



Character Education TPACK Skills to Emergency Remote Learning During The Covid-19 Pandemic

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ABSTRAK

Transisi pendidikan ke lingkungan daring karena pandemi Covid-19 menjadi tantangan baru bagi guru dan siswa. Di sisi lain hanya ada sedikit penelitian tentang pengembangan PCK yang berkaitan dengan pendidikan karakter. Teknologi Pedagogical Content Knowledge (TPACK) adalah solusi untuk masalah pembelajaran daring saat ini. Penelitian ini bertujuan untuk menganalisis keterampilan TPACK Pendidikan Karakter untuk pembelajaran jarak jauh darurat selama pandemi covid-19. Penelitian ini merupakan penelitian metode campuran dengan pendekatan penelitian kuantitatif dan didukung secara kualitatif. Populasi dan sampel sebanyak 200 guru. Metode pengumpulan data menggunakan kuesioner. Instrumen penelitian dengan kuesioner yang terdiri dari 33 pernyataan dan 5 pertanyaan terbuka yang dibagikan kepada. Data diperiksa secara numerik dan subyektif dengan menggunakan analisis komponen dan deskripsi penjelasan guru. Teknik analisis data menggunakan Statistik kuantitatif. Hasil penelitian menunjukkan bahwa penguasaan TPACK Pendidikan Karakter di kelas online dengan menggunakan media pembelajaran dan platform instruksional yang berbeda. Penelitian ini mengimplikasikan bahwa ke depannya, guru dapat meningkatkan penggunaan bahan ajar, media, metode, dan model pembelajaran untuk mata pelajaran yang sesuai dan mengikuti TPACK yang terintegrasi pendidikan karakter untuk menciptakan suasana pembelajaran yang aktif, menyenangkan, dan bermakna.

ABSTRACT

The transition of education to an online environment due to the COVID-19 pandemic presents new challenges for teachers and students. On the other hand, there is only a little research on developing PCK related to character education. Pedagogical Content Knowledge (TPACK) technology solves today's online learning problems. This research aims to analyze Character Education TPACK skills for emergency distance learning during the COVID-19 pandemic. This research is a mixed methods research with a quantitative approach and is supported qualitatively. The population and sample are 200 teachers. The data collection method uses a questionnaire. The research instrument was a questionnaire consisting of 33 statements and 5 open questions, which were distributed. Data were examined numerically and subjectively using component analysis and teacher explanatory descriptions. Data analysis techniques use quantitative statistics. The research results show that the mastery of TPACK Character Education in online classes uses different learning media and instructional platforms. This research implies that in the future, teachers can increase the use of teaching materials, media, methods and learning models for appropriate subjects and follow TPACK integrated with character education to create an active, fun and meaningful learning atmosphere.

1. INTRODUCTION

The World Health Organization (WHO) has declared the Coronavirus a pandemic. The Covid-19 virus (Corona Virus Disease 2019) has spread to infect almost all countries worldwide. Coronavirus disease 2019 (covid-19) caused by SARS-CoV-2 was first reported in Wuhan, China (Shereen et al., 2020). This disease has infected more than one million people worldwide. WHO has listed covid-19 as a global pandemic, so officially, the 2 current global pandemics are HIV/AIDS and covid-19 (Satriawati et al., 2022; Watkins, 2020) Learning management studies show the need for state readiness in the case of a pandemic

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in the direction of education. The covid-19 pandemic has forced teachers and students to conduct distance learning, which applies to all levels of education (Retnosari & Hakim, 2021). The situation with general education, especially in schools, is different (Basilaia & Kavadze, 2020; Hariati et al., 2022). Most schools in Indonesia transitioned to emergency remote teaching as a new policy in education from the end of 2019 to early 2022 as a response to the coronavirus disease (Covid-19) (Usak et al., 2020).

