Chu et al., 2017, p.111). There is an increasing trend for technology integration in the classroom, requiring teachers to incorporate technology into their pedagogy (Kopcha, 2012; Wilson & Christie, 2010; cited in Chu et al., 2017, p.111).

According to Christensen and Knezek (2008), teachers progress through various stages of technology adoption, beginning with being alert to the possibilities of technology implementation for both personal purposes and letting students acquire IT literacy in their everyday learning. This awareness eventually brings about routine utilization of technology. Furthermore, with appropriate training and support, they advance to more creative usage of technology for teaching and learning (cited in Chu et al., 2017, p.111).

Teachers' beliefs in IT and confidence in their own IT skills are two major attitudinal obstacles towards effective technology integration in their teaching (Bhalla, 2012; Kopcha, 2012; cited in Chu et al., 2017, p.112). Chu et al. (2017) stated that, "If teachers feel uncomfortable with the use of technological tools or are apprehensive that they may not be qualified to teach using IT, they are less likely to incorporate technology into their teaching, resulting in less interaction between students and technology" (p.112).

Information Literacy (IL)

Information literacy is the ability to "access information efficiently and effectively, evaluate information critically and competently and use information accurately and creatively." (Trilling & Fadel, 2009, p.65). Probert (2009) stated that some teachers may have received training on information processing models – models that divide the process of seeking information into manageable stages, starting from identifying questions to locating information sources, as well as the stages of information evaluation and management (cited in Chu et al., p.113). Nevertheless, they show little awareness of the need for and benefits of engaging students in the process of information search. These teachers view it as their responsibility to research into and prepare materials for their students when learning a new topic, thereby reducing students' opportunities to practice information access and use. This is problematic as it is the teacher's level of consciousness or awareness of IL skills rather than their own IL level that ultimately determines students' IL competency (Merchant & Hepworth, 2002; cited in Chu et al., p.113).

Media Literacy (ML)

"Media literacy refers to the medium of delivering messages (print graphics, animation, audio, video, web sites and so on)." (Trilling & Fadel, 2009, p.68). According to Hobbs (2010), ML includes one's skillful use of media tools and sharing of appropriate and relevant information with others (cited in Chu et al., p.114). Trilling and Fadel (2009) argue that students' media literacy is not only their ability to apply the media resources for learning but also to use media creation tools to create effective communication products such as video, audio podcasts and websites (p.67). Teachers' ML proficiency highly influences students' media usage, and hence their ML.

According to Keengwe and Kang (2013), the purpose of using media in the classroom is often limited to one-way information presentation from the teacher to students (cited in Chu et al., 2017, p.114). Chu et al. (2017) pointed out that such a use of media leads to "a perceived lack of interaction between students and technology, in which students remain in the receiving end of the media, owing to the predominant use of technology such as PowerPoint and video clips in teachers' presentations." (p.114). The researchers attributed students' passive role in media

utilization in class to the teachers' unfamiliarity with the software chosen for students to create PowerPoint presentations, and their lack of skills to facilitate students' use of the media (p.114).

Collaboration Skills

According to Cortez et al. (2009), in order to develop and sharpen one's skills of collaborating with peers and becoming a team player, one very effective way is to learn through experience – to collaborate with fellow classmates in activities that encourage social interaction (cited in Chu et al., 2017, p.114). Collaborative learning replaces the teacher's traditional role of the teacher by that of a facilitator (Chu et al., 2012). With this change in the teacher's role from a knowledge deliverer to a mediator of students' knowledge development, new tools and pedagogies are needed to appropriately support students' acquisition of collaboration and communication skills. In order for collaboration not to become a waste of time and thus lead to failure to complete the task, teachers need to take the necessary measures to ensure adequate and effective communication between students on the chosen collaborative platform. (Rummel & Spada, 2005; cited in Chu et al., 2017, p.115).

In the view of Law et al. (2008), to integrate 21st century skills into the current teaching content, teachers have to be open to ongoing professional development. It does not suffice for teachers to only focus on routine practice of instruction in their respective classrooms and disregard other teachers. In addition to keeping track of their own professional learning, it is beneficial that teachers share their knowledge with colleagues in a community of practice, engage in reflections of their own teaching, are ready to take risks and foster trust within the community of practice (cited in Chu et al., 2017, p.115). Scholars have proposed that such a relationship among teachers can be built with the assistance of technology and collaboration with other educators.

Teacher Professional Development in the 21st Century

After introducing 21st century skills that many teachers are particularly lacking and therefore need to adopt, we come to the section that discusses the strategies or methods through which teachers can develop such skills. Yue (2019) stated that, "Teacher professional development integrates 21st century skills into teaching. For instance, integrates cross-cultural understanding skills into literature class, practices critical thinking and problem solving skills in management class. Strategies of teacher professional development should be cohesive and coherent with 21st century skills." (pp.252-254). The following methods can strengthen teacher professional development for 21st century education.

