

## Exploring Effective Methods of Teacher Professional Development in University for 21st Century Education

XiaoYao Yue

### Abstract

In the 21st century, the new trends of technology, economy, politics impact social life, workplace and people lifestyle. In turn, university need to alter and innovate curriculum and instruction to teach students with “21st century skills”, such as critical thinking and problem solving, cross-cultural understanding, creativity and innovation, information, communications, media literacy, computing and ICT literacy. Teachers have to foster all of them then can teach students to learn. Under this situation, teacher professional development evoke teachers to meet students needs for 21st century education. Through systematical content analysis on related research works, the author conclude effective teacher professional development methods that contains 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, which can address teacher learning and practice.

**Keyword:** teacher professional development, 21st century education, 21st century skills, teacher professional

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## Abstract

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**Keywords:** teacher professional development, 21<sup>st</sup> century education, 21<sup>st</sup> century skills, teacher professional development methods

**Objectives:** To explore the effective teacher professional development methods for university for 21<sup>st</sup> century education.

## Introduction

Nowadays, under the development of economy, politics and technologies, people's career and life style have changed a lot especially the young generation. Folks are required to master the skills and capacities of work, lives, and study in the 21st century. Trilling and Fadel (2009) argues that it is necessary to prepare students with life-long learning skills both in work and lives. These skills are excellent weapons for people who live in the future.

In this regard, higher education institutions needs to address students with 21st century skills, such as critical thinking and problem solving, cross-cultural understanding, creativity and innovation, information, communications, media literacy, computing and ICT literacy. For this purpose, teachers have to develop all of them then can teach students. Face for this situation, effective teacher professional development is requirement for higher education. Teachers are supposed to transform practices with 21<sup>st</sup> century skills to meet student needs.

## Methods

The approval has not been received by an ethical committee. In Johnson and Onwuegbuzie (2004) study, quantitative mainly argues that social science should be objective which is called positivism while qualitative purists constructivism, idealism, relativism, humanism, and hermeneutics. Content analysis is summarized and quantitative method according to the scientific standards (Neuendorf, 2017). Machi and McEvoy (2017) describes content analysis is a systematic process to read accurately, understand, test, interpret the texts from data and extract information to address the framework from analyzing original data.

This paper used a content analysis method to achieve objective one-to explore the desirable effective teacher professional development methods in universities for 21<sup>st</sup> century education. The author systematically reviews researches published online in recent years focus on teacher professional development. The identified key words based on the paper objectives have concerned on effective teacher professional development methods. Under the theme of effective teacher professional development methods in universities for 21<sup>st</sup> century education, word frequency counts for each identified keyword were collected and categorized. The data were gathered and summarized responding to the paper objectives. Through analysis teacher professional development methods, propose desirable effective teacher professional development methods in universities for 21<sup>st</sup> century education.

Obviously, to answer the first research question, the author identifies the desirable effective teacher professional development methods in higher education institutions for 21<sup>st</sup> century education. According to analysis the research publications online, the effective teacher professional development methods in university for 21<sup>st</sup> century education are follows: need assessment of TPD, peer-mentoring, building collaboration, create positive school culture, develop 21<sup>st</sup> century skills, instructional strategies for active learning, embedding core values, continual professional development, research-based projects and integrated ICT teaching.

## 21<sup>st</sup> century education

### 21<sup>st</sup> Century Education

The new trends of, economy, politics, technology influence social life, workplace and people lifestyle especially the young generation. Jerald (2009) has argued that education also have to be changed to catch up with these new trends. Traditional education is out of date, educators appeal we should change and innovate curriculum and instruction to teach students with “21st century skills”.

### 21<sup>st</sup> Century Skills

In 21<sup>st</sup> century education, Kozma (2008) asserts student achievement and success are education vital goals. If the students can learn the 21<sup>st</sup> century knowledge and skills well, which can help students get high academic achievements, better life and works in future. School leader should lead all the teachers and staff to serve and support students to master 21<sup>st</sup> century skills.

As such, the administrators have to improve and adjust the system to meet this requirement. Partnership for 21<sup>st</sup> century skills (2007) conclude skills of framework for 21<sup>st</sup> century learning: critical thinking and problem solving, cross-cultural understanding, creativity and innovation, information, communications, media literacy, computing and ICT literacy.

These seven skills are pivotal for students and the detail meanings as follow: Critical thinking and problem solving-students have critically thinking and the competency to solve problems; Creativity and innovation-students are creative and innovate in study and work; Cross-cultural understanding-students learn different cultures and have a good understanding about mixed-culture; Communications, information, and media literacy-students communicate with others skillfully, can get and choose information from website with enough media literacy; Computing and ICT literacy- students can use computer well and understand the ICT literacy; Career and learning self-reliance- students care for their profession and have capacity to learn something by themselves.

