



Mobile Learning American Service as Digital Literacy in Improving Students' Analytical Skills

Annis Kandriasari^{1,*}, Yeni Yulianti¹, Sachriani¹, Jarudin²

¹ Faculty of Engineering, Universitas Negeri Jakarta, 13220, Indonesia

² Department of Information Engineering, Faculty of Information Engineering and Communication, Institut Teknologi dan Bisnis Bina Sarana Global, Indonesia

ARTICLE INFO

Article history:

Received 8 February 2023

Received in revised form 20 June 2023

Accepted 27 June 2023

Available online 15 July 2023

Keywords:

Mobile learning; digital literacy;
American service

ABSTRACT

This research aims to produce mobile learning media as digital literacy to improve students' skills in service and arrangement in the American style. This research uses data analysis techniques with the Content Validity Ratio (CVR) method. Data analysis used two methods: qualitative analysis for quantitative data and qualitative analysis. The Feasibility of material content for mobile learning has gone through the formative evaluation stage with a one-to-one expert assessment including material experts, instructional design, media, and language with the results feasible to use. A one-to-one test was conducted by 3 participants with an average overall percentage of the results of the student's assessment was 94.1% which means very good. The limited group test was conducted on 8 students, and all students stated that the media had very good quality, with an average percentage of 99%. The last user trial of this formative evaluation was a field trial with 30 Catering students. Field Group Test, the last trial of the last formative evaluation, obtained an average percentage of 87.46%, which can be categorized as good with a very positive response to the media used. Based on the results of user testing through one-to-one, small group, and field trials, it can be concluded that mobile learning American service as digital literacy is feasible to use.

1. Introduction

Information and communication technology makes it easier to improve the performance of human resources and organizations [1,2]. One of the learning activities that utilize more dynamic technology is known as mobile learning. Mobile learning is part of e-learning, where e-learning characteristics specifically refer to personalized learning [3,4]. Mobile learning combines individualized learning with any-time and anywhere learning to utilize free time [5,6].

Using mobile learning in COVID-19 pandemic situations is helpful in the knowledge transfer process and provides near-real clarity for practicum material [7,8]. One of the practicum materials that must first understand the theory is the types of services in restaurants where students must first understand the theory so that they can carry out the practicum. To provide independent learning

* Corresponding author.

E-mail address: annis@unj.ac.id

and digital literacy for students where digital literacy relies on "reading" and increases the ability to analyse and use digital information obtained [9]. To facilitate the learning process, it is necessary to develop mobile learning with a focus on material development as digital literacy [10]. The use of various media makes learning interesting and motivates students to improve their skills American service.

Some relevant previous studies revealed that digital literacy criteria for undergraduate students could improve thinking, analysis, and collaboration skills [11]. Mobile Learning in conventional education will fulfil the requirements for improving the quality of education [12]. In addition, the flexibility of the educational process will increase while fulfilling the demands of lifelong learning [13]. The results of another study stated that mobile learning could improve learners' language skills, and the main emphasis should be given to acquiring language skills such as listening, speaking, reading, and writing skills through mobile technology. Thus, the findings indicate that listening skills are better acquired through the app than other language skills [14].

The study Shdifat *et al.*, [15] showed that the level of teacher practice of governance principles has an important role in improving skills, that the percentage of concentration in practical skills that male students have a higher presentation. The results indicated that vocational education teachers have few skills that help students implement lessons due to the constraints faced in developing the vocational education curriculum.

The study Rabiman *et al.*, [16] proved that the development of e-learning in the professional field based on a Learning Management System (LMS) is "very feasible" to use. The assessment depends on the usability of the LMS, its functionality, visual communication, learning design, and material content, in addition to language and communication. This increases the satisfaction and quality of learning. Students feel that online learning has not provided a better experience and productivity in mastering competencies. However, it can provide them with motivation and ease of learning with easy access to resources, and they are still hesitant about its continued use in the future [17].

