



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT



www.hrmars.com

ISSN: 2226-6348

Tamil Schoolteachers' Knowledge Competency on Implementing Creativity, Critical Thinking, Collaboration and Communication Skills in Classroom Learning

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Abstract

The Ministry of Education has implemented a 21st century learning approach to prepare Malaysian students for global competition in higher education and future employment. This shift to 21st century learning has created uncertainty among Tamil schoolteachers, who are accustomed to the conventional education system centered on teacher-led learning and examinations. This research aims to identify the essential knowledge elements required by Tamil schoolteachers to implement the 4C (Critical thinking, Creativity, Collaboration, and Communication) precisely in classroom learning. A qualitative research approach, specifically a Multiple Case Study design, was chosen to conduct the research with a total of nine participants. Data were collected through semi-structured interviews, document analyses, and micro-teaching video analysis, and thematically analyzed and triangulated. The findings indicate that teachers require four types of knowledge to effectively implement the 4C in the classroom: pedagogical knowledge, technological knowledge, 4C skill knowledge, and socioeconomic knowledge. Equipping Tamil schoolteachers with these types of knowledge will assist them to develop their students' 4C skills effectively.

Keywords: 4C, Knowledge, 21st Century Learning, Pedagogy, ICT, Tamil Schoolteachers, Tamil School.

Introduction

Tamil schools are a form of Malaysian vernacular schools that fall under the jurisdiction of the Ministry of Education Malaysia (MOE). Therefore, Tamil school teachers are required to comply with existing MOE policies related to education. The MOE has specified that the 21st century learning is the new direction for the education system (Ministry of Education Malaysia (MOE), 2014; Ewe et al., 2018). The decision to implement 21st century skills among school students enables them to compete with the technological advancements of the present day (McGuire, 2015; Arbaa et al., 2017; Ewe et al., 2017).

The 21st century skills are often referred to as the 4C skills, consisting of critical thinking, creativity, collaboration, and communication skills (National Education Association (NEA), 2012). These skills are essential for students to succeed in education and their future careers

(Alismail & McGuire, 2015; Arbaa et al., 2017; Ewe et al., 2017), and to provide competent human capital to lead the country towards development in terms of politics (Centre for Curriculum Redesign (CCR), 2015), economics (Abdullah & Osman, 2010; Ruminar & Gayatri, 2018), and social evolution (Alismail & McGuire, 2015).

As the Malaysian education system undergoes significant changes in the 21st century, it is crucial for schoolteachers to implement the 4C skills to students to prepare them for the future. However, there is a problem when teachers are not adequately trained to implement the 4C in their teaching, and only receive limited courses to explain the 21st century education system, which may not be sufficient for some teachers to fully understand how to apply it. Some Tamil schoolteachers also believe that the previous exam-based education system is better than the current one. Therefore, this research aims to identify the "knowledge competency elements" that Tamil school teachers require to effectively implement the 4C skills in classroom learning. The research was conducted in Tamil schools across all ten districts in the Johor state of Malaysia.

Literature Review

Students in the 21st century, at all levels of education, are facing high competition due to the use of technology and saturated media. This is why our education system should enrich students with the necessary skills demanded in this era of globalization (Afandi et al., 2019). Other than that, the conducted research shows that the implementation of 21st century curriculum and teaching is very important in providing students with skills that will help meet their desires for success in the future (Alismail & McGuire, 2015).

Teacher competency still in modest level because teachers' knowledge and understanding regard 21st century model is still underprivileged (Aziz & Rahman, 2018; Rahaman et al., 2018). Some more, teachers are rarely selected to receive on-service training held in urban areas; they fail to choose appropriate teaching methods, which can cause students to perform poorly in class (Ebbie et al., 2019). As a result, teachers still use teacher-centered learning because they are burdened with clerical work (Aziz & Rahman, 2018). Teachers with low competency cannot work well and may hinder the learning process. Teacher competency also influences the creativity level in the learning process (Hassan & Thambu, 2018). If teachers are not prepared to receive 21st century learning, it may become a burden for them to implement it in their teaching (Hassan & Thambu, 2018).