Current reality, the transition in education to an online environment becomes a new challenge for teachers and students (Gomez, 2022; Murphy, n.d.). They must quickly adapt to this new environment. Many new problems related to the emergency remote learning implementation (infrastructure and teacher's and students' readiness as the parties involved) have emerged (Arifianto et al., 2021; Mustika & Temarwut, 2022; Saboowala & Manghirmalani Mishra, 2021). The teacher is a role model for students because they are one of the essential factors in education. Their figure significantly influences the student's academic achievement, personality development, and attitude (Paidi et al., 2021; Widyaningsih & Keguruan, 2022). Some studies revealed that teachers have difficulty integrating technology and delivering material meaningfully in their online classes. Technological integration is an effective way for information and communication technology and appropriate educational technological application to achieve the desired learning outcomes (Fitriyani et al., 2020; Rahmadi, 2021). In addition, the current quality teachers must master pedagogical and didactic skills in subjects. They also have to master technology and connect it to learning, starting from the plan, organization, and implementation to learning evaluation, students' learning support, and development. One of the learning management that applies pedagogical knowledge is Pedagogical Content Knowledge (PCK). The PCK model equipped with technology forms a Technological Pedagogical Content Knowledge (T-PACK) model. T-PACK is a theoretical framework that develops Pedagogical Content Knowledge (PCK). PCK was first initiated by Shulman in 1986. Teacher must master Pedagogical Knowledge (PK) and Content Knowledge (CK). Combining PK and CK means that teacher must master the content/material and pedagogy in creating learning. This is stated in Law Number 14 of 2005 concerning teacher competence: teachers must have pedagogic, personality, social, and professional abilities. The combination of PCK capabilities and technology as T-PACK (Pane et al., 2022).

When applying their educational system, every school prioritizes character education. Even in the United Kingdom and the United States, character education has promoted political participation because the government and educators see character education as a tool for overcoming societal issues (Jerome & Kisby, 2019). Since 1966, the British government has been designing character education incorporated into the national curriculum. Character education was developed in the mid-1990s through the Knowledge is Power Program (KIPP) institutions in America (Jerome & Kisby, 2019; Novayanto & Pribadi, 2023). Character education has started to be developed in Indonesia as part of the government's cultural education and national character initiative. This nationwide trend is the primary cause of the increasing worry about implementing character education in schools. According to the National Plan, the first goal is to realize a national character, which includes rivalry, good conduct, and Pancasila-based values (Law No. 17/2007). Furthermore, that it represents Indonesian culture's varied and accepting characteristics (Hastasari et al., 2022). Although the Indonesian government only started character education in 2010, schools have long integrated character education into their educational structure (Hastasari et al., 2022; Prayitno et al., 2022). National elements of the character education are related to the expressions and words in which every regional location in Indonesia is different. Consequently, it causes problems for teachers in which they have difficulty explaining learning material to students because it is not easy to make sure they understand the material being explained (Lestyanawati, 2020; Rahman et al., 2021). Teachers find it difficult to control the writing sources for the students or their honesty in conducting assignments. Using one medium repeatedly by the teacher causes students to feel not interested and bored in being involved in the next online class.

State of the art according previous research findings that T-PACK research on various content has been carried out by researchers abroad in English study programs (Lim et al., 2021) and social sciences (Cuhadar, 2018). T-PACK research in Indonesia has been conducted in biology (Zulyusri et al., 2022), Indonesian language (Hanik et al., 2022; Prasetyo et al., 2022) and physics study programs (Setiawan et al., n.d.). Very little T-PACK research relates to character education. There was almost no PCK research that concerns character education specifically. There is very little research on PCK development related to character education with experienced teacher subjects, not pre-service and in-service teachers (Abidin, 2019). However, several PCK studies relate to learning outcomes in the form of certain characters. The characters examined include creative and curious characters; confident and meaning-filled characters; affective, perceived control, cognitive belief, efficacy state; teacher attitude; social responsibility and self-actualization; and solving skills (Slamet, 2014; Zeng et al., 2022).