Based on some of the results of mobile learning development research that has been done, there are still many weaknesses; Namely, students have not been able to evaluate learning outcomes independently and have not been equipped with a QR Code to make it easier to access the application. The development of mobile learning in American service as digital literacy in the vocational field of catering has not been much related to individual service. So, in this study, research will be conducted that focuses on the development of mobile learning in American service as digital literacy in vocational learning in the catering field. Mobile Ad hoc Network (MANET) is more vulnerable to various attacks since it has no centralized or any pre-existing network structure [25]. The novelty in this research is the development of mobile learning American service in the form of digital flipbooks and videos along with assessments that can be accessed using Android with a QR Code by hyperlink to be used as student digital literacy in distance learning that can be accessed specifically for the Restaurant Arrangement and Service course in the Tata Boga study program, Faculty of Engineering, State University of Jakarta.

The urgency in this research is to develop American service-learning content in the form of digital flipbooks and videos along with assessments that can be accessed using Android with QR Code Hyperlinks to be used as student digital literacy in distance learning. Practicum activities are expected to be better organized and provide maximum competence for students. The mobile learning developed is expected to be an alternative to increase student learning independence in improving skills and overcoming the lack of mentoring intensity carried out by lecturers during practicum.

2. Methodology

2.1 Research Design

The media developed before being tested with users is validated by experts so that the results of the products developed are suitable for use to improve student skills. Validation was carried out with four experts: instructional design experts, material experts, media experts, and linguists. The aspects assessed by instructional design experts are the accuracy of instructional objectives, the suitability of delivery strategies with user characteristics, the suitability of program content, and the accuracy of the sequence of learning materials with a total of 14 items. Aspects validated by material experts are the information presented in the learning program is free from conceptual errors. Direct explanation of the core material, the suitability of information with the applicable curriculum (up to date) and following core competencies/standard competencies/basic competencies, clarity, and suitability of the contents of the learning program with learning objectives, the material in learning has sufficient depth, not too deep or not too shallow, the references used are sufficient for user needs in learning the contents of the learning program with a total of 16 items.

Aspects validated by media experts are media clarity, narration, suitability of language and communication styles with audience characteristics, the attractiveness of media packaging, accuracy, and attractiveness of the media, with a total of 13 items. While the aspects assessed by linguists are language accuracy, the language used to convey messages is easy to understand, and writing accuracy, the writing used is easy to read with a total of 10 items. Based on the results of validation by experts, improvements are made and then returned and declared feasible, and then the student trial stage will be carried out.

The next stage is the development test for students by providing an assessment questionnaire on learning media consisting of material and flow aspects, appearance, and user-friendliness. The development test was carried out in three stages consisting of

- i. One-to-one trial, at this stage, the product that has been made will be tested on 3 students (low, medium, and high scores) of the Catering Education study program who are studying the Restaurant Arrangement and Service course. Students are selected based on their abilities, representing research respondents with high, medium, and low ability levels. At this stage, students will fill out a questionnaire and comment on the product developed, and the results will be considered for product improvement.
- ii. The one-to-one trial and expert validation results will be improved and tested again at the small group trial stage. The trial process was carried out with 8 students of the Catering Education study program who were studying the Restaurant Arrangement and Service course to know the level of practicality of the American Service mobile learning media to be developed, and small group trials were also carried out to determine the applicability and benefits of using learning media before being produced for the improvement stage. Students will fill in the questionnaire sheet and provide comments and suggestions for the developed product. The results of this trial will be used as the basis for the next trial.
- iii. Large group trial (field test), which is tested with one class (30 people) of students studying the Restaurant Arrangement and Service course. This stage is conducted to confirm the results of the usability and practicality of the developed American Service mobile learning. Students will be asked to fill out a questionnaire that has been provided, and the questionnaire will be processed so that the feasibility level of the developed product can be known. Development trials on experts and students will be discussed at the product feasibility stage.

2.2 Participants

This research was conducted at the Faculty of Engineering, Tata Boga Study Programme, in the 2021-2022 academic year. A total sample of 41 students studying in the odd semester was selected through purposive sampling. Participants were also selected based on students studying with the American Service Styling course.

