

## **SOLUTIONS FOR TEACHERS' CHALLENGES IN DEVELOPING COMPETENCIES IN THE METAVERSE ERA**

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### **Abstract**

Lack of motivation, unwilling asking capable colleagues, comfortable in their work position and lack of facilities have become problems for teachers in developing competencies. This research points to analyze solutions for teachers' challenges in developing competencies in the Metaverse era. The type of this research was descriptive qualitative and purposive sampling was used to select informants. Data were collected through interview guides, observation guidelines and questionnaires. Data obtained from interviews and observations were analyzed through Miles and Huberman model. Meanwhile, data obtained from questionnaires were analyzed through descriptive analysis. Method triangulation was used to check data trustworthiness. The finding of this research reveals that teachers should improve their digital literacy skills by following training about Metaverse, pursuing education to a higher level, mastering foreign languages, reading books and research related to the Metaverse, being active in scientific forums, conducting research, and publishing articles related to Metaverse. The results of this study are expected to motivate teachers to use Metaverse in teaching.

**Keywords:** Challenges, Solutions, Competencies, Metaverse

### **Abstrak**

Kurangnya motivasi, enggan bertanya pada rekan yang mampu, rasa nyaman pada posisi pekerjaan, kurangnya sarana teknologi digital menjadi kendala bagi guru dalam mengembangkan kompetensi. Tujuan penelitian ini menemukan solusi tantangan guru dalam pengembangan kompetensi di era Metaverse. Metode penelitian ini deskriptif kualitatif. *Purposive sampling* digunakan pada penelitian ini. Data dikumpulkan melalui panduan wawancara, pedoman observasi dan angket. Data dari wawancara dan observasi dianalisis melalui Model Miles dan Huberman. Sementara, data yang diperoleh dari kuesioner melalui analisis deskriptif. Metode triangulasi digunakan untuk mengurangi potensi bias hasil penelitian. Hasil penelitian ini menunjukkan bahwa guru harus meningkatkan keterampilan literasi digital melalui pelatihan tentang Metaverse, melanjutkan pendidikan ke jenjang yang lebih tinggi, menguasai bahasa asing, membaca buku dan hasil penelitian, aktif dalam forum ilmiah, melakukan penelitian dan menerbitkan artikel terkait Metaverse. Hasil penelitian ini diharapkan dapat memotivasi para guru untuk menerapkan Metaverse dalam pembelajaran.

**Kata Kunci:** Tantangan, Solusi, Kompetensi, Metaverse

### **A. Introduction**

The existence of the internet in the digital age has brought the easiness for teachers to communicate with students through virtual learning. This virtual learning is designed as similar to offline learning or direct interaction in a classroom. Most activities can be done through this technology. By applying this method, human works have been assisted by the development of technology.

The impact of Covid-19 on digitization has made educators find solutions in online teaching. Thus, the metaverse is on the agenda recently (Kang, 2021). The term metaverse (virtual universe) first appeared in Neal Stephenson's novel *Snow Crash*. This novel, as a whole, tells about humans as avatars who can interact with other avatars in 3D virtual space. Nowadays, many people have been interested, discussed and even join this metaverse. Metaverse is a higher degree in the internet. This is also called the new era when people use the virtual world to do daily activities by using Augmented Reality (AR) and Virtual Reality (VR). Therefore, people need to have prepared to face the era.

Metaverse means beyond the universe. Metaverse is defined as a post-reality universe that uses the physical environment of virtual reality with digital (Susilawati, et al: 2022: 4). The metaverse has represented the use of the physical world, where users can experience a real multiplicity of activities characterized by an unlimited number of users. In other words, this metaverse is a virtual community world that is built and connected to another, where humans meet, work, play, and even buy and sell transactions just like in the real world. The purpose of this metaverse is to make it easier for people to carry out their daily activities. There are some examples; tourism, concert, teaching online and virtual conferences.