Teacher education intervention positively affected TPACK (Ning et al., 2022). Students and teachers must adapt to work and study online, considering the Covid-19 pandemic that directly and permanently changes future education. Teachers have to adapt quickly by conducting emergency remote learning. This

adaptation can be carried out by improving the teachers' TPACK skills and their skills to use online learning technology. Therefore, this study aims to explore character education' TPACK skills to carry out emergency remote learning during the Covid-19 pandemic. In this study, the authors describe the use of online learning technology for the character education, the current TPACK skills of character education, and the advantages and problems encountered by emergency remote learning. It is hoped that this research will provide an overview of character education' TPACK skills and some information related to the problems and advantages faced in emergency remote character education learning for teachers and policymakers to create a better learning system.

2. METHOD

This research was conducted using mixed methods. This mixed method was carried out first using a quantitative research approach and then qualitatively supported. supported qualitatively. The mixed research conducted is exploratory in nature and aims to help find out more about the variables being studied. In this study, a survey technique with a quantitative and qualitative strategy was used as a research design. This study had 5 stages: 1) introduction, 2) tool creation, 3) survey execution in Central Java, 4) data analysis, and 5) synthesis, and reporting. Respondents in this research were teachers from Central Java province in Indonesia. Random sampling was used to pick individuals by distributing the Google Form inquiry link. The questionnaire was distributed to Character Education teachers from primary, junior high, senior high, and vocational high schools, both public and private. Total 200 teachers accepted this study. This study's questionnaire included 33 closed statements and 5 open statements such as strongly agree, agree, neutral, disagree, and strongly disagree. Meanwhile, the open statements about character education' TPACK and their recommendations for implementing learning during the Covid-19 outbreak were adapted from the literature and previous (Ariyani et al., 2023; M Fuad et al., n.d.) The instruments grid used such as technology knowledge, content knowledge, pedagogical knowledge, pedagogical content knowledge, technological content knowledge, and TPACK. The quantitative statistics, as stated in the frequency distribution and percentage and displayed in the tables were used to evaluate close statements in the questionnaire. Furthermore, the quantifiable data comprising the TPACK components was evaluated using Spearman correlation and factor analysis. The results of these analyses were used to support the reliability using Cronbach's Alpha and validity using Loading Factor of the questionnaire's assertions (Akoglu, 2018; Janse et al., 2021; Schober et al., 2018). Meanwhile, open statements from the questionnaire were examined qualitatively. The qualitative data was reduced to get representative themes, which were then displayed in a table and removed from the conclusion.

3. RESULT AND DISCUSSION

Result

The demographics of the respondents are shown in Table 1. The majority of respondents are female, education bachelor, level Senior High School, and school of teaching public.

Table 1. Characteristics of Respondents' Socio-Demographic

Demographics Variables	N	Percentage (%)
Gender		
Male	45	22,5
Female	155	77,5
Education		
Diploma	50	25,0
Bachelor	125	62,5
Master	25	12,5
Level		
Elementary School	40	20,0
Junior High School	55	27,5
Senior High School	75	37,5
Vocational High School	30	15,0
School of Teaching		
Public	125	62,5
Private	75	37,5

The technology used in Character Education online learning. During the Covid-19 pandemic, the online class taught by the Character Education teacher was greatly aided by Internet access and technology such as platforms, applications, and media that teachers can use to explain skills and teaching materials to students, precisely Character Education material. The survey results showed the media used by Character Education teachers during internet learning. Technology-based media used in online learning in [Table 2](#).

Table 2. Technology-Based Media used in Online Learning

Types of Media	N	Percentage (%)
Telegram	4	2.0
Website	4	2.0
Google Meet	4	2.0
LMS	7	3.5
E-Learning	7	3.5
Sispensek	4	2.0
Video	7	3.5
Google Form	15	7.5
Pin Smart	4	2.0
Youtube	10	5.0
WhatsApp	47	23.5
Microsoft Office	4	2.0
Zoom Meeting	24	12.0
Google Classroom	59	29.5

[Table 2](#) depicts the 14 different learning platforms, apps, and media they use. Almost half of the Character Education teachers who agreed to participate in this research stated that Google Classroom was their primary medium for delivering material and assigning homework. Furthermore, because of its simplicity of use, WhatsApp was the second most popular form of media. Zoom Meeting was selected for teleconference video so students could communicate immediately in real-time. A competent platform with numerous benefits, such as Sispensek, is less appealing to Character Education. Teachers can quickly recap the outcomes of tasks in Sispensek by monitoring and measuring student attitudes during learning. This absence of interest is due to Sispensek's need for an account, which the school typically gives. Meanwhile, not every institution provides access to this tool. Only a few of the fourteen kinds of media are frequently used, while most Character Education infrequently use others. Cronbach's Alpha reliability and loading factor's validity measurement for all indicators showed in [Table 3](#).