### **Characteristics of 21<sup>st</sup> Century Higher Education**

In recent years, creative thoughts and discoveries are central tasks for higher education and all colleges and universities distribute new knowledge and skills to young generation (Jesa & Nisha, 2017). Luthans, Luthans, and Avey (2014) illustrate that all higher education institutions' purpose are developing students to achieve academic success and be successful in their career with knowledge and capabilities after graduation. Hence, with the economy and technology development rapidly, prepare students mastering 21<sup>st</sup> century skills to be able to survive in a 21<sup>st</sup> century global society become a vital mission for universities . Simultaneously, higher education adopt strategies to respond on 21<sup>st</sup> century education that foster 21<sup>st</sup> century skills both in teaching and learning, for instance, integrate media literacy into instruction (Galician, 2004), develop students critical thinking and communication skills (Everett, 2008), train student cross-cultural skills (Papadourakis, 2016) and ICT skills (Rena, Namibia, 2010 & Higgins, Xiao, Katsipataki, 2012).

## **Teacher professional development**

### **Theories of Teacher Professional Development**

Teacher professional development is indispensable in educational research. Over the past decades, the concern of school quality is teacher professional development according to Schwerdt, Glock & Böhmer (2014). High level of teacher professional development opportunities are education wants.

Teachers as one of school elements that is the most influencing factor on student achievement and have more and more influence on student engagement. Batista (2018) and DeMonte (2013) both agree teacher professional development can improve teacher subject knowledge and skills and strengthen practice in classrooms. Yoon, Duncan, Lee, Scarloss and Shapley ( 2007) reveal teacher professional development is one of the significant methods for addressing instruction and student outcomes. Sustainable, intensive and content-focused teacher professional development is needful. Professional development increase teacher content knowledge of subjects, deepen teacher understanding of classroom instructions, and give

feedback of effectiveness on teaching for students.

Nevertheless, at present, teachers face a lot of challenges. Supported by the research work of Creemers, Kyriakides & Antoniou (2013), a gap of research between economy increase highly and less student learning quality. Teacher professional development invests knowledge and skills to react the challenges in 21<sup>st</sup> century education. To innovate and promote teacher professional development is in a hurry.

In previous studies, the definitions of teacher professional development in literature have many ways, such as Avolos (2011) claims that the vital meaning of teacher professional development is teacher learning, Haßler (2014) highlights “teacher education” or “teacher professional development” is better than “teacher training”. Teacher learn how to learn, how to put theory into practice to advance student development.

As is well documented in the literature, a lot of constructs and concepts about teacher professional development are prominent. Teacher professional development is a complex system. Studies results from Opfer and Pedder (2011) reflects teacher professional development can be divided as three systems refer to the individual system, school system, and activities system. Individual system illustrates that teacher personal experience, belief, goal have effect on his or her own practice. And the second is school system- it means school environment and culture impact teacher learning. School vision and mission will be shared among teachers, which provide supports to teacher in learning and teaching. The third system is activities of teacher professional development.

Burke (2013) thinks teacher professional development is job-embed and sustainable. Teachers can corporate with colleagues, learn from each other in a period of time. Professional development changes teacher knowledge, skills and practices, then indirectly provokes student outcomes. There are five characteristics of professional development discussed by Griffin, al. (2018), collective attendance, active learning, content focus, coherence, duration. Content focus is the most influencing facet. Professional development concerns the teacher major knowledge and skills and content teaching, contribute to teacher professional competency and motives. Teachers learn how to transform knowledge, evaluate students, and make students learning better.

Admittedly, there is a gap between the knowing and practicing of theory. Professional development facilitate teacher professional knowledge, instruction practice and more involvement in classroom. The study of Grimmatt (2014) describes a higher quality professional learning that should be continual, cooperative, school-based, research-based, authority-shared, evaluated and emphasize students learning, connect between theory and practice.

Likewise, the discussion of professional development concentrate on professional learning which is a long time procedure instead of a short time matter. School establish professional learning community to change teaching practice and stress student learning outcomes. Teacher professional development focus student learning. Research findings debate it boost teachers teaching practice through attentively observe and informally discuss with other peers. However, experienced teachers tend to use formal meetings to develop their professional learning.

### **Teacher professional development in 21<sup>st</sup> century education**

Change never changes. UNESCO (2003) reports that educational system is changing in all over the world.

Teacher professional development is one of parts in educational reform. Base on Partnership for 21<sup>st</sup> Century Skills (2009), the teacher professional development must concerns on 21<sup>st</sup> century skills to achieve the expectation of 21<sup>st</sup> century education.