The Indonesian government has made an idea to enhance the standard of the learning and teaching process for the future. However, applying Metaverse leads to challenges for teachers. There are several challenges for them. The development of technology cannot be avoided. They should have the competency to have virtual teaching. The constitution of Indonesia Republic Number 14 Year 2005, verse 8 states that teachers should have the competencies. The competencies include personal, pedagogical, social dan professional. Personal competency relates to the teacher's character. Pedagogical competency deals with the ability in the learning and teaching process. Social deals with how teachers socialize with students, colleagues, the headmaster and the community and professional competency relate to the competency in the subject they teach. In MTsN Dharmasraya, there are fifty-seven teachers. The number of teachers whose graduate bachelor's degree is fifty-three while master's degree is four. During covid-19, most teachers used asynchronous online learning, for instance, platform Edmodo, Whatsapp Group, blogspot.com, google forms and youtube. Only one of them used synchronous online learning, for instance, the Zoom application.

Based on preliminary research, teachers at MTsN Dharmasraya have competencies in using digital technology. In fact, in the two last semesters' evaluations, the platform Examora was used. In addition, they have used *Raport Digital Madrasah* (RDM). It indicates that they can use digital technology. Despite having the ability in using digital technology, the availability of technology tools can cause the teachers to have low motivation to do it as well as the changing of newest platforms from time to time. Thus, they need to refresh their knowledge relates to technology digital, such as Metaverse.

Challenges faced by teachers have solutions so that they can use Metaverse for the next several years even though the implementation will be the extra teaching to improve the quality of the learning and teaching process as well as to improve students' and teachers' skills. Consequently, solutions for teachers' challenges in developing competencies in the Metaverse era should be investigated.

Metaverse has allowed teachers to have different experiences in the teaching and learning process. In this era, teachers are not the only source of knowledge. They need to improve competencies that adjust to the current technology. In other words, they should apply digital technology (Sugianto, 2022). Every year the development of technology changes (Lee and Kim, 2021). Thus, teachers need to learn.

Haz and Sugianto (2022) claim that some efforts can be done to develop pedagogic competency by teachers they should be active in scientific forums, pursue education to a higher degree, follow training, do evaluations and improve knowledge through reading. Teachers do not only teach in the classroom. They need to be active in Subject Teachers Forums, being participants and presenters in conferences. Besides, they need to refresh their knowledge by continuing their education to a higher level as well as self-reflection in the teaching and learning process.

Related to teachers' digital literacy competency, Haz and Sugianto (2022) also state that there are some efforts to do. The efforts are emerging awareness of the importance of digital literacy, following digital literacy training, optimizing the function of the library, and giving rewards to a teacher who reaches achievement. Teachers need to realize that they should have digital literacy competence to support their activities by enriching knowledge.

Besides having pedagogical, professional, personal and social competencies, in the 21<sup>st</sup> century, Munianti (2022) declares that education, technology commercialization, globalization, future strategy development and consultant competencies are important competencies in this century. Education competencies deal with internet-based teaching in the classroom whether they are synchronous or asynchronous online learning. Commercialization technology relates to teachers and should bring students to be entrepreneurs. It means that students' creativity can be promoted online. Meanwhile, globalization competency means teachers should be ready to face different cultures in the world and can solve education problems. Globalization is not a threat but it is a change. Future strategy development means teachers can predict the changing in the future and find alternative strategies to solve problems that will appear. Consultant competency means not only counselor teachers can solve students' problems but other teachers also can whether it is learning problems or psychological ones.

Challenges require solutions so that the quality of learning increases in the Metaverse. There are several solutions for education problems so that learning runs well. According to Hanik (2011: 101), to achieve qualified education, several components should be considered; development of human resources, facilities and infrastructures, institutions development, work process, and a conducive atmosphere. The meaning of this statement is that everything related to school, starting from the principal, teachers, educational staff, facilities and infrastructure, working atmosphere, and the quality of educators are components that can make the quality of education more advanced. All elements should work together and maintain mutual attitudes so that the education process in school runs smoothly.