The majority of teachers still use conventional learning methods in the teaching and learning process due to time constraints, a dense syllabus, and an exam-based education system (Hakim & Ikhsan, 2018; Mantihal & Maat, 2020; Yahaya et al., 2020). Conventional learning is based on low-level cognitive processes according to Bloom's Taxonomy (Krathwohl, 2002), whereas the implementation of 4C skills in learning involves high-level cognitive processes. Effective learning depends on teachers' skills and understanding of 21st century learning to structure suitable pedagogy for selecting appropriate learning methods.

The expanding use of technology in learning environments encourages teachers to develop pedagogy that uses technology as a complement (Baholano, 2017). However, there are still some teachers who lack the knowledge to use technology effectively in the classroom (Hassan & Musa, 2019; Yahaya et al., 2020). The main challenge of 21st century learning is how teachers use technological and informational support to shape effective, high-quality, and relevant learning environments (Buletin Anjakan Bil. 4, 2015). Additionally, some teachers may not be serious about enforcing the use of ICT in the classroom (Onyema &

Hanken, 2017). Moreover, ICT can help teachers change their teaching methods from teacher-centred learning to student-centred learning (Kivunja, 2014; Garba et al., 2015; Sailin & Mahmor, 2016; Warner & Kaur, 2017)

Methods

A qualitative approach has been employed to conduct this research, using a multiple case study design. The population of interest is Tamil schoolteachers in Johor, with a total population of 1,236 teachers from 70 schools in Johor. The sample size for this research is 9 participants. Data was collected using three instruments for triangulation: semi-structured interview protocols, document analysis, and micro-teaching videos. The trustworthiness of the semi-structured interview protocol has been evaluated by two experts from related fields of study, and all the questions are permitted to be asked.

Prior to collecting data for research, approval was sought from the MOE, Johor State Education Department, and all district education offices. Once approval was granted, the researcher contacted the school via phone calls and email. After the school agreed to participate in the research, they provided the necessary data. A Tamil schoolteacher with knowledge and skills in 21st century learning was nominated by the school to provide the required data.

The process of data collection took six months due to the busy schedules of teachers in school. Since most schools had fewer than 50 students, there were fewer teachers who were burdened with multiple responsibilities in the school.

The interviews were conducted online using Google Meet and were recorded. Subsequently, the interviews were transcribed and sent back to the participants for member check, which ensured the validity of the data. The transcribed data was then analyzed and coded. Daily lesson plans from the participants were also collected and analyzed along with the micro-teaching videos, and the findings from all three data sets were triangulated and analyzed.

Results

Table 1.1 shows the emerging themes of knowledge competency from this study. The knowledge competency of Tamil schoolteachers in enforcing the 4C in classroom learning has four main elements: pedagogical knowledge, 4C knowledge, technological knowledge, and socioeconomic knowledge (PS4T). PS4T will guide teachers in implementing the 4C in learning. An appropriate understanding of PS4T will generate the intended 21st century student.

Table 1.1

The Emerging Themes of knowledge competency

N	Emerging Themes	Emerging Sub-themes
1	Pedagogical Knowledge	a. Student information b. Classroom management c. Curriculum d. Teaching methods
2	Socioeconomic knowledge	a. Social structure b. Economy and social infrastructure c. Schools' objectives
3	4C Skill Knowledge	a. Comprehension of the 4C skills b. Specification of the 4C skills
4	Technological knowledge	a. Technological Tools b. Information and Communication Technology