Peer-mentoring

According to Yue (2019), mentoring invests the best practice and brings appropriate tools in teacher professional development. There is a need to introduce experienced teachers who use effective methods to educate teachers and develop their 21st century skills into professional development. Peer-mentors can act as advisors and consultants to help teachers with prior experience and nurture teachers with self-management, communication and leadership skills. Peer-mentors know the teachers well that can design beneficial training to guide them how to teach 21st century skills and how to stimulate student learning (p. 253).

Building Collaboration

Collaboration can take different forms, such as: teacher networks, team-based, learning community and peer coaching. Depending on job-embed professional development, in their groups teachers can discuss together, exchange different opinions, learn from each other to

achieve the same goal. Moreover, teachers develop themselves by collaborating with other colleagues replace of work alone while cross-discipline groups with same goals on student performance and achievement of 21st century skills (Yue, 2019, p. 254).

Collaborative Inquiry

The ultimate aim of teacher professional development is to improve teaching practice. In this regard, inquiry learning is often recognized as a way of encouraging shifts in teaching practice in terms of self-improvement and classroom behavior (Bray, 2002; cited in Chu et al., 2017, p.117). According to Chu et al. (2017):

Inquiry based professional development is no different from inquiry based projects undertaken by students: teachers are required to draw on resources from the literature and experience of their own or their colleagues to guide inquiry in a sustained and reflective manner, and such inquiries are carried out over a period of time (pp. 117-118).

In the view of Deni and Malakolunthu (2013), one benefit of teachers' collaborative inquiry efforts is their increased attempts to problem-solve (cited in Chu et al., 2017, p.118). Through teachers' concerted effort, they engage in conversations that examine the causes and impact of instructional problems. Teachers' patterns of thinking are progressively oriented towards problem solving, with discussions and diagnostic viewpoints supported by examples and evidence, which lead to new angles and possibilities to solve problems (Chu et al., 2017, p.118).

Teacher Communities

Peer support in the form of the teacher communities is another way to engage teachers in the professional development of 21st century skills. In teacher communities, teachers with common goals in areas such as teaching and problem solving can exchange ideas on classroom practice and student learning, develop and share teaching materials, observe one another teach when possible, and offer advice that helps members of the community learn new ways of teaching (Lomos et al., 2011; Little, 2012; cited in Chu et al., 2017, p.120). According to Levine (2010), most professional communities focus on the concept that collaboration among teachers promotes teacher learning, which in turn improves their teaching and student learning (cited in Chu et al., 2017, p.120). Little (2012) pointed out that the success of teacher communities however depends heavily on teachers' willingness to openly share and discuss their teaching dilemmas and uncertainties with one another (cited in Chu et al., 2017, p.120), which in general strengthens teachers' ability to collaborate, in addition to gaining insights via discussions.

Integrated ICT Teaching

According to Yue (2019), "Information communication technology can be applied in teacher professional development. Online forum produces a platform for teachers communicate with each other to share training experience of 21st century skills together and learn from peers. Peer-mentors can use video in training teachers." (p.255).

Formal Training Courses

According to Chu et al. (2017), "Formally structured courses are organized, often by higher education institutes, to serve the purpose of enhancing teachers' capacity to adapt to changes required in 21st century teaching."(pp. 119-120). The researchers pointed out, "These courses guide teachers step-by-step through the process of implementing the pedagogy, providing them with the necessary knowledge and skills, as well as chances to share them with colleagues at

work." (p. 120). These courses may cope with different aspects of 21st century skills, and are held over a period of time to allow teachers the time needed to absorb what they have learned.

Conclusion

The focus of this paper was on how Continuing Professional Development can enhance the quality of teaching by equipping teachers with new skills and improving their competencies. According to student needs, teacher professional development is changing so rapidly and so frequently. All standards describe what a 21st century student should be capable of doing, from which teachers can develop teaching strategies that facilitate the learning process. The 21st century skills contain critical thinking and problem solving, communication and collaboration, cross-cultural understanding, creativity and innovation, information literacy, media literacy, technology literacy and ICT literacy. There are great demands placed on teachers in the twenty-first century; they must enable their students to meet the rapidly changing demands of the 21st century job market. Thus, the type of teacher education requires teachers to be high-level knowledge workers who are constantly developing their professional knowledge. Today, teacher professional development programs are designed to equip teachers with these skills. This study highlighted effective approaches and methods that can strengthen teacher professional development for 21st century education.

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