Teachers are learning humans. They have to learn even though they have become teachers. Because of the rapid development of technology in the 21<sup>st</sup> century, learning should emphasize the 4C skills. One of the steps to anticipate unemployment in the 21<sup>st</sup> century,

skilled human resource is needed. These skills include critical thinking and problem-solving, creativity and innovation, communication, and collaboration (Redhana, 2019). Even though these skills are developed by students, teachers also should have the 4C competencies. Thus, teachers need to develop them in the teaching and learning process.

There were some researches done that deal with this research. Putra (2022) conducted research entitled “*Metaverse: Tantangan dan Peluang dalam Pendidikan Profil Pelajar Pancasila*”. The method of this research was library research. The finding of this research shows that the challenge of *Profil Pelajar Pancasila* is the preparation of infrastructure and providing knowledge technology.

Apriliyanti (2020) did research entitled “*Enhancing Teachers’ Competencies Through Professional Development Program: Challenges and Benefits*”. The method of this research was a case study (Qualitative research). Data were collected through observation. The finding of this research depicts that there are pedagogical and professional competencies are the basic formulation for learning materials. The challenges faced by the teacher in the program of professional development are innovative teaching strategies and creative lesson plans.

Li and Xioong (2021) conducted research entitled “*The Metaverse Phenomenon in the Teaching of Digital Media Art Major*”. The results of this study show that the Metaverse is not a technology, but an idea. It is compulsory to bring together the latest technologies, social forms and digital living spaces, where the virtual space and the screen world are integrated.

Moreover, Samoling, et al. (2022) had conducted research entitled “*Efektivitas Pembelajaran Daring pada Masa Covid di SMAN 2 Salatiga*”. Qualitative research was applied in this research. Observation guidelines, interview guides and documentation were used to collect data. The result of this study indicates that the online learning program at SMAN 2 Salatiga has been effective from a cognitive perspective but affective and psychomotor domains have not been effective.

Shu and Gu (2023) had done the research, entitled “*An Empirical Study of A Smart Education Model Enabled by the Edu-Metaverse to Enhance Better Learning Outcomes for Students*”. The design of this research is the mixed method. The finding of this research is the students who engaged in the smart education model in the Edu-Metaverse yielded higher scores in oral English, vocabulary and grammar, reading comprehension, English-to-Chinese translation, and writing than those who engaged in traditional instruction.

The similarities of the previous research to this research are the method and the instrument used. The topics of the previous research deal with challenges, how to enhance teachers’ ability in developing competencies and description of online learning but this research would find the solutions for teachers’ challenges in developing competencies in the Metaverse era especially in MTsN Dharmasraya.

## **B. Method**

Method of this research was a descriptive qualitative where the researcher was a key instrument (Sugiyono, 2016:9). The purpose of this research is to describe, explain and answer questions in detail. Purposive sampling was used in selecting informants. In other words, the researcher chose appropriate informants to be the subject of this research. The informants

were two teachers at MTsN Dharmasraya. The first instrument of this research was a semi-structured interview guide. The second instrument was observation guidelines. The type of observation was participant observation. It means that the researcher was involved as the subject of this research. During observation, field note was used. The triangulation method was used to check data trustworthiness. The third instrument was a questionnaire to support data which were obtained from interviews and observations. The number of respondents was 16 for checking reliability. The reliability of the questionnaire was very high (0.97). The number of respondents for real data was 32 (Driving teachers and ordinary teachers) in Dharmasraya, West Sumatra. Data obtained from interviews and observations were analyzed through data reduction, data display and interpretation data to take conclusions and verification (Miles, Huberman & Saldana, 2014:31-33). Meanwhile, data obtained from the questionnaire was analyzed through descriptive analysis.

$$Pi = \frac{F}{N} \times 100\%$$

Pi: Percentage of developing competencies

F: Respondent's score

N: Score maximum (Sudijono, 2007)

The percentage was interpreted based on the following adapting classification table:

Table 1

The Classification of Teacher's Developing Competencies

No.	Score 100	Criteria/Level of Competencies
1.	80-100 %	Very Good
2.	66-79 %	Good
3.	56-65 %	Sufficient
4.	40-55 %	Poor
5.	30-39 %	Very Poor