2.3 Data Collecting Technique

The approach used in this study is the quantitative method—the research design of quantitative methods in collecting, analysing, and evaluating data. The design used in this research is embedded design, namely data collection that is carried out by starting with f data together or sequentially where one form of data acts as a support for other data.

This instrument is designed following the concept of understanding the arrangement of American Service. The device used is a Likert scale questionnaire to obtain information in assessing the level of American Service arrangement skills. The scoring rubric for the score, namely 1 = Less Good / Less Agree, 2 = Quite Good / Quite Agree, 3 = Good / Agree, and 4 = Very Good / Strongly Agree.

This instrument has been validated before use. The questions in the instrument consisted of 27 items. The instrument grids used are presented in Table 1.

Table 1

Grid of instruments

No.	Question indicator	Item	Item of Number
1.	Understand	1,2	2
2.	Appearance	3,4,5,6,7,8,9,10,11	9
3.	Easy	12,13,14,15	4
Total			15

2.4 Data Analysis Technique

The data analysis technique used was based on the information from the questionnaire filled out by the students. Based on their perspective on American Service style structuring skills, students were observed to fill out the form. Testing is done through the percentage method to determine the level of mathematical communication ability of algebraic forms. The results of the analysis of the three instruments were reduced and validated to draw conclusions based on the nature of the subject. Furthermore, the data from the analysis of the three instruments were contested and analysed descriptively based on the steps presented by [18], which describes the category by reviewing the frequency. The goal is to find the right conclusion that can be accounted for.

According to Suharsimi and Jabar [19], quantitative data in the form of numbers from calculations or measurements can be processed by summing and comparing with the expected number so that a percentage is obtained. The equation used is as in Eq. (1).

$$P = \frac{f}{N} \times 100\% \quad (1)$$

Description:

P = Presentation sought

F = Frequency

N = Number of Respondents

Response questionnaire to determine the interest in mobile learning in American services as digital literacy, respondents were given a questionnaire. They know the final score using the average analysis of the items concerned in the questionnaire, namely by calculating the feasibility value of the questionnaire for each aspect divided by the number of statements. The percentage score results obtained from the research are interpreted in the criteria of Table 2.

Table 2
Feasibility scale of developed media

Percentage (%)	Criteria
81-100	Very feasible
61-80	Feasible
41-60	quite feasible
21-40	less feasible
0-20	very unfeasible

3. Results

Mobile learning development research results include the development process and content feasibility assessment. The resulting product is a digital flipbook and American service video as digital literacy in the Restaurant Arrangement and Service course. The learning media developed was tested on students who had taught the Restaurant Arrangement and Service course. American Service digital literacy in the form of flipbooks and videos can be used for various lecture activities, including Semester Learning Plan (RPS), material delivery, assignments/quizzes/evaluations, value space, discussion space, and video space supported by several facilities that can be accessed via smartphone or laptop/computer equipped with QR Code hyperlinks.

3.1 Mobile Learning Development Results

The learning media that has been developed is American Service mobile learning which can be accessed using a QR Code that can be scanned through a smartphone and then connected to the American Service mobile learning application. The features in the mobile learning application developed as the focus of research consists of a Semester Learning Plan (SSP), material provision, assignments/quizzes/evaluations, score room, discussion room, and video tutorial room. This learning media is intended for students who take Restaurant Arrangement and Service courses, Culinary Education Study Program, and Applied Bachelor of Culinary Arts and Food Service Management Study Program, Faculty of Engineering at the State University of Jakarta.

The results of the initial analysis were carried out by reflecting on previous learning in the odd semester of the 2020/2021 academic year in the Restaurant Arrangement and Service course, and there was a problem, namely that the laboratory used still did not illustrate the real restaurant atmosphere, so that the American Service material in learning activities at the State University of Jakarta, the media was deemed not ideal and the results obtained were still not optimal, this is known from the data on the average value of restaurant arrangement and service in American Service material, namely in odd semesters with an average value of 68 and even semesters with an average value of 74.20. Based on these values, the learning of Restaurant Arrangement and Service on American service material is still not optimal. Mobile learning media for American service material is still not used in the Culinary Education and Applied Bachelor of Culinary Arts and Food Service Management study programs, Faculty of Engineering, State University of Jakarta. Lecturers still often

use presentation media with PowerPoint, learning videos, and printed modules. Researchers believe that creating a mobile learning media for American service material as digital literacy in the Restaurant Arrangement and Service course will help increase student interest in using effective and efficient learning media as one of the digital learning media options.