The first element is pedagogical knowledge of the teacher, which has four sub-elements: students, classroom management, curriculum, and teaching. Teachers need to properly understand their students and be aware of their capabilities and basic skills. This understanding will enable them to design a robust learning experience that embraces the 4C in classroom learning. Teachers' knowledge of classroom management is important, as they need to be able to communicate and control the classroom during the learning process and afterward when students are practicing their 4C skills. Teachers must ensure that all students follow instructions and develop their 4C skills in their own way. Teachers also must have the capability to understand and help students develop their ideas and skills. Teachers' knowledge of the curriculum is crucial, as they must be aware of the curriculum designed by the MOE. The curriculum will help teachers design a proper learning section with 4C elements, ensuring that no student is left behind and all have the same chances to develop their 4C skills. Lastly, teachers' knowledge of teaching methods is important in choosing the best way to embrace 4C elements in students. The understanding of teaching methods is the real heart of pedagogical knowledge. The development of technology and student-centred learning systems has changed the paradigm of teaching methods. Teachers should be trained and informed about new and practical teaching methods that can be used to implement the 4C. Therefore, student knowledge, classroom management, curriculum, and teaching methods are crucial elements of pedagogical knowledge that help to implement the 4C in classroom learning.

Socioeconomic knowledge is important for teachers to have in order to better understand their students' backgrounds. Socioeconomic knowledge is divided into three elements: social structure, social infrastructure, and authorities' objectives. Teachers should be aware of the social structure in the school's surrounding area, including the local population's ethnicity, religion, beliefs, culture, skills, education level, careers, and occupations. This information will help teachers mold their students' 4C skills in classroom learning based on the social structure of the area. Understanding the social infrastructure of the school area can help teachers plan their lesson plans accordingly and ensure they are using the necessary infrastructure available. The social infrastructure includes the public library, laboratory, internet connectivity or communication, transportation, and emergency services such as the police, fire department, and hospital. For example, some areas may still

have poor internet connectivity. If a teacher plans to use the internet for assigning students some assignments, some students may be left out. Having proper information about the school's area and surrounding places is important for teachers to plan and deliver effective lessons. The Ministry of Education, State Education Department, District Education Office, and school all have their own objectives to achieve. Most importantly, each school has its own objectives to achieve, and teachers must be aware of them and work towards achieving them. Some schools may have a high focus on sports, so some students may be engaged in sports training, while others may be involved in competitions like debates and innovation. Therefore, teachers must plan separate lesson plans for these students to ensure they are not left behind. Having socioeconomic knowledge will help teachers create a balanced 4C learning plan for their students so that they can be in line with global students, and no one is left behind in this 21st century education.

Teachers' knowledge of the 4C skills can be divided into two categories: comprehension of the 4C skills and specification of the 4C skills. Comprehension of the 4C skills includes the teacher's ability to define the definition, effects, importance, and need for 4C skills. This demonstrates that teachers have a complete understanding of the 4C skills and can implement them effectively in classroom learning. Additionally, teachers must understand the specifications of each 4C skill so that they can break down each skill into its simplest form and teach these skills to students effectively. Understanding the specification of each 4C skill will help teachers identify the right method of delivery for each skill.

Technological knowledge can be divided into two parts: knowledge of technological tools and understanding of Information and Communication Technology (ICT). Technology integration in teaching supports teachers to implement 4C skills in learning. The 21st century learning model consists of teaching methods that widely infuse technology as part of teaching and learning. Teachers must utilize technological tools that can help them conduct teaching and learning processes that incorporate 4C skills in their students. It is essential for teachers to be aware of new technological tools for learning and to incorporate them into their teaching. Furthermore, teachers must have a decent understanding of ICT so that they can use the internet, software, and applications for teaching, simplify their job, and help implement 4C skills in classroom learning. As we are all aware, the internet has a vast amount of material that can be used as teaching aids. Teachers can use the cloud to store information and data that can be effortlessly shared with students. Technological knowledge is an extremely necessary element in the teaching field today.

Teacher knowledge of PS4T can provide a useful outline for new and existing Tamil schoolteachers to understand the types of knowledge needed to effectively implement 4C skills in the classroom. PS4T serves as a guideline for teachers to become more productive in their field and to clearly articulate their lesson plan objectives.