(Arikunto (2013:245))

### C. Result and Discussion

Based on data analysis from interviews with teachers and observation at MTsN Dharmasraya, the teachers still had several obstacles in developing competencies in the Metaverse era. The problems were the lack of motivation in applying technology digital. They were unwilling to ask capable colleagues. In addition, these teachers seem to feel that they were comfortable in their work positions. The lack of facilities and infrastructure also affected teachers' use of digital technology. The solutions for teachers' challenges in competency development in the Metaverse era are teachers should improve their digital literacy skills through following training about Metaverse, pursuing education to a higher level, mastering foreign languages, reading books and research related to the Metaverse, being active in scientific forums to introduce Metaverse, conducting research and publishing articles relates to Metaverse.

All teachers should have competencies. These competencies support them to do all activities during the teaching and learning process. They should enrich their knowledge to adjust to the development of technology from time to time. If they do not have new skills,



they will be left behind. Solutions for teachers' challenges in the metaverse era are by improving their digital competency through following online or virtual training about Metaverse and continuing education. Here is an example of the script of interviews:

*Interviewer:* Apa yang harus dilakukan guru untuk meningkatkan kompetensi di era Metaverse?

*Informant 1:* Cara meningkatkan kompetensi guru di era Metaverse mengikuti pelatihan.

*Informant 2:* Guru harus mengikuti pelatihan bagaimana cara kerja Metaverse, ikut seminar dan berbagi ilmu pengetahuan.

*Interviewer:* Apakah perlu bagi guru melanjutkan pendidikan ke jenjang yang lebih tinggi?

*Informant 2:* Perlu. Karena bisa meningkatkan pengetahuan.

The above data depict that teachers can develop their competencies by having training and being active in scientific forums to share knowledge. Nowadays, virtual training has brought teachers to develop their knowledge, such as flatform zoom.

Even though there are several translation applications provided on the internet, mastering foreign languages is important for teachers. Here is an example of an interview script.

*Interviewer:* Apakah perlu penguasaan bahasa Inggris?

*Informant 1:* Tidak perlu. Kita bisa menggunakan Google Translate.

*Informant 2:* Perlu. Tetapi mungkin lebih tepatnya bahasa asing. Seperti bahasa Arab juga. banyak aplikasi penerjemah bahasa yang bisa digunakan. Kita bisa menggunakannya.

The data above show that English as a foreign language has been used in some aspects of life. It implies that mastering a foreign language becomes necessary even though teachers do not know the meaning of all words. At least they learn and translate difficult words through applications when they do not understand the meaning of words.

Conducting classroom action research and writing best practices can be done by teachers to improve their competencies. They need to have a relationship to publish their writing. Here is an example of an interview script:

*Interviewer:* Apakah perlu bagi guru melakukan penelitian dan mempublikasikan hasil penelitian mereka di era Metaverse?

*Informant 1:* Perlu. Mereka bisa melakukan penelitian tindakan kelas dan menulis Best Practice mereka. Tentang permasalahan dalam kelas.

*Informant 2:* Perlu sekali. Guru bisa melakukan Classroom Action Research yang berhubungan dengan kendala-kendala mereka di kelas.

*Interviewer:* Apakah Anda setuju dengan hasil penelitian tindakan kelas bisa memecahkan permasalahan guru di kelas?

*Informant 2:* Setuju.

*Interviewer:* Bagaimana dengan publikasi karya tulis ilmiah?

*Infromant 1:* Ya. Kita perlu mempublikasikannya di media cetak maupun media elektronik.

Doing research and publishing articles can support teachers' performance as well as they can improve their competencies. They can have relations with publishers to publish their articles. Thus, this indicates that social competency is still needed besides professional competence.

