

# Teacher Readiness Level Facing Technology Demands, Pedagogical Skills and Development of School Culture in the 21st Century

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**Abstract:** Teachers in the 21st century face more complex challenges and difficult work for them, for example: increasing diversity students and parents, higher demands for quality education, standards of teaching and learning processes with higher outcomes and others. This article aims to explain the importance of integrating the role of technology and pedagogical skills in the 21st century learning process and building a school culture that can shape the attitudes, personality, and character of students. The method used in this research is descriptive research. Descriptive research is research that is used to describe a situation or phenomena as they are. Data sources are obtained through several articles, journals, proceedings, and books. The results of this study show that teachers must have broader skills in teaching, managing classes effectively, building, developing, and managing relationships with students and the school community, believing the use of technology to be more effective in the learning process and building a good school culture to shape the morale of students.

**Keywords:** *Role of Technology, Pedagogy, 21st Century, School Culture*

## I. INTRODUCTION

Teachers currently face challenges that are far greater than the previous era. Teachers face clients who are far more diverse, subject matter that is more complex and difficult, standard learning process and also demands the achievement of higher student thinking skills [1]. This is caused by the existence of a large transformation in the political, social, economic and cultural aspects which are driven by the rapid development of science and technology, demographic and environmental changes that have a major impact on schooling and teacher professionalism [2].

21st century teachers are required not only to be able to teach and manage classroom activities effectively, but also are required to be able to build effective relationships with students and the school community, use technology to support the improvement of teaching quality, and reflect and improve their learning practices continuously [1]. Therefore, teachers really need conducive learning conditions in schools as a place for continuous and continuous professional learning. 21st century professional teachers are teachers who are skilled in teaching, able to build and develop relationships between teachers and schools with a broad community, and a learner and agent of change in school [3].

Professional teachers are required not only to have the ability to teach as required in the standard pedagogical competence, but the teacher must also be able to develop professionalism continuously as stated in professional competence. The teacher is also required to be able to establish effective communication with fellow educators, personnel, parents, and the community as required in social competence and have a good personality as described in personal competence. Besides that, the teacher must also have an academic qualification or educational background that is adequate and relevant to the teaching field [4].

From the description above which has explained all the demands that must be fulfilled by a teacher in the 21st century, the author tries to explain the importance of integrating the role of technology and pedagogical skills in the learning process in the 21st century and building a school culture that can shape students' attitudes, personality, and character.

## II. THE 21ST CENTURY LEARNING

Emergence of a movement that calls for a new learning model for the 21st century, there have been many opinions that state that the formal education system must be changed. This change is very urgent to bring up the various forms of new learning needed in overcoming so complex global challenges. Identifying student competencies that need to be developed is important in the face of the 21st century. The approach that has been carried out so far still emphasizes memorization or simple application that will not develop students' critical thinking skills and independence. Each student must be involved in inquiry-based learning that is meaningful, has truth and relevance values, to develop the high level of thinking they need [5].

The 'transmission' or lecture teaching model alone is not effective to be applied in the 21st century. This kind of teaching usually leads to ignorance, apathy and boredom. Instead, students must learn to interact with teachers and peers, practice applying newly acquired skills and knowledge, share with friends through collaboration designed to support each individual in adapting to new and contextual problems. Without the opportunity to practice and apply new knowledge in various contexts, adaptation and integration of new knowledge will not be achieved and will paralyze creativity. The 'transmission' teaching model is still dominant in education in various parts of the world [6].

Trilling & Fadel said that education in the 21st century must always move along with the progress of the age. This movement is based on the change in the conventional educational paradigm towards the modern age [7]. The movement of the paradigm can be seen in the following Table.

TABLE I. THE MOVEMENT OF THE PARADIGM

Old	Paradigm 21st Century Paradigm
<i>Teacher-Direct</i>	Centered Student-Centered
<i>Material</i>	Teaching Interactive Teaching
<i>Basic</i>	Process
<i>Facts and Principles</i>	Skills Applied Skills
<i>Theory</i>	Questions And Problems
<i>Material-Based</i>	Practice
<i>Time Limited</i>	Project-Based Based On
<i>Competitive</i>	Needs
<i>One-Size-Fits-All</i>	Collaborative
<i>Focusing on The Class</i>	Personalized
<i>Text-Summative</i>	Focusing On Global Community
<i>Learning to Continue Schooling</i>	Based Web-Based
	Formative Evaluation
	Learning For Life

(Source: Trilling & Fadel 2009)

Students must hone skills and improve learning to be able to overcome global challenges, such as critical thinking skills, the ability to communicate effectively, innovate and solving problems through negotiation and collaboration. However, in terms of pedagogy it has not been adapted to address these challenges.

### III. PEDAGOGICAL SKILLS

Learning that create a positive and effective learning community can support deeper learning through the acquisition of knowledge content and the development of intrapersonal and interpersonal competencies [8]. Metacognitive development also encourages problem-based learning activities that require collaboration with friends. The collaboration process stimulates students to consider using knowledge for new things with their friends and developing new ideas. □

The teacher is always faced with students who need the main knowledge, skills and attitudes to face his life in the future. The main task of the teacher is to teach, guide, direct, train, assess, evaluate students, and educate students in class and outside the classroom. Pedagogical competent teachers are teachers who have the ability to manage students. Pedagogic skills place students as an important element that has rights and obligations in the framework of a comprehensive and integrated education system [9].