Table 3. Cronbach's Alpha Reliability and Loading Factor's Validity Measurement for all Indicators

No.	Questionnaire Components	Frequency Response					Cronbach's Alpha	Loading Factor	Communalities
		1	2	3	4	5			
Technology Knowledge									
1	I understand how to handle technical issues in the classroom	24	20	16	44	96	0.805	0.821	0.770
2	I am comfortable with electronics	24	18	16	42	100	0.835	0.853	0.844
3	I stay up to date on key technological advancements	26	16	18	66	74	0.775	0.787	0.677
4	I enjoy experimenting with novel technology	12	20	20	62	86	0.806	0.829	0.788
5	I am well-versed in a variety of tools	16	50	12	60	62	0.701	0.684	0.689
6	I have the necessary technological abilities to use technology	4	46	22	56	72	0.670	0.661	0.698
7	I have numerous chances to engage with various technologies	10	44	28	46	72	0.748	0.745	0.762
Content Knowledge									
8	I am well-versed in the subject of Character Education	20	18	24	66	72	0.861	0.856	0.732
9	I typically use logical reasoning	8	44	24	50	74	0.874	0.875	0.765

No.	Questionnaire Components	Frequency Response					Cronbach's Alpha	Loading Factor	Communalities
		1	2	3	4	5			
10	I use various methods and techniques to improve my knowledge of Character Education content	8	20	24	58	90	0.803	0.808	0.653
Pedagogical Knowledge									
11	I understand how to evaluate students achievement in class	6	46	16	36	96	0.783	0.765	0.696
12	I can modify my instruction based on what the students understand or do not understand	16	26	26	36	96	0.632	0.592	0.356
13	With various students, I can modify my teaching approach	8	48	38	22	84	0.710	0.696	0.488
14	I can evaluate students learning through a variety of methods	0	20	58	76	46	0.739	0.798	0.944
15	In the classroom, I can employ many instructional strategies	8	26	50	46	70	0.746	0.727	0.717
16	I am well-versed in students' comprehension and misconceptions	0	22	68	64	46	0.721	0.783	0.952
17	I can plan and handle classes	16	54	24	40	66	0.734	0.714	0.627
Pedagogical Content Knowledge									
18	I can select an effective instructional strategy to direct students' thoughts and learn about Character Education	0	18	52	70	60	0.739	0.711	0.506
19	I can select an effective teaching strategy to direct students' reading, thinking, and learning	0	24	58	68	50	0.816	0.825	0.681
20	I can adjust my instruction based on what students comprehend to improve thinking and learning Character Education	0	14	44	64	78	0.816	0.832	0.693
Technological Content Knowledge									
21	I know the technology that can be used to comprehend and practice Character Education content	0	10	44	60	86	0.869	0.859	0.738
22	I can select the most effective technology for comprehending Character Education content	0	10	50	86	54	0.857	0.859	0.737
23	I grasp how to plan and handle classes while using technology to help students learn Character Education material	0	2	40	74	84	0.823	0.832	0.693
Technological Pedagogical Knowledge									
24	I can select technology for a successful instructional strategy	2	6	44	84	64	0.694	0.709	0.503
25	I can select technology that improves students understanding	0	10	50	86	54	0.796	0.827	0.684
26	The teacher education program has made me consider more deeply how technology can influence my instruction in class	0	22	68	64	46	0.860	0.876	0.768
27	I consider how to use technology in the classroom thoughtfully	0	28	64	58	50	0.740	0.726	0.527
28	I can apply what I've learned about technology to different teaching tasks	6	46	62	46	40	0.744	0.698	0.488