Using a questionnaire supports data obtained from the interview guide and observation guidelines. The data obtained from the questionnaire can be seen in the following table:

Table 1.2 Percentage of Teachers' Competencies Development

No.	Indicators	Item	Percentage	Level
1	Professional Competence	5	$P_i = \frac{485}{640} \times 100\%$ = 76 %	Good
2	Pedagogic Competence	5	$P_i = \frac{498}{640} \times 100\%$ = 78 %	Good
3	Social Competence	2	$P_i = \frac{198}{256} \times 100\%$ = 77 %	Good
4	Personal Competence	2	$P_i = \frac{217}{256} \times 100\%$ = 85 %	Very Good
5	Critical Thinking and Problem-Solving	3	$P_i = \frac{284}{384} \times 100\%$ = 74 %	Good
6	Creativity and Innovation	1	$P_i = \frac{102}{128} \times 100\%$ = 80 %	Very Good
7	Communication	3	$P_i = \frac{296}{384} \times 100\%$ = 77 %	Good
8	Collaboration	4	$P_i = \frac{374}{512} \times 100\%$ = 73 %	Good
<b>Total</b>		25		

There are eight indicators used in the questionnaire. The use of this instrument supports data from interviews and observations. The level of teachers' developing competencies is good and very good. It implies that the teachers generally have a good ability in developing competencies in the Metaverse era. Based on the score for each questionnaire statement, the finding of this research is reading books and research results related to Metaverse, being active in scientific forums to introduce Metaverse and conducting research as well as publishing their article.

The presence of technology digital in the Metaverse era is certainly intended to improve the teaching and learning process. It can be efficient to do. Teachers as human resources, should require an education qualification. They need to have higher education and follow training so that they can improve their competencies easily (Hanik, 2011:101). From year to year, the development of information and technology has been changed for improvement. The paradigm changes in the development of information and communication

technologies every ten years. In the 1990s, communication used computers. In the 2000s, communication used the web. In the 2010s, it used mobile and the last paradigm is metaverse in the 2020s (Lee and Kim, 2021) Consequently, teachers should refresh their knowledge of digital technology. The steps can be followed by teachers by sharing knowledge in scientific forums, pursuing education to a higher level and following online and offline training (Haz and Sugianto, 2022).

Besides teachers should enrich knowledge, providing facilities is important to support teachers' competency (Putra, 2022). Both of these can be said as systems. They have relations with one another, as an example, providing computer and wireless fidelity (WiFi) at school. Thus, teachers can take advantage of these facilities to develop their competencies in the Metaverse era.

Due to English being applied in some applications, teachers can develop language skills. There are many applications provided on the internet that ease them, such as online English courses, online Test of English as a Foreign Language (TOEFL) or English Proficiency Test (EPT), Test of Arabic as a Foreign Language (TOAFL), and google translate if they have to translate the words from one language into other languages.

It is very important for teachers in continuing professional development in the Metaverse era. This competency development can increase teacher professionalism in facing challenges in the Metaverse era. It seems that there are not many teachers who do not know about the Metaverse. They only know the word Avatar or 3D images. Even during the interview, some thought that learning via Zoom or using other digital technologies was considered learning using the Metaverse. Therefore, teachers need to research Metaverse studies or at least read research results and references about Metaverse studies. In addition, they need to publish their work so that other teachers know what learning using the Metaverse is all about. Using Metaverse facilitates teachers to enrich or develop knowledge. They can take part in this opportunity. They can feel long-distance virtual interaction. Consequently, besides developing writing competency, teachers also can use current digital technology so that they will not be left behind.

#### **D. Conclusion**

The conclusion that can be taken from this research is in the learning and teaching process, every teacher faced problems. The solutions for the teachers' challenges in the Metaverse era are they need to develop digital literacy skills through training and pursuing education to a higher level, be active in scientific forums, master foreign language, be creative and conduct research or write a best practice as well as publish their articles. Metaverse in education will create a fun virtual learning space. Due to the Metaverse user's form as an avatar that can not only speak and can touch objects in virtual space, the implementation of Metaverse in learning can develop students' imagination and creativity. The result of this research is expected that teachers to use Metaverse in the next few years, especially in MTsN Dharmasraya, West Sumatra. They can invite teacher or trainer who has implemented using Metaverse to their schools.



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