Teachers attend professional development have to develop the 21<sup>st</sup> century skills such as critical thinking and problem solving, cross-cultural understanding, creativity and innovation, information, communications, media literacy, computing and ICT literacy skills. Teacher professional development integrates 21<sup>st</sup> century skills into teaching. For instance, integrates cross-cultural understanding skills into literature class, practices critical thinking and problem solving skills in management class, focus on ICT and technology skills in math course. Drawing on teacher professional development, they can understand and learn 21<sup>st</sup> century skills more and more. Accordingly, teachers know how to enhance student 21<sup>st</sup> century skills, connect 21<sup>st</sup> century skills with real life when give lessons (Saavedra and Opfer, 2012), and ask student to deal with a real complex problem to stimulate their interesting.

## **Effective Teacher Professional Development for Higher Education**

### **Teacher Professional Development in Higher Education**

Compare with K-12 schooling, higher education teachers demand more precise, comprehensive, enlightening knowledge and skills. Equally, teacher professional development should be deep. Jesa (2017) conducts a study that a high quality higher education teacher has broad, deep and intellectual knowledge and skills. Moreover, an eligible lecture is innovative and has been trained with kinds of teaching methods. Higher education teachers usually have these instructional strategies consist of authoritarian strategies, democratic strategies, and base of information technology strategies.

Since old learning approaches cannot produce student with skills to reflect on complex problems in universities. As Hensley (2018) have shown such as these ecological, social, and economic unresolved issues, world problem likes climate changing, decrease of biodiversity quickly, poor problem, and water resource shortage. Transdisciplinary inquiry and collective action are crucial for promote learning more knowledge. Consequently, professional development in higher education institutions encourage teachers learn more skills and knowledge on solving intricate problem, cross-culture, communication, leadership, media literacy and technology to cultivate next generations.

### **Effective Teacher Professional Development**

Teacher professional development is salient for higher education institutions. The following viewpoints come from research of effective teacher professional development. As Garet, et al.( 2001) concerns, content knowledge, active learning method, relative learning activities are significant for reinforcing teacher knowledge and skills. Further, the activity forms, teachers work backgrounds (schools, majors), the time of activities affect teacher learning. What is more, the school success factors, the teacher feedback and evaluation which influence the effective professional development provide by Archibald, Coggshall, Croft and Goe (2011).

Hammond (2017) and others (Blank, 2008 & Postholm, 2012 & Gökmenoğlu, 2015 & DeMonte, 2013)



have demonstrated the key words about effective methods in teacher professional development are focus the content, active learning, develop collaboration, supports from experts, the evaluation about teacher profession and sustained time.

However, teachers have less opportunities join design in traditional professional development. Research finds traditional professional development always is one-shot workshop that not relates to the curriculum. Simultaneously, Klein & Riordan (2011) makes point that experiential learning can challenge teachers. Experiential learning involves teachers in experience directly and concentrates on feedback to promote their knowledge, skills and values. This method helps teacher to develop constructing knowledge and skills. During the experiential learning, teachers will understand school system better, rethink curriculum and instruction, and change their practices in classroom to address student learning .

More specifically, teacher professional development programs would have various goals of knowledge and practices. Seven knowledge has put forward by Creemers, Kyriakides and Antoniou, (2013), teachers have pedagogical content knowledge; knowledge of instruction; knowledge of subject; knowledge about students and their characteristics; knowledge about contexts and environment in classroom; governance and financing for school districts and knowledge of educational mission, objectives, values and the knowledge in education based on philosophy and history.

## **Discussion and Conclusion**

Though review and analysis of related research works, it can be seen that the effective teacher professional development (TPD) methods in higher education institutions for 21<sup>st</sup> century education include need assessment of TPD, peer-mentoring, building collaboration, create positive school culture, develop 21<sup>st</sup> century skills, instructional strategies for active learning, embedding core values, continual professional development, research-based projects and integrated ICT teaching.

### **Need Assessment of TPD**

Teacher reflection of professional development is a rewarding approach. It embroils analysis teacher needs and problem, improve training process, learners' feeling of efficacy and belief. Besides, in professional development, assessment can promote teacher practice and cognition. Self-evaluation is also can be used in TPD. Namely, ask teacher to do feedback questionnaires individually to examine whether their 21<sup>st</sup> century skills have to be developed though training.

### **Peer-mentoring**

Mentoring invests the best practice and brings suitable tools in teacher professional development. To introduce experienced teachers who use effective methods to educate teachers and develop their 21<sup>st</sup> century skills into professional development is needed. Peer-mentors can work as advisers and consultants to assist teachers with previous experience and nurture teachers with self-management, communication skills and leadership. Peer-mentors know the teachers well that can design beneficial training to guide them how to teach 21<sup>st</sup> century skills and how to stimulate student learning.

