

Research Article

21st Century Learning Design for Educators to Improve the Competence of Technology Literacy

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Abstract.

Technology literacy is a competency that cannot be avoided by educators, especially during the current Covid-19 pandemic. They are required to possess and improve their technological skills to support the learning process, especially as face-to-face implementation is not possible. However, many educators face difficulty and have not mastered technology in the field of learning, particularly various technology applications connected to the Internet, which facilitate remote or online learning. To address these challenges, the community service team from the Mathematics department at Universitas Islam Bandung took the initiative to organize education and training activities as a solution to improve educators' technological literacy competence. One of the most suitable learning methods applied during this pandemic is the 21st Century Learning Design (21CLD) packaged in a Microsoft Certified Educator (MCE) certification program. Through this MCE training activity, it is hoped that educators can enhance their technological literacy competencies and apply them in their respective educational institutions along with their students. The MCE training activities were conducted for 8 days, starting from May 26, 2022, to June 20, 2022, every Monday and Thursday, from 15.00 to 18.00 online via Zoom conference apps. The training was attended by educators from MTs and SMK at Tarogong District, City of Garut, Indonesia.

Keywords: microsoft certified educator, 21CLD, century, learning, design, sertification

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1. Introduction

Technological literacy [1] is one thing that must be owned by educators, including teachers, lecturers, as well as educators in formal or non-formal institutions. Referring to the limited face-to-face meeting due to the Covid-19 pandemic [2], technological literacy, especially online learning applications, is an unavoidable ability [3]. Online

learning in the form of virtual face-to-face through video conferencing applications such as: Microsoft Teams [4], Zoom [5], Google Meet [6], or other virtual face-to-face applications, is an alternative learning activity to reduce the number of transmissions. Making teaching materials for the use of information and communication technology so that it can optimize the potential that exists in school partners in the use of Information Technology to improve the quality of learning [7]. Covid-19. Starting from the current pandemic situation, the Community Service Team (PKM) of the Bandung Islamic University (UNISBA) Mathematics Study Program took the initiative to design an activity to improve the competence of educators in the field of technological literacy.

Microsoft Certified Educator (MCE) [8] is a specialized certification program in the field of education that professionally bridges the gap between technological literacy competencies and the learning process in the classroom. In the MCE certification program, educators are encouraged to have the competencies required by students regarding 21st century technology learning through the 21st Century Learning Design (21CLD) curriculum [9].

Through the MCE certification program, the PKM team took the initiative to carry out education and training activities as a medium for delivering MCE materials to teachers in an effort to improve technological literacy competence. This competency improvement is expected to be a tool and a driving force for teachers to be able to master the technology that supports current learning activities, including various applications that are connected to the Internet. Some of them are used as learning resource called pedagogic text or academic text. This academic text is now present in the form of digital media and media convergence such as ebook and e-journal [10].

2. Method

2.1. Place and Time of Implementation

MCE Certification Training is conducted online via the Zoom application. The training is carried out online with the consideration of 2 factors. First for effectiveness, cost and energy saving, where participants and presenters remain in their respective regions or cities. This is reinforced because the participants are used to participating in online activities. The second factor is following the government program which still recommends limiting community activities after the Covid-19 pandemic.

2.2. Target Audience

The targets of the MCE training are teachers of Madrasah Tsanawiyah (MTs) Muhammadiyah and Vocational High Schools (SMK Muhammadiyah Garut, West Java Province). The subjects taught are not limited. All subject teachers in MTs and SMK Muhammadiyah Garut can participate in the activity MCE training.

2.3. Community Service Method

The implementation of MCE training begins with the preparation stage, namely the division of committee tasks including making posters, distributing participant invitations, preparing training materials, determining presenters, and preparing video conference application systems. Participants who want to take part in the training register through an online form, and are then invited to social media forums/groups. There is no training fee for participants. The next stage is the implementation of MCE training activities. The training activities are divided into two parts. The first part is training for the delivery of MCE materials, and the second part is training in training questions to prepare for the MCE certification exam. The first part of the training was held in 7 meetings, each meeting for 3 hours. Before the training begins, a pre-test and post-test are carried out at the end of the training. For the 3 participants who get the highest score during the assessment test for each MCE material delivery, they will be given a reward. In the second part of the training, test preparation is carried out in the form of practice questions for 7 meetings, 3 hours each. The implementation of the MCE exam is adjusted to the participants' time availability. The exam is carried out online using the special for the MCE certification exam [11].

2.4. Success Indicator

Indicators of the success of the training are shown by several factors, including: 1) The enthusiasm of the participants in the training activities, shown by proactively submitting questions, responses, or opinions during discussion forums, and turning on the camera on the video conferencing application; 2) An increase in the post-test scores compared to the pre-test scores, indicating that participants paid attention to the material so that they could answer the questions during the pre-test; 3) Most of the participants remained in social media forums/groups to keep abreast of MCE scientific developments and

continuing education and training, as well as discussing and sharing information about the world of education, especially those related to MCE training materials.