Discussion

The knowledge competency of Tamil schoolteachers in implementing 4C skills in classroom learning consists of four main elements: pedagogical knowledge, socioeconomic knowledge, 4C skill knowledge, and technological knowledge (PS4T). PS4T shares similar elements with previous frameworks such as Technology, Pedagogy, and Content Knowledge (TPACK) (Mishra & Koehler, 2009) and Pedagogical Content Knowledge (PCK) (Shulman, 1987). In our study, we found that socioeconomic knowledge is another crucial element that needs to be embraced by Tamil schoolteachers as a new independent category. It is equally

significant as other knowledge for teachers to implement 4C skills in classroom learning and has a direct influence on teachers' planning of lesson plans.

Teachers need to integrate pedagogical knowledge in order to effectively implement 4C skills in their teaching. The competence of teachers' pedagogical knowledge will directly improve their performance, as teachers are capable of managing learning effectively by selecting appropriate strategies (Rahman, 2014). Moreover, teachers need to have a level of teaching efficacy in order to perform their duties well (Ebbie et al., 2019). Furthermore, MOE recommends that teachers equip themselves with knowledge in line with 21st century learning practices (Sinau & Rahman, 2018).

Socioeconomic knowledge provides teachers with the necessary information regarding their students' background and area. Higgins (2014) emphasizes the importance of understanding cultural and value differences, indicating that education should be adapted to the local context globally and meet the specific needs of students from diverse backgrounds and the demands of the 21st century. To provide appropriate support and interventions, teachers must be aware of their students' socioeconomic status (Henderson & Mapp, 2002).

Tamil schoolteachers need to master the knowledge of 4C skills to effectively implement them and facilitate student understanding. Rusdin (2018) emphasizes that teachers' readiness to apply 21st century learning is high, and there is a relationship between their academic level and their understanding of 4C skills. As teachers are the driving force for change in the education system, they must equip themselves with the necessary knowledge for 21st century learning (Ibrahim et al., 2019).

Teachers must improve their technological knowledge since the use of technology is helpful in implementing 4C skills in classroom learning. ICT infrastructure and the internet can assist teachers in employing the 21st century learning approach, which develops 4C skills and enables them to shift from teacher-centered to student-centered teaching methods (Garba et al., 2015). Furthermore, according to Ruminar and Gayatri (2018), the use of technology can bridge the gap between basic skills and the 4C skills needed in the Fourth Industrial Revolution. Therefore, pedagogy is used to implement the 4C skills through technology, forming an effective learning environment where students can master the 4C skills (Zubaidah, 2019).

PS4T is an important knowledge that Tamil schoolteacher must embraced to implement 4C in classroom learning. Teacher must always be aware of development of PS4T regard education so they can keep them in line with the development in 21st century learning.

Conclusion

21st century Tamil schoolteachers need to acquire new knowledge to conduct meaningful lessons for their students. However, the challenges faced by Tamil schoolteachers can be overcome by using technology. Mainly, Tamil schoolteachers must be ready to learn and practice lifelong learning to be competent in their field of work. PS4T has been identified as necessary knowledge for Tamil schoolteachers to understand the proper method to implement 4C skills among students. Tamil schoolteachers should be given on-the-job training on PS4T so that they can develop their understanding of 21st century learning and implement 4C in the classroom. This way, Tamil schoolteachers can teach students with the proper methods and implement 4C in classroom learning. The acquisition of 4C skills among students is necessary for them to compete in higher education placements and employment opportunities.