The media to be used in this development is a mobile learning application. Mobile learning media uses the internet or intranets to distribute learning through wide-area networks (WAN) or local-area networks (LAN). The media element used in this learning media is a mobile learning web-based media application with materials in the form of text, images, and video tutorials. The developer starts by collecting material that follows the indicators used. Furthermore, collecting media such as digital flipbooks and images related to the material. Researchers also developed a video media to support learning materials in this learning media. The developer implements the media, starting with the installation of figma.com, setting/managing, and looking for components or extensions needed to meet the needs of learning media, such as facilities for downloading, creating forums, and creating quiz/practice questions. The selection of software for the development of this media is because Figma features are complete and practical and facilitate designers in making designs. The results of American Service mobile learning media development are still in the form of prototypes for the available space/features. The appearance can be seen in Figure 1.



Fig. 1. Results of mobile learning media development

3.2 Mobile Learning Evaluation Results

Mobile learning as a digital comic learning media for non-individual service material has been validated by instructional design experts, material experts, and linguists who are experts in their fields. Learning media is validated using a questionnaire with the use of a Likert scale. Based on the instructional design expert validation results, it is known that the score obtained is 63, with an average of 4.5 and a 90% achievement percentage which can be categorized as "Very Good". The conclusion of the assessment from the instructional design expert is worth testing in the field.

However, to develop better media, instructional design experts provide several comments and suggestions for improving learning media. Learning objectives should be specific in 1 display in the developed learning video. The learning media has been improved according to the instructional design expert's suggestions. This indicates that the learning media developed is feasible from various aspects of learning design and can be continued for evaluation with media experts.

Based on the results of media expert validation, it is known that the score obtained is 64, with an average of 4.9 and a percentage of achievement of 98.4%, which can be categorized as "Very Good". The conclusion of the assessment from the media expert is "Worth testing in the field with revisions according to suggestions". However, to develop better media, media experts provide several comments and suggestions for improving learning media. The writing colour should use a colour that does not cause a little effect on the background of the display (at minute 0.50-1:23). The learning media has been improved according to the media expert's suggestions. This indicates that the learning media developed has been feasible measured from various aspects of Feasibility and can be continued for evaluation with material experts.

Based on the material expert validation results, it is known that the score obtained is 74, with an average of 4.6 and a percentage of achievement of 92.5%, which can be categorized as "Very Good". The conclusion of the assessment from the material expert is "Worth testing in the field without any revisions". However, to develop better media, material experts provide comments and suggestions for improving learning media as follows.

When making learning videos, look for references from various updated sources, and pay attention to the details, from the talent skills at each stage to the lighting at the location. The learning media has been improved according to the material expert's suggestions. This indicates that the learning media developed has been feasible measured from various aspects of the Feasibility of material content and can be continued for evaluation with linguists.

Based on the results of the linguist validation, it is known that the score obtained is 45, with an average of 4.5 and a percentage of achievement of 90%, which can be categorized as "Very Good". The conclusion of the assessment from the linguist is "Worth testing in the field without any revisions". This indicates that the learning media developed has been feasible measured from various aspects of language feasibility and can be continued for user testing. The results of the expert team validation can be seen in Figure 2.