### IV. SCHOOL CULTURE

School is a social system that has a unique organization and a unique pattern of social relations among its members. This is called school culture. However, to realize this is not only the responsibility of the school. Schools can collaborate with other parties, such as families and communities to form school culture patterns that can bridge the importance of value transmission [10].

Each school has its own unique culture. Each school has rules of conduct, customs, ceremonies, school hymns,

uniforms and other symbols that give the school a distinctive style. Research shows that this school culture has a profound influence on the process and way of learning students [11].

Therefore, school culture or culture is indispensable for educational innovation to foster morality and influence student behavior. School culture is important for transforming schools to succeed in academic and non-academic aspects. Schools must prepare and provide opportunities, conditions, and atmosphere for morality to be implemented. Knowledge, leadership, aphorisms, commitment, control of teacher mechanisms, experience, and opportunities to apply values and morals, are also needed in shaping school culture and developing morality.

### V. READINESS OF TEACHERS AGAINST TECHNOLOGY

Technology is a media or learning tool that has benefits for teachers and students because it is quite effective and efficient in the effort to achieve the expected competencies. Media or learning tools such as laptops, internet, LCD, and others both simple and modern are very helpful for the effectiveness of the learning process. Technology-based learning will be very effective if teachers use student-centered learning model(*student-centered*) [12], but in some cases that there are many teachers who stutter technology so that the learning process is still using the traditional way.

In integrating technology with learning, Bingimlas [13] found several obstacles in integrating the use of technology in learning. Some of the main obstacles identified, namely: lack of teacher confidence, teacher anxiety about the use of computers, lack of teacher competence and lack of access to sources of information (material). Furthermore, factors related to the personality traits of teachers, such as computer self-efficacy, self-concept, attitude, motivation and needs are also considered important in the integration and development of technology in 21st century education [14].

There are several literatures which state that the best indicator in achieving the goal of integrating technology in learning is the teacher's self-efficacy in integrating technology in learning itself [15]. They found that teachers who had a high level of efficacy had devoted a lot of effort to integrating technology and were more enthusiastic in participating in continuing learning using technology than teachers who had low levels of self-efficacy.

### VI. METHODS

The research method used in this study is descriptive research. Descriptive research is research that is used to describe a situation or phenomena as they are [16]. In this type of research, the researcher does not give certain treatment or action to the object of research. All activities or events run as they are. The data collection technique used is by searching for the latest literacy and information regarding the role of technology and pedagogical skills and school culture in 21st century learning [17].

## VII. RESULTS AND DISCUSSION

Educational institutions as organizers and printers for the next generation of the nation have an incidental role in restoring and synchronizing learning in the order of the implementation of the education system [18]. Because 21st century learning students are faced with various developments in Technology, Information and Technology (ICT) so quickly that it brings new changes and demands.

Based on these thoughts, students must be equipped with a variety of *skills* and skills, as stated by the *Partnership for 21st Century Learning* that students must master *skills* such as information, media, technology, communication, collaboration skills, and critical thinking, problem solving skills [19]. Judging from these conditions, it is necessary to have teachers who are able to integrate technology in the learning process.

The focus of his interest is not in knowledge or skills in integrating technology, but depends on evaluating their own beliefs and abilities in integrating technology into learning so that he will always exert his ability to always learn about technology and provide the latest innovations in learning.

Using technology to support meaningful learning of students, teachers need additional knowledge about the content they must teach, pedagogical methods that facilitate learning, and specific ways in which technology supports those methods. For example, when the teacher involves students who are more cross-disciplined in the discipline, the content of the students' needs to be developed. Pedagogical knowledge also needs to be broadened to generate ideas on how to develop the ability of students to work collaboratively or to control their own learning in a technology-laden environment [20]. Based on the knowledge of students and subjects, the teacher must be able to choose the most appropriate technology and information resources that enable students to meet the learning objectives needed.

In addition to this pedagogic belief, there are beliefs associated with school culture. Culture can be interpreted as internal background quality, atmosphere, environment, taste, nature and climate that is felt by all people. School culture can be interpreted as the quality of life of a school that grows and develops based on the spirit and values of a school. Usually school culture is displayed in the form of how principals, teachers and other education personnel work, study and relate to each other so that it becomes a school tradition [21].

Culture has an important role in schools, including efforts to improve the quality and quality of schools. Therefore, every school is always trying to be able to develop a positive and strong school culture. One way that can be done to improve the quality and quality of education in schools is by developing school culture. The strategy or way of developing the development of school culture is to take photos of school culture and the results are analyzed, it will produce school culture that is positive, negative, or neutral in nature [22]. The quality of life of a school depends on the spirit and the underlying values. Therefore many school culture experts also define school culture as a tradition (working, learning and relating to

each other) that the school has that grows and develops according to the spirit and values adopted by the school.