2.5. Evaluation Method

The evaluation method of MCE training activities can be seen through the responses of teachers at MTs and SMK Muhammadiyah who see or read activity information conveyed through social media messages (WhatsApp) who then register to become participants and join social media groups. In addition, evaluation is also carried out through increasing the assessment of the post-test results compared to the pre-test scores.

3. Result and Discussion

3.1. Preparation Phase

In the preparation stage, the activity begins with the formulation and planning of PKM activities. The agreed form of PKM activities is to increase the competence of educators through the MCE certification program. The activity is carried out in the form of online training because it is considered more effective than face-to-face meetings. In addition, meeting activities are accustomed to being carried out as an alternative to carrying out activities during the Covid-19 pandemic so that participants feel that online implementation feels more comfortable. The target of the training participants are MTs and SMK Muhammadiyah Tarogong Garut teachers, West Java. Furthermore, the division of tasks was carried out through the formation of committees, in the form of licensing, correspondence administration, preparation of activity posters, dissemination of participant registration information, preparation of training materials, preparation of video conference applications, and determination of presenters. Information on MCE training activities is conveyed to teachers through the Principals of MTs and Vocational Schools through social media. The preparatory stage is carried out from early March 2022 until before mid-May 2022.

3.2. Implementation Stage of MCE Training

The first part of the MCE training was held for 8 meetings which were held every Monday and Thursday, starting at Pkl. 15.00 until Pkl. 18.00. MCE training begins on

Thursday, May 26, 2021, until Monday, June 20, 2021. Training activities are carried out via video conference using the Zoom application. The structure of the training activities begins with the opening, remarks, pre-test, delivery of 7 MCE materials, post-test, and ends with closing. The MCE training materials presented were 1) Introduction to MCE, 2) Collaboration, 3) Skilled communication, 4) Knowledge construction, 5) Self regulation, 6) World Problem Solving Real and Innovation (real world problem solving and innovation), and 7) Use of ICT in the learning process (use of ICT for learning). MCE training activities through video conferencing are shown in Figure 1 and Figure 2.

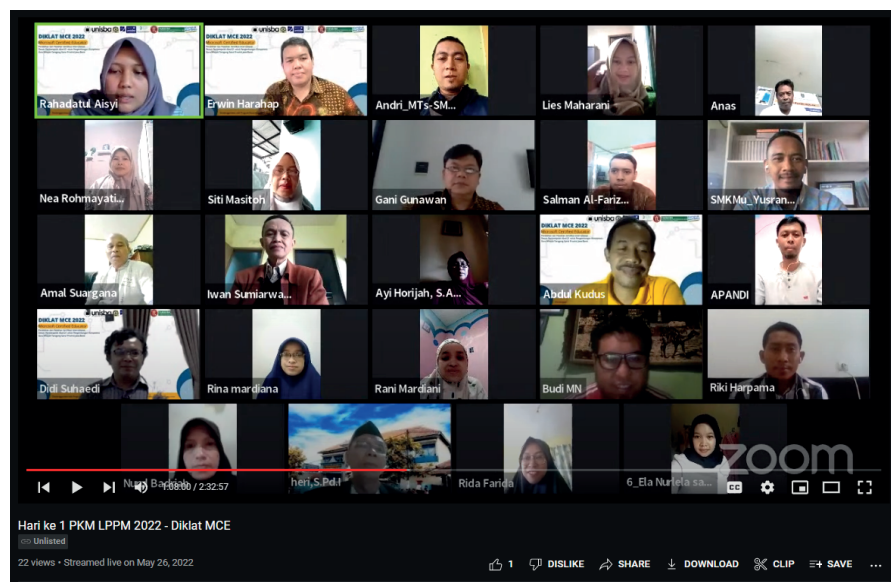


Figure 1: Opening of MCE Training for LPPM UNISBA PKM Program via Video Conference (Zoom).

