Jurnal
Guru Komputer
Journal homepage: https://ejournal.upi.edu/index.php/JGrKom

Seminar on Future Trends and Research in the Field of Study Smart Learning Environment

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ABSTRACT

The field of education has advanced thanks to technological developments in the 21st century. Teaching and learning activities have pointed towards a smart learning environment (SLE). Many research efforts have attempted to define SLE as well as identify key features for creating an intelligent learning environment. SLE is a development of digital learning environments (DLEs). Both SLE and DLEs have the same goal, which is to provide an effective, efficient and attractive learning environment for learners. The purpose of this community service is to introduce SLE research and studies, provide insight to academics, practitioners and students regarding SLE research trends, find out the extent of implementation, needs and opportunities for SLE implementation in institutions. The method used is the direct communication counseling method by holding webinars (online seminars) regarding SLE research trends targeting academics, practitioners and students at both undergraduate and postgraduate levels. At the end of the activity, a question-and-answer session was carried out, and the participants filled out a questionnaire as a form of evaluation. After attending this seminar, it is expected that the participants can understand trends future research regarding the field of SLE studies.

ARTICLE INFO

Article History:
Submitted/Received 20 Apr 2022
First Revised 30 Jun 2022
Accepted 15 Sep 2022
First Available Online 01 Aug 2023
Publication Date 01 Sep 2023

Keyword:
Article,
Journal,
Smart Learning Environment (SLE).
Study,

1. INTRODUCTION

The field of education has advanced thanks to technological developments in the 21st century. Teaching and learning activities have pointed towards a smart learning environment (SLE). Many research efforts have attempted to define a SLE as well as identify key features for creating an intelligent learning environment. In research, SLE is defined as an open, intelligent and integrated learning space based on constructivist learning theory, integrated learning theory and the latest educational methods consisting of devices, tools, techniques, media, teaching origins, teaching communities and related student (Rosmansyah *et al*. 2022).

SLE are a development of digital learning environments (DLEs). Both SLE and DLEs have the same goal, which is to provide an effective, efficient and attractive learning environment for learners. In fact, SLE models and frameworks have been used in various studies. There are a number of results from SLE researchers that can be used as guidelines for developing discussions and further research opportunities regarding SLE.

The definition of "Smart" is the ability to solve difficult things intelligently, precisely and effectively. In the literature, a SLE is defined as a high-level digital learning environment that supports student-centered, service-based, context-aware, personalized, interactive, and adaptive learning (Huang *et al*., 2013; Hwang, 2014; Zhu *et al*., 2016a; Zhu *et al*., 2016). In other literature, SLE is considered as a learning resource service that facilitates collaborative learning and an enhanced digital service to provide self-directed, self-motivated, and personal learning services (Kim *et al*., 2013; Koper, 2014). In simple terms, a SLE is defined as a hybrid learning system (online, offline, and mixed learning mode) that provides a fun learning process for students while achieving learning outcomes thanks to the smart use of tools and techniques (Rosmansyah *et al*. 2022).

Research on the SLE has been widely discussed and published in scientific papers and scientific journals. However, there are still many academics, practitioners, and students who still do not understand the concepts and benefits of research in the field of SLE studies. To overcome this, it is necessary to carry out a community service activity in the form of scientific seminar discussing the field of SLE studies aimed at academics from both lecturers, researchers and teachers, as well as practitioners and students for bachelor, master and doctoral levels. The purpose of this activity is to introduce research and studies on SLE, in order to provide insight to academics, practitioners and students regarding SLE research trends, find out the extent of implementation, needs and opportunities for SLE implementation. With this activity, it is expected that academics, practitioners and students will be motivated to conduct research and implement research related to the field of SLE in their respective institutions.

The Community service activities proposed is in the form of web seminars (webinar) which discuss "Trends and Future Research of Smart Learning Environment (Research Opportunities for Undergraduate, Masters and Doctoral Levels)". In the midst of the Covid-19 pandemic, which made it impossible to carry out face-to-face activities, this activity was carried out through a web seminar (webinar) with the help of the Zoom application and via live streaming on the Youtube channel. This activity was organized The Smart Learning Environment Study Group (KBK-SLE) of the Department of Computer Science Education Universitas Pendidikan Indonesia (UPI) and the Bandung Institute of Technology (ITB). The participants in this activity were teachers, lecturers, researchers, practitioners and students from the provinces of DKI Jakarta, West Java, Central Java, East Java, Bali and West Nusa Tenggara (NTB).

DOI: http://dx.doi.org/10.17509/xxxx.xxx
p- ISSN xxxx-xxxx e- ISSN 2774-7891

2. METHODS

The method for implementing community service activities consists of several stages (**Figure 1**). The first stage is the planning stage. In this stage, the organizers held discussions regarding identifying problems and the outputs desired by webinar participants as well as planning and preparing the material that will be presented in the webinar. In addition, the organizers conducted internal discussions regarding the material to be presented in the webinar.