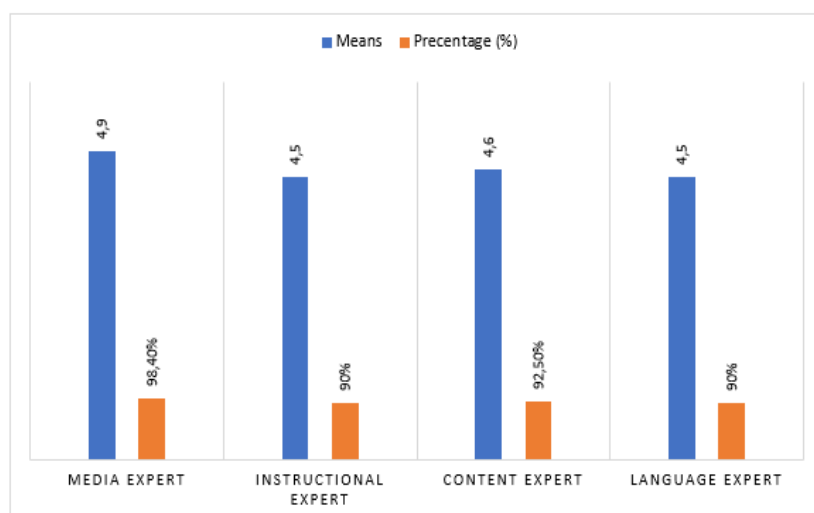


Fig. 2. Results of team expert validation

Furthermore, students were asked to fill out a questionnaire to test the use of the media. This questionnaire has 15 questions. The assessment uses Guttman scale scoring with 2 options and a column of comments or suggestions. The results of the one-to-one trial can be seen in Figure 3.

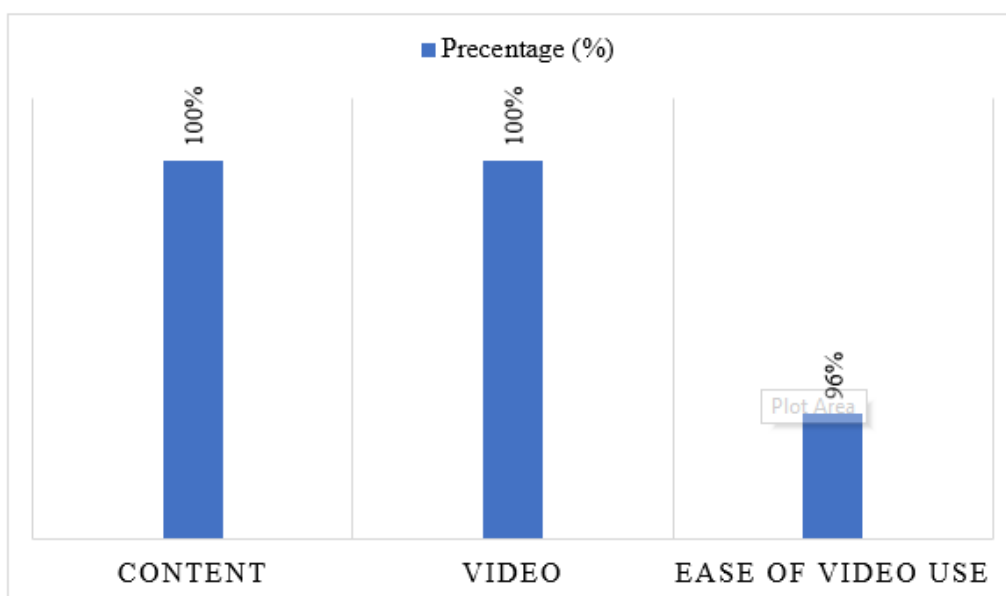


Fig. 3. One-to-one evaluation results

Based on the results of the individual test (one-to-one evaluation) conducted on 3 students, all students stated that the media had very good quality in content and video flow with a percentage of 100%. As many as 3 students stated that the media was of very good quality in the display aspect, with a percentage of 100%, and quality in the aspect of convenience, with a percentage of 89%. The average for the overall assessment is 96% which can be interpreted as based on a one-to-one evaluation. The American service video is very good quality and can be used as digital literacy to learn restaurant arrangement and service. The conclusion given by 3 students in the individual trial stage is that it is feasible to use without revision. The suggestions and comments given by students regarding the video are that it is quite good and makes it easier for users to learn about American Service. In some parts, there is noise from the surrounding sound, and I suggest that Video Operation should be done by one person only. The comments given in the individual test have been improved by disguising the sound with music and increasing the volume of the talent.