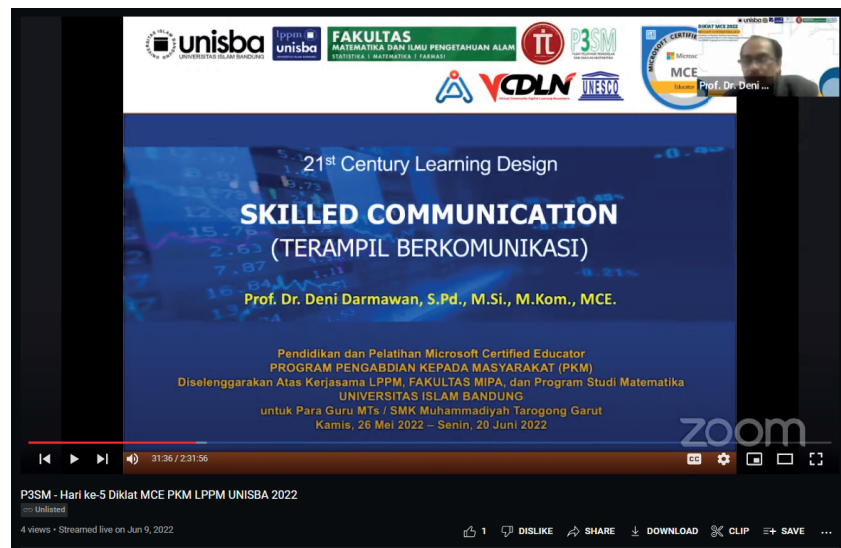


Figure 2: Display of MCE Training Activities The 5th meeting material "Communication Skills" by Prof. Dr. Deni Darmawan, S.Pd., M.Sc., M.Kom., MCE.

MCE Training Materials generally explain how 21st Century Learning Design (21CLD) can be applied in the learning process with students. All MCE materials are publicly accessible through the Microsoft Education website (Education, 2021). Figure 3 shows the appearance of the MCE material website from Microsoft.



Figure 3: MCE material website display.

The explanation of the MCE material is presented in the form of a rubric. The rubric display is provided in two formats, namely in table format and decision tree. Some people understand the rubric better in a tabular format (Figure 4), but others prefer the view in a decision tree format (Figure 5) because it is seen as easier to understand.

3.3. Activity Success Indicator

The success of MCE training activities is measured by the indicators of the participants' participation in participating in the activities and the results of the post-test. This indicator is seen in the discussion sessions at each delivery of the material, and the results of the post-test which show a significant difference between before and after the implementation of the training. The participants were deemed to have quite understood the material presented in the MCE training activities. After participating in the MCE training activities, the participants are expected to be able to apply the materials that have been received at their respective institutions with the students. Figure 6 show the training committee with the participants at the end of MCE training activity.

Rubrik Konstruksi Pengetahuan



Kode	Rubrik
1	<ul style="list-style-type: none"> Siswa TIDAK PERLU mengkonstruksi pengetahuan Siswa menyelesaikan aktifitas menggunakan informasi yang ada atau dengan prosedur umum
2	<ul style="list-style-type: none"> Siswa PERLU mengkonstruksi pengetahuan melalui Interpretasi, Analisis, Sintesis, atau Evaluasi terhadap informasi atau gagasan TETAPI aktifitas utama BUKAN konstruksi pengetahuan
3	<ul style="list-style-type: none"> Aktifitas utama pembelajaran adalah Konstruksi Pengetahuan, TETAPI tidak mewajibkan siswa untuk menerapkan pengetahuan dalam konteks baru
4	<ul style="list-style-type: none"> Aktifitas utama pembelajaran adalah Konstruksi Pengetahuan DAN aktifitas pembelajaran MEWAJIBKAN siswa untuk menerapkan pengetahuan ke dalam konteks baru TETAPI aktifitas pembelajaran TIDAK interdisipliner (lebih dari satu mata pelajaran)
5	<ul style="list-style-type: none"> Aktifitas utama pembelajaran adalah Konstruksi Pengetahuan DAN aktifitas pembelajaran mewajibkan siswa untuk menerapkan pengetahuan mereka kedalam konteks baru DAN konstruksi pengetahuan bersifat interdisipliner (Aktifitas ini memiliki sasaran pembelajaran dalam lebih dari satu mata pelajaran)

Figure 4: Display of the MCE “Knowledge Construction” Rubric in Table format.

Pohon Keputusan untuk Terampil Berkomunikasi

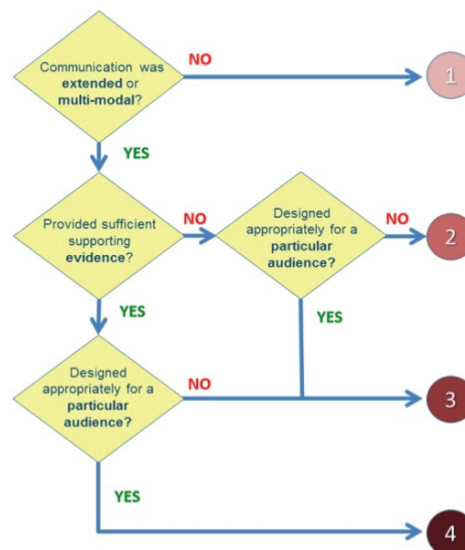


Figure 5: MCE Rubric Display “Skilled Communication” in Decision Tree Format.

4. Conclusion

MCE training activities are carried out with the aim of increasing the technological literacy competence of MTs and SMK Muhammadiyah Tarogong Garut city. Through MCE training, it is hoped that teachers understand the essence of learning in the 21st century, where technology plays a very important role and becomes an important factor



Figure 6: Committee and participants at the end of MCE training activity.

in supporting learning activities. The role of technology in learning includes the Internet, mobile applications, video conferencing, and online learning systems.

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