No.	Questionnaire Components	Frequency Response					Cronbach's Alpha	Loading Factor	Communalities
		1	2	3	4	5			
TPACK									
29	I can teach the proper topic by combining Character Education material, technology, and instructional methods	0	10	54	90	46	0.760	0.766	0.587
30	I can select classroom technology that improves what I teach, how I teach, and what students learn	0	22	40	78	60	0.850	0.848	0.720
31	I can apply techniques learned in classroom classes that combine material, technology, and instructional approaches	0	24	60	68	48	0.781	0.767	0.589
32	I can assist others in my school and/or county coordinate content, technology, and instructional approaches	0	14	44	64	78	0.849	0.852	0.726
33	I can select technology that improves the substance of an issue	0	10	44	60	86	0.876	0.882	0.778

The questionnaire given to Character Education contained 33 statements. Table 3 demonstrates that Cronbach's Alpha reliability measurement for all indicators was greater than 0,7, indicating that all assertions on the indicators are reliable. In general, the findings of the loading factor and communality measurements were greater than 0,5, implying that the questionnaire comments reflect the measured factors. Correlation of TPACK components showed in Table 4.

Table 4. Correlation of TPACK Components

	TK	CK	PK	PCK	TCK	TPK	TPACK
TK	0.428	1	0.641	0.478	0.439	0.536	0.455
CK	0.505	0.641	1	0.624	0.584	0.689	0.616
PK	0.528	0.478	0.624	1	0.722	0.707	0.850
PCK	0.565	0.439	0.584	0.722	1	0.803	0.842
TCK	0.513	0.536	0.689	0.707	0.803	1	0.781
TPK	0.515	0.455	0.616	0.850	0.842	0.781	1
TPACK	0.428	1	0.641	0.478	0.439	0.536	0.455

Table 4 displays the findings of the component correlation tests. According to the correlation findings, each variable has a favorable association with the other. The correlation values among factors were generally greater than 0,4, implying that each factor frequently correlates with and supports each other for TPACK.

Discussion

The findings show that demonstrated mastery of Characer Education's TPACK in their online classes by using different learning media and instructional platforms. Online learning forced teachers, particularly Character Education, to use technologies such as learning media and online platforms to help distribute materials and tasks. The primary cause is the ease with which media can be accessed and used. Teachers believe they invest significant time studying how to use media/platforms. For example, developing or presenting topic matter diverts attention away from the instructional activity. This is particularly true for older teachers, who have a different level of internet proficiency than younger teachers (Fuad et al., 2020). According this research, Google Classroom, WhatsApp, and Zoom Meeting are three of the most popular platforms among teachers. They are also favorite choices for online learning of biology and Indonesian language (Prasetyo et al., 2022; Zulyusri et al., 2022). Some teachers use other media/platforms to keep students interested and waiting for surprises in the next class. In addition to media variations, teachers offered materials and tasks via videos posted to YouTube. It also seeks to make students feel challenged and intrigued in creating new things. Many studies in different disciplines have investigated the role of social media in shaping and reflecting teenagers' views, behavior, and experiences (Literat, 2021; Ritonga et al., 2020).

Another finding from this research findings is that effective media/platforms are still rarely used by teachers because they are unfamiliar with them or need to be provided access to them. Their institution needs to have such an educational tool. The government's efforts during the Covid-19 epidemic show that they prioritized education in Indonesia (Ferri et al., 2020; Salehudin et al., 2021). With the government's help, it is anticipated that infrastructure will be well distributed throughout Indonesia, allowing teacher quality in planning online classes to be maintained. For use in the classroom, teachers should pay closer attention to the kinds of media that promote social contact and collaboration. Both factors are critical in offering a successful distance learning setting. Teachers will find it simpler to educate and provide meaningful learning if they can grasp their students' experiences and perceptions (Andriyani & Suniasih, 2021; Literat, 2021).