**Building Collaboration**

Collaboration are teacher networks, team-based, learning community, peer coaching. . Drawing on job-embed professional development, teachers in groups can discuss together, share different opinions, learn from each other to achieve the same goal. Add more, teachers develop themselves by collaborate with other colleagues replace of work alone while cross-discipline groups with same goals on student performance and achievement of 21<sup>st</sup> century skills.

**Create Positive School culture**

School culture stands for a school learning environment. School leaders have to consider if organizational structure and system are supportive teacher professional development and school context is good for teacher professional development. In part, higher education institutions should create positive school culture to buttress teacher professional development for 21<sup>st</sup> century education.

**Developing 21<sup>st</sup> century skills**

Teacher professional development have to help teacher develop 21<sup>st</sup> century skills. The 21<sup>st</sup> century skills contains critical thinking and problem solving, cross-cultural understanding, creativity and innovation, information, communications, media literacy, computing and ICT literacy. The content, course, strategies of teacher professional development should be cohesive and coherent with 21<sup>st</sup> century skills.

**Instructional Strategies for Active Learning**

Professional development programs gives opportunities for teachers to attend actively and engage improved. Teachers can review students performances of 21<sup>st</sup> century skills and get feedback of their teaching to support future professional development. Students have to engage all aspects behaviorally, emotionally and cognitively when they immerse in learning.

**Embedding Core Values**

Teacher professional development should be match with teacher's goals, needs, believes, knowledge, attitudes. And it might to be consistent with standards, aims, visions and missions in national, province, university level. For the purpose of increasing the 21<sup>st</sup> century skills in teaching and learning, teacher training programs have to correspond with these objectives and can adjust some parts based on the context.

**Continual Professional Development**

Duration is how long time of doing teacher professional development. Teacher professional development is a process but not a one-stop shopping. Otherwise, too long time of teacher professional develop is unfavorable. Some studies show duration is the most effective for teacher professional development when over one hundred hours but no more than one year. The teacher professional development period should ensure quality and content to help teacher to learn how to integrate 21<sup>st</sup> century skills into course to teach students.



### **Research-based Projects**

In higher education institutions, research-based projects play a main role on teacher professional development. Research on teacher develop, discuss, absorb, and practice new knowledge and skills is crucial. Teacher professional development is not a only one step but a continual and sustainable process. Teachers know how to apply 21<sup>st</sup> century skills in class and teach students better through attending professional development. Research-based projects keep teacher professional development of 21<sup>st</sup> century skills be prevalent, potent, ongoing, and updating.

### **Integrated ICT Teaching**

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 21<sup>st</sup> century skills together and learn from peers. Peer-mentors can use video in training teachers.

### **Discussion and conclusion**

Teacher professional development in universities for 21<sup>st</sup> education is paramount. To meet student needs, teacher have to enhance student 21<sup>st</sup> century skills includes critical thinking and problem solving, cross-cultural understanding, creativity and innovation, information, communications, media literacy, computing and ICT literacy. Teachers have to develop all of them and change traditional practice in classroom. Effective teacher professional development methods contains need assessment of TPD, peer-mentoring, building collaboration, create positive school culture, develop 21<sup>st</sup> century skills, instructional strategies for active learning, embedding core values, continual professional development, research-based projects and integrated ICT teaching, which can address teacher learning and practice. These methods can strengthen teacher professional development in University for 21<sup>st</sup> century education.

### **Significance of the study**

This paper could gather information of teacher professional development in higher education institutions for 21<sup>st</sup> century education. The findings will highlight effective methods of teacher professional development for 21<sup>st</sup> century education in higher education institutions, which maybe include need assessment of TPD, peer-mentoring, building collaboration, create positive school culture, develop 21<sup>st</sup> century skills, instructional strategies for active learning, embedding core values, continual professional development, research-based projects and integrated ICT teaching.

Accordingly, teacher professional development for 21<sup>st</sup> century education is necessary. Higher education teachers may acquire more insights and understanding of professional development for 21<sup>st</sup> century education. Further, teacher professional development become a part of school reform. There are new models and chances to develop teacher professional development for 21<sup>st</sup> century education. Strategies and suggestions of teacher professional development for 21<sup>st</sup> century education will be given to educational leaders and managers in higher education institutions. The future researchers will receive the knowledge and information about teacher professional development in universities for 21<sup>st</sup> education. Future research

can do more on teacher professional development for 21<sup>st</sup> education in the context.

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