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References

- Abdullah, M., & Osman, K. (2010). 21st century inventive thinking skills among primary students. *Procedia - social and behavioral sciences*, 2(2), 3408-3412.
- Afandi, A., Sajidan, S., Akhyar, M., & Suryani, N. (2019). Development Frameworks of the Indonesian Partnership 21st-Century Skills Standards for Prospective Science Teachers: A Delphi Study. *Jurnal Pendidikan IPA Indonesia*, 8(1), 89-100. doi:<https://doi.org/10.15294/jpii.v8i1.11647>
- Alismail, H.A., & McGuire, P (2015). 21st Century Standards and Curriculum: Current Research and Practice. *Journal of Education and Practice*, 6(6), 150-154.
- Arbaa, R., Jamil, H., & Ahmad, M. Z. (2017). Model Bersepadu Penerapan Kemahiran Abad ke-21 dalam Pengajaran dan Pembelajaran. *Jurnal Pendidikan Malaysia*, 42(1), 1-11.
- Aziz, F. A., & Rahman, M. J. A. (2018). Tahap Kesiediaan Guru-Guru dalam Melaksanakan Model Bersepadu Pembelajaran Abad Ke-21. *Paper presented at the International Conference on Education and Regional Development, Bandung, Indonesia*.
- Baholano, H. (2017). Smart social networking: 21st century teaching and learning skills. *Research in Pedagogy*, 7(1), 21-29.
- Center for Curriculum Redesign. (2017). The CCR-n Framework for 21st Century Education. Retrieved from https://www.researchgate.net/figure/The-CCR-n-Framework-for-21st-Century-Education-Center-for-Curriculum-Redesign-2017_fig2_338475714 (Accessed 15 Mar, 2023).
- Ebbie, S., Talip, R., & Ag Kiflee@Dzulkifli, D. N. (2019). Pengaruh kepemimpinan pengajaran guru besar, kompetensi profesionalisme guru dan kompetensi peribadi guru terhadap efikasi pengajaran guru sekolah rendah di zon pedalaman sabah. *Malaysian journal of social sciences and humanities (mjssh)*, 4(8), 29-38. <https://doi.org/10.47405/mjssh.v4i8.323>
- Ewe, L. C., Faizahani, A. R., & Faragai, L. A. (2018). *Teachers' awareness towards 21st century teaching and its implementation (administrators' perspective)*. Atlantis press.
- Garba, S., Yusuf, B., & Busthami, A. (2015). Toward the use of technology and 21st century teaching-learning approaches: the trend of development in Malaysian schools within the context of Asia Pacific. *International journal of emerging technologies in learning (ijet)*, 10(4), pp. 72-79. Doi:<http://dx.doi.org/10.3991/ijet.v10i4.4717>
- Hakim, N. A. A., & Iksan, Z. (2018). *Pengetahuan, kemahiran pelaksanaan dan sikap guru terhadap pembelajaran berasaskan masalah (pbm) dalam mata pelajaran sains. Seminar antarabangsa isu-isu pendidikan (ispen2018)*. Auditorium utama, fakulti pendidikan, universiti malaya.
- Hassan, M. H., & Thambu, N. (2018). Kompetensi pengajaran guru pendidikan moral di sekolah menengah: satu kajian rintis. *Muallim journal of social sciences and humanities*, 2(3), *mjssh*, 2(3) page 176.
- Hassan, M. A. A., & Musa, K. (2019). Amalan Profesionalisme Guru Sekolah Rendah di Semenanjung Malaysia. *Paper presented at the 4th Asia Pacific Conference on Educational Management and Leadership (APCEMaL2019)*.