Ideally, each school certainly has certain spirit or values, for example the spirit and values of self-discipline, responsibility, togetherness, and openness. Spirit and values will color the making of the school's organizational structure, compilation of job descriptions, school work systems and procedures, school policies and rules, school discipline, vertical and horizontal relations between school citizens, and ritual events. These conditions will shape the quality of the physiological and psychological life of the school and will further shape behavior, both school behavior, group behavior, and individual behavior of school residents.

## VIII. CONCLUSION

Education is a process of preparing young people to live in the future. Education is not only required to provide students with knowledge about what needs to be known in the future, but more than that, education should also be able to provide moral values as a guide for the lives of young people in the future that are different from reality now. This research, teachers are expected to be able to use technology especially convinced of their ability to integrate it with the learning process, so that they can guide students in the direction of progress. Because the nature of the technology itself is always developing and advancing, it further enhances the pedagogical skills to understand the whole character of students in learning and collaboration with other teachers to form a good school culture. With the existence of the school culture, students will indirectly influence their character and behavior. In the concept of psychologists, behavior is not just psychomotor, but also effective and cognitive aspects. In detail, student behavior includes attitudes, interests, talents, skills, motivation, and personality.

## REFERENCES

- [1] L. Darling-Hammond, "Constructing 21st century teacher education," *Journal of teacher education*, vol. 57, pp. 300-314, 2006.
- [2] A. Hargreaves and M. Fullan, "Mentoring in the new millennium," *Theory into practice*, vol. 39, pp. 50-56, 2000.
- [3] A. Hargreaves, "The four ages of professionalism and professional learning," *Unicorn (Carlton, Vic)*, vol. 23, p. 86, 1997.
- [4] ME Dilworth and DG Imig, "Professional Teacher Development and the Reform Agenda. ERIC Digest," 1995.
- [5] B. Barron and L. Darling-Hammond, "Teaching for Meaningful Learning: A Review of Research on Inquiry-Based and Cooperative Learning. Book Excerpt," *George Lucas Educational Foundation*, 2008.
- [6] AR Saavedra and VD Opfer, "Teaching and Learning 21st Century Skills," 2012.
- [7] B. Trilling and C. Fadel, *21st century skills: Learning for life in our times*: John Wiley & Sons, 2009.
- [8] NR Council, *Education for life and work: Developing transferable knowledge and skills in the 21st century*: National Academies Press, 2013.
- [9] D. Miller, D. Glover, and D. Averis, "Developing pedagogic skills for interactive whiteboard in mathematics," *British Educational Research Association*, pp. 1-18, 2005.
- [10] R. Berns, *Child, family, school, community: Socialization and support*: Nelson Education, 2012.

- [11] KD Peterson and TE Deal, *The shaping school culture field book*: John Wiley & Sons, 2011.
- [12] J. Harris, P. Mishra, and M. Koehler, "Teachers' technological pedagogical content knowledge and learning activity types: Curriculum-based technology integration reframed," *Journal of Research on Technology in Education*, vol. 41, pp. 393-416, 2009.
- [13] KA Bingimlas, "Barriers to successful integration of ICT in teaching and learning environments: A review of the literature," *Eurasia Journal of Mathematics, Science & Technology Education*, vol. 5, 2009.
- [14] F. Paraskeva, H. Bouta, and A. Papagianni, "Individual characteristics and computer self-efficacy in secondary education teachers integrate technology in educational practice," *Computers & Education*, vol. 50, pp. 1084-1091, 2008.
- [15] JT McDonnough and JJ Matkins, "The role of field experience in elementary preservice teachers' self-efficacy and ability to connect is research to practice," *School Science and Mathematics*, vol. 110, pp. 13-23, 2010.
- [16] P. Baxter and S. Jack, "Qualitative case study methodology: Study design and implementation for novice researchers," *The qualitative report*, vol. 13, pp. 544-559, 2008.
- [17] VA Lambert and CE Lambert, "Qualitative descriptive research: An acceptable design," *Pacific Rim International Journal of Nursing Research*, vol. 16, pp. 255-256, 2012.
- [18] JM Carroll, DC Neale, PL Isenhour, MB Rosson, and DS McCrickard, "Notification and awareness: synchronizing task-oriented collaborative activity," *International Journal of Human-Computer Studies*, vol. 58, pp. 605-632, 2003.
- [19] N. Pheeraphan, "Enhancement of the 21st century skills for ICT in classroom education," *Procedia-Social and Behavioral Sciences*, vol. 103, pp. 365-373, 2013.
- [20] M. Webb and M. Cox, "A review of pedagogy related to information and communications technology," *Technology, pedagogy and education*, vol. 13, pp. 235-286, 2004.
- [21] S. Hennessy, K. Ruthven, and S. Brindley, "Teacher perspective on integrating ICT into subject teaching: commitment, constraints, caution, and change," *Journal of curriculum studies*, vol. 37, pp. 155-192, 2005.
- [22] AJ MacNeil, DL Prater, and S. Busch, "The effects of school culture and climate on student achievement," *International Journal of Leadership in Education*, vol. 12, pp. 73-84, 2009.