Furthermore, a limited trial (small group evaluation) can be conducted. Then a percentage of 96% was obtained and categorized as "Very Good" quality with a very positive response to the use of the media. This shows that through the one-to-one test, the American Service feature is declared feasible with good quality, can be accepted, and used properly, does not need to be revised, and can be continued to the next formative test. Furthermore, the trial was a small group test on a slightly larger scale.

The results of the trial of a small group of Tata Boga students totalling 8 people, followed the theory of [20]. Small group trials were conducted online. Students are given media and then asked to complete a questionnaire to test media use. The questionnaire used is still the same as the questionnaire used in the one-to-one trial. The results of the small group trial can be seen in Figure 4.

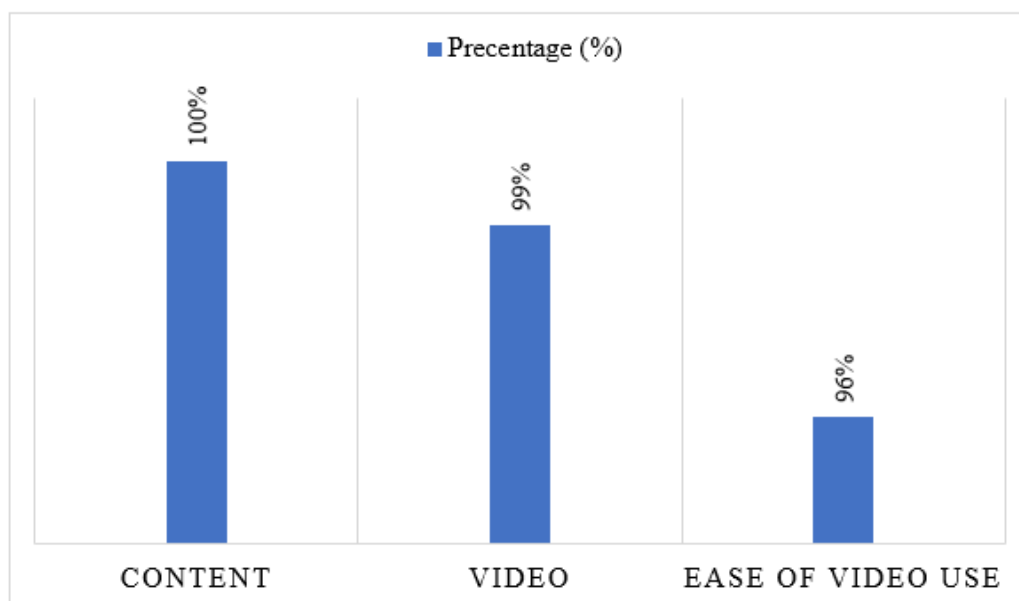


Fig. 4. Results of small group evaluation

Based on the results of the limited group test (small group evaluation) conducted on 8 students, all students stated that the media had very good quality in material and video flow with a percentage of 100%. As many as 8 students stated that the media was of very good quality in the display aspect, with a percentage of 100%, and quality inconvenience, with a percentage value of 96%. The average for the overall assessment is 99% which can be interpreted as based on the limited trial (small group evaluation). The American service video has very good quality with a very positive response to the media that can be used as digital literacy in learning restaurant arrangement and service. The conclusion given by students in the small group trial stage is that, on average, it is feasible to use without revision.

The suggestions and comments given by students regarding the video are

- i. The videos and materials provided are good and very easy to understand in learning American service
- ii. The video presented is complete and interesting
- iii. The learning video presented is detailed, clear for each step and flow
- iv. At minute 7.35 when the guest makes an order, the narrative says 2 persons. Less "s" should be 2 persons
- v. The video is good, clear, and easy to understand. However, the file size may be reduced because the size of 1GB is quite large when stored on a cell phone
- vi. This video is clear enough to be a learning video reference
- vii. This video is good and suitable for use as learning media on American Service material. This video can also increase the user's motivation to understand the material before the practicum begins
- viii. The sound effect is not appropriate; it is better to change it to a soft instrument
- ix. Overall, this video is good enough to be an example for users before practicing in the real world. The comments given in the individual test have been improved by disguising the sound with music and increasing the volume of the talent.