- Henderson, A. T., & Mapp, K. L. (2002). *A new wave of evidence: The impact of school, family, and community connections on student achievement*. Austin, TX: Southwest Educational Development Laboratory
- Higgins, S.E. (2014). Critical thinking for 21st century education: a cyber-tooth curriculum?. *Prospects*, 14 (4), pp. 559-574. [Http://dx.doi.org/10.1007/s11125-014-9323-0](http://dx.doi.org/10.1007/s11125-014-9323-0)
- Ibrahim, N., Adzra'ai, A., Sueb, R., & Dalim, S. F. (2019). Trainee teachers' readiness towards 21st century teaching practices. *Asian journal of university education*, 15(1), 1-12.
- Kementerian Pendidikan Malaysia (2014). *Kurikulum abad ke-21*. Bahagian pembangunan kurikulum.
- Kementerian Pendidikan Malaysia. (2015). *Buletin anjakan bil. 4/2015*. Retrieved January 20, 2020, from <http://www.padu.edu.my/>
- Kivunja, C. (2014). Do you want your students to be job-ready with 21st century skills? Change pedagogies: a pedagogical paradigm shift from vygotskyian social constructivism to critical thinking, problem solving and Siemens' digital connectivism. *The journal of higher education*. 3. 81-91. Doi:10.5430/ijhe.v3n3p81.
- Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70.
- Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: an overview. *Theory into practice*, 41(4), 212-218.
- Mantihal, S., & Maat, S. M. (2020). Pengaruh pembelajaran abad ke-21 (pak21) terhadap minat murid dalam pengajaran dan pembelajaran matematik: satu tinjauan sistematik. *Jurnal dunia pendidikan*, 2(1), 82-91.
- McGuire, P. (2015). *21st century standards and curriculum: Current research and practice*. New York, NY: Routledge.
- MOE. (2013). *Malaysia Education Blueprint, 2013-2025*. Putrajaya: Ministry of Education.
- National Education Association. (2010). *Preparing 21st Century Students for a Global Society: An Educator Guide to the Four Cs*. Retrieved from <http://www.nea.org/assets/docs/A-Guide-to-Four-Cs.pdf>
- Onyema, O. G., & Pokidko, D. (2017). Educating the 21st century learners: are educators using appropriate learning models for honing skills in the mobile age? *Journal of entrepreneurship education*, 20, 1-10.
- Rahaman, A. A., Rahman, M. J. A., Alias, S. A. M., Roslan, N. A., & Daud, N. (2018). Aplikasi Stem dalam Pengajaran dan Pemudahcaraan di Sekolah Luar Bandar: Peluang dan Cabaran. *Paper presented at the International Conference on Education and Regional Development, Bandung, Indonesia*.
- Rahman, M. A. (2014). Quality of education and teacher competency: how teacher education contributes to quality of education. *IOSR journal of research & method in education*, 4(5), 1-7.
- Ruminar, H., & Gayatri, P. (2018). *Incorporate 4C's skills in EFL teaching and learning to face education challenges in the 4IR*. FKIP, UNISMA.
- Rusdin, N. M. (2018). Teachers' Readiness in Implementing 21st Century Learning. *International Journal of Academic Research in Business and Social Sciences*, 8(4), 1293-1306.
- Sailin, S. N., & Mahmor, N. A. (2016). Promoting Meaningful Learning Through Create-Share-Collaborate. *Proceedings of Icecrs*, 335-340. Issn 2548-6160. Doi: [Http://Dx.Doi.Org/10.21070/Piccrs.V1i1.502](http://Dx.Doi.Org/10.21070/Piccrs.V1i1.502).

- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.
- Sinau, M. T., & Rahman, M. J. A. (2018). Multimedia approach in 21st century learning in rural preschool. *Journal of Rural and Remote Studies*, 18(2), 45-54.
- Warner, S., & Kaur, A. (2017). The perceptions of teachers and students on a 21st century mathematics instructional model. *International electronic journal of mathematics education*, 12(2), 193-215.
- Yahaya, M., Hanafiah, R., Zakaria, N., Osman, R., & Bahrin, k. (2020). Amalan pembelajaran abad ke-21 (pak21) dalam pengajaran dan pemudahcaraan (pdpc) guru-guru sekolah rendah. *Jurnal ipda*, 26(1), 13-24. Retrieved from <https://myjms.mohe.gov.my/index.php/ipda/article/view/8022>
- Zubaidah, S. (2018). Mengenal 4C: Learning and Innovation Skills untuk menghadapi Era Revolusi Industri 4.0. *Jurnal Pendidikan Karakter*, 8(2), 111-120.