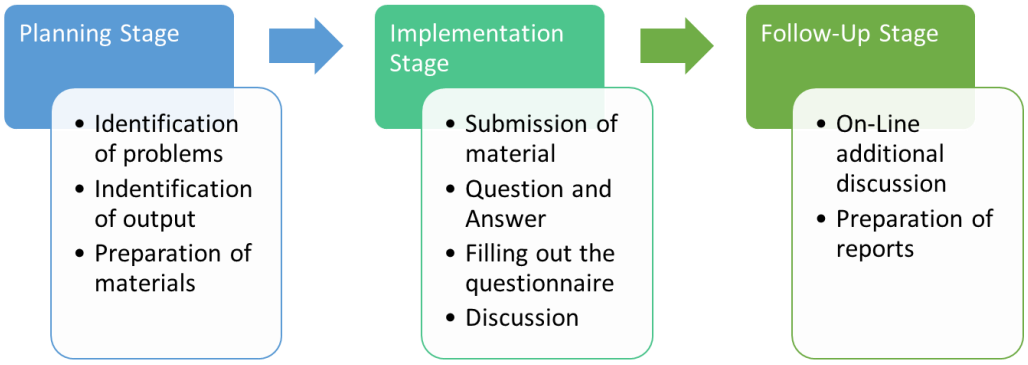

Figure 1. Stages of implementation method.

The second stage in this community service activity is the implementation of the activity). This activity was in the form of delivering material by a member of the Smart Learning Environment (KBK-SLE) Department of Computer Science Education at the UPI. The material presented was Computational Learning in the Smart Learning Environment (SLE) delivered by Dr. Budi Laksono Putro, S.Sc., M.T. (Head of KBK Smart Learning Environment). The second speaker is Yusep Rosmansyah, S.T, M.Sc., Ph.D. (Director - ITB Education Development Directorate) with the material presented, namely Surgical Journal Q1 "A simple model of Smart Learning Environment".

The final stage in this community service activity is the follow-up to the implementation of the activity. This stage was carried out by answering the questions asked by the participants after the event was over, and giving out the questionnaire to be filled by the participants. This activity is carried out in the form of online discussions with participants. Lastly, a final report containing the event detail and result is made to be presented to the faculty as an archive for future community service activity.

3. RESULTS AND DISCUSSION

The community service activities in the form of web seminars (webinar) which discuss "Trends and Future Research of Smart Learning Environment (Research Opportunities for Undergraduate, Masters and Doctoral Degrees)" took place on Saturday 19 March 2022 at 08.00 AM WIB. In the midst of the Covid-19 pandemic, which made it impossible to carry out face-to-face activities, this activity was carried out through a web seminar (webinar) with the help of the Zoom application and via live streaming on the Youtube channel. The event amassed over than 100 participants from Indonesia. The documentation can be seen in **Figure 2.**