Another element that influences the efficacy of online learning is teachers' ability to integrate material, teaching, and technical expertise, also known as TPACK. The seven components of the Character Education teacher's TPACK that were examined demonstrate that they have mastered the Character Education content and the skills required to create a successful classroom setting. Teachers know how to control the classroom, evaluate student learning using various methods, and adjust teaching styles to improve students' learning and learning practices (Muhammad Fuad, Efendi, et al., 2020; Hirschman & Wood, 2018), but these components have not been able to become a teacher's provision in teaching in the current situation. Technology knowledge is required to wrap subject knowledge and pedagogical knowledge to make online courses that students look forward to (Bhattacharjee et al., 2016; Phungsuk et al., 2017). Technological expertise refers to teachers' understanding and ability to use different technologies, technology tools, and associated resources. Character education in school can be broadly classified into three events: the development of instruction from each subject, the development of extracurricular activities and in school culture development, and the strategy development of character education in elementary school subjects such as sports, religious, Indonesian, science, math, natural sciences, and social sciences. Character education can be integrated into educational materials in several ways, including (1) instructional content, (2) material selection, and (3) instructional media integration.

Teachers can use technology in their classrooms to ease the delivery of Character Education materials and tasks. Some teachers, however, need help picking technology that can improve the content of Character Education topics and have trouble supporting others in communicating the use of technology in connecting it to the instruction and content of Character Education. They need help adapting to new media types, so they only use the same kinds of media in their classes. The repetitive environment frequently causes students to be tired and unenthusiastic in class. Teachers can prepare for this by learning how to create autonomous learning products/media, such as videos of learning tasks and podcasts of the topics being taught. Technical abilities in the use of this technology can aid in the creation of more effective learning and the fulfillment of 21st-century teaching skills (I-Ju et al., 2020; Rasmini & Nofikusumawati Peni, 2024).

The findings of this study reinforce previous findings which state that online learning significantly impacts teachers' ability to produce effective and efficient learning during the pandemic, particularly in the use of technology (Susanti & Perdana, 2020). Online learning now makes use of new and diverse learning tools. Teachers can provide project tasks in addition to various kinds of learning material to break up monotonous learning. Project-based learning can boost students' ingenuity and interest in engaging in learning (Chao et al., 2017; Kim & Kim, 2021). Teachers can verify or review all types of online students assignments/projects. They can obtain these assignments at any moment and from any location. These file tasks are readily archived, saving paper. Virtual learning using technology is deemed ecologically beneficial because it reduces the use of paper and transportation emissions (Kaliappen et al., 2021; Widyaningsih & Keguruan, 2022). During the Covid-19 pandemic, many new studies supported using online learning as an option to face-to-face learning (Afroz et al., 2021; Ariyani et al., 2023; Robinson & Rusznyak, 2020; Velle et al., 2020; Xue et al., 2020).

In addition to the traits of online learning that are regarded by the government's policy of social separation, the impact of online learning makes students more conscious of how to use technology correctly due to educational demands. Teachers and students must acquire digital literacy abilities to adapt to the new world. What was previously coercive had a beneficial effect on their technical skills and understanding. Another advantage is that students learn responsibility for assignments and time management by taking classes and completing homework. Based on the results of the research and discussion, it can be said that character education-integrated TPACK is feasible to use and positively impacts the online learning process. Character education TPACK can help teachers and students understand character education subject matter during online learning. This research implies that in the future, teachers are expected to be able to increase the use of teaching materials, media, methods, and learning models for appropriate subjects and follow TPACK-integrated character education to create an active, fun, and meaningful learning atmosphere.

4. CONCLUSION

The findings show that demonstrated mastery of Character Education's TPACK in their online classes by using different learning media and instructional platforms. Character Education can use creative tasks such as creating videos during the learning process during the pandemic using Indonesian language to generate non-boring learning. Character Education strive to adjust to the changing educational system, which includes the use of media and instructional platforms by teachers during learning activities. The tools and platforms used are diverse, but three stand out for Character Education: Google Classroom, WhatsApp, and Zoom Meeting. Teachers can use technology in their classrooms to make Character Education resources and tasks more accessible. In general, teachers have acquired TPACK skills to prepare for today's online learning; though many teachers continue to provide monotonous online learning, their technological abilities must be improved. This repetitive online learning can be avoided by assigning tasks as homework. This project task can potentially boost students' creativity and interest in engaging in future learning.

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