DOI: http://dx.doi.org/10.17509/xxxx.xxx
p- ISSN xxxx-xxxx e- ISSN 2774-7891

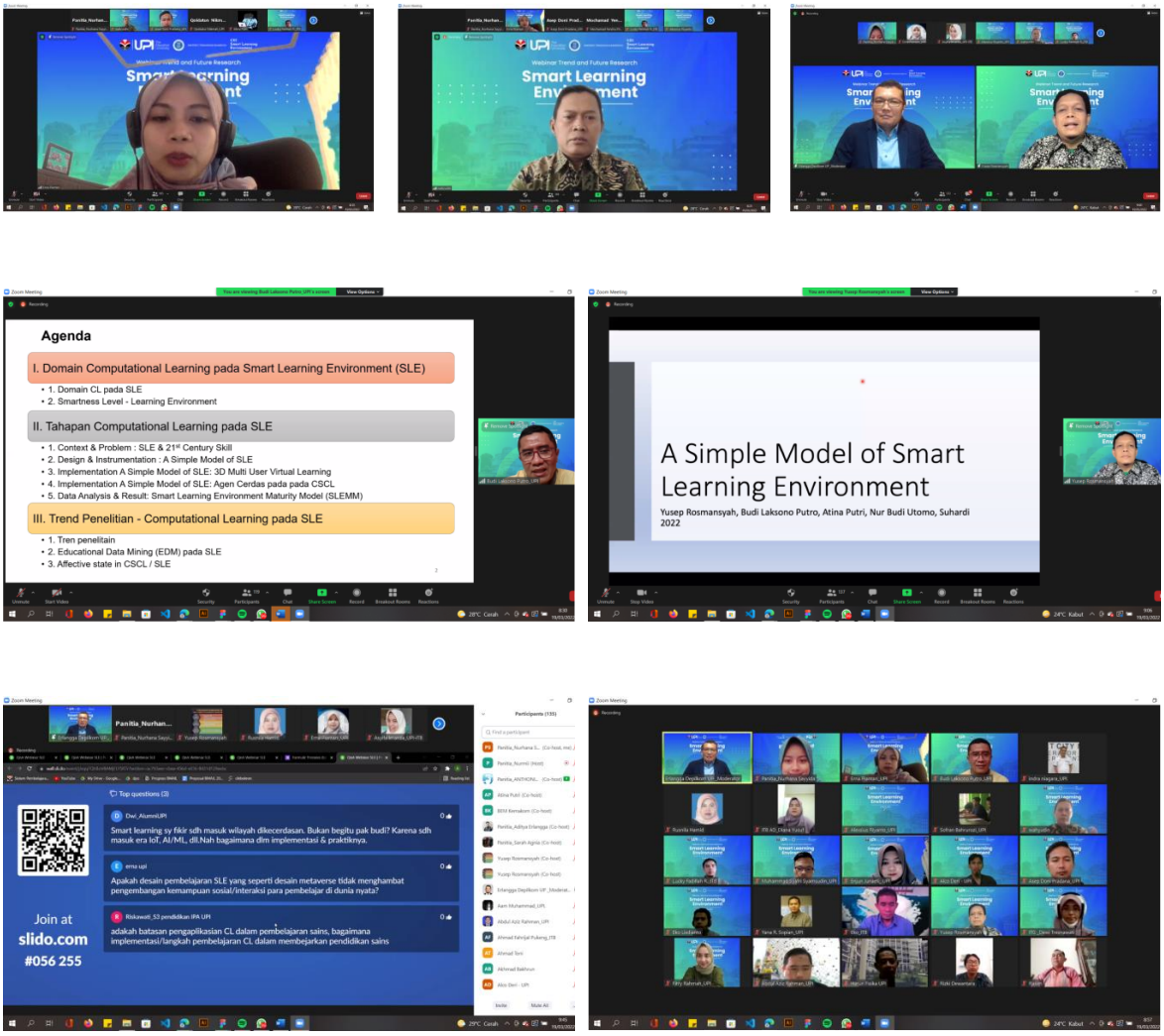

Figure 2. Presentation of material, discussion, and questions and answers.

At the activity implementation stage, one of the members of the Smart Learning Environment Study Group (KBK SLE) served as a speaker by Dr. Budi Laksono Putro, S.Sc., M.T. (Chairman of KBK Smart Learning Environment) by delivering material on "Computational Learning in Smart Learning Environment (SLE)". This session discusses three points. The first point is Domain Computational Learning in SLE", explaining that Computational Learning in SLE is an intersection of the fields of computer science and educational science. The second point discusses Computational Learning Stages in SLE, and the third point discusses Research Trends in SLE.

After explaining the background on the importance of scientific publications, the KBK-SLE continued to deliver material on the Q1 Journal Review "A simple model of Smart Learning Environment" by guest speaker Yusep Rosmansyah, S.T, M.Sc., Ph.D . (Director - ITB Education Development Directorate) by reviewing the proposed model in the journal synthesized using various sections of previous studies, intelligent tutoring systems (ITS), learning technology best practices, and documents ISO 21001:2018 (International Organization for Standardization, 2018).

Furthermore, the speaker conveyed that the method used in the research was Design Research Methodology (DRM) adopted as a guideline for this research. It consists of four stages: Clarification Research (RC), Descriptive Study I (DS-I), Prescriptive Study (PS), and Descriptive Study II (DS-II). As well as the Simple Model SLE consisting of Standards, Policy,

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Curriculum, Domain modules, Learner Modules, Pedagogy Modules, Interface Modules, and Supporting Resources.

In addition, the speaker conveyed the SLE establishment guideline, which is a guideline for the establishment of a SLE. This tool was developed based on ISO 21001:2018 standards (International Organization for Standardization, 2018) and the ADDIE approach Branch in 2009. As well as explaining the SLE measuring instrument is SLEMM. This tool is used to measure the maturity level of a learning environment. SLEMM is used to measure Learning Process, Effectiveness, Efficiency, and Engagement.

Finally, the KBK-SLE provided an opportunity for participants to ask questions. With moderator's help, the participants are welcome to ask some questions to the resource person. Due to time constraints, not all participants had the opportunity to ask questions during the activity. However, the KBK-SLE still opens opportunities for participants who still want to receive additional explanations regarding the material that has been presented through online discussions after the event is over.

At the end of this activity, participants were asked to fill out a questionnaire related to understanding trends and future research regarding the field of SLE studies, understand the extent of implementation, needs and opportunities for SLE in institutions. The questionnaire is shared and filled out online. Based on the results of the questionnaires, this webinar motivated the participants to conduct research in the field of SLE studies, and implement the results of research in the field of SLE studies at participating institutions.

4. CONCLUSION

Community service activities in the form of training through webinars related to "Trend and Future Research of Smart Learning Environment (Research Opportunities For Undergraduate, Masters and Doctoral)" which aims to introduce research and studies on smart learning environment (SLE), providing insight to academics, practitioners and students regarding SLE research trends and implementation, has been successfully carried out. This activity is very useful for participants and motivates participants to increase research in the field of SLE studies, and implement the results of research in the field of SLE studies at participating institutions. This community service activity was carried out in a relatively short period and only through webinars so that the understanding obtained by participants was still not optimal. Thus, advanced community service activities can be carried out by inviting participants to attend face-to-face training. In addition, the frequency of training can be increased but with a smaller number of participants in order to ensure the progress of each activity participant.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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DOI: http://dx.doi.org/10.17509/xxxx.xxx
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DOI: http://dx.doi.org/10.17509/xxxx.xxx
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