Furthermore, a field trial can be carried out. An average percentage of 99% was obtained and can be categorized as "Very Good". This shows that interactive multimedia is feasible with good quality in the small group test, can be accepted and used properly, does not need to be revised, and can be continued to the next formative test. Furthermore, the feasibility test is continued to the field trial stage with more respondents.

The last user trial result of this formative evaluation was a field trial with 30 Catering students as online respondents. Students are given the media and then asked to fill out a questionnaire to test the use of the media. This questionnaire has 15 questions. The assessment uses a Likert scale scoring with five options and a comment or suggestion column. The results of the field trial can be seen in Figure 5.

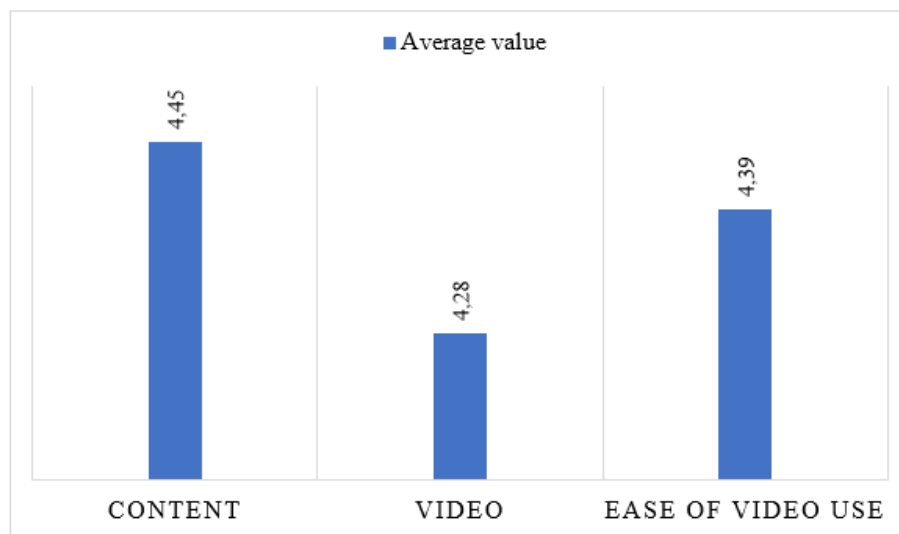


Fig. 5. Field evaluation results

Based on the results of the field test conducted on 30 students, the average value of the material and flow in the video was 4.45; the average value of the video display was 4.28, and the ease with an average of 4.39. The average for the overall assessment is 4.37. Based on the big group (field test), the American service video is feasible for digital literacy in learning restaurant arrangement and service. An average percentage of 87.46% was obtained, categorized as "Good" quality, with a very positive response to the media used. This shows that interactive multimedia is declared feasible with good quality, acceptable and well-used in the field group test. Field Group Test is the last trial of formative evaluation. With this learning, media has been completed through the evaluation stage and declared feasible with good quality, so it is ready to be distributed.

Mobile learning American service is an android-based application that contains learning media content for American Service. This media increases students' digital literacy in Culinary Arts courses or subjects. This media is developed based on the elements of digital literacy, namely

- i. Cultural about understanding the various contexts of digital world users. Mobile learning American service consists of various types of media. Learning media, namely visual, audio-visual, and text learning media. This follows the statement written by [21] in his book entitled Digital Literacy. Digital literacy is "the ability to understand and use information in various forms from various sources accessed through computer devices." 2.
- ii. Constructive is the creation of something skilled and actual.

- The learning videos developed are tutorials related to the service stages/procedures carried out during the practicum. This video is presented to provide real illustrations and strengthen understanding. After students watch and learn the material in the mobile learning American service, students must practice it in class. This follows the essential elements of digital literacy, namely that they create things to be real, utilizing learners directly implementing during practicum according to the topic of practice [9,22].
- iii. Communicative is understanding the performance of networking and communication in the digital world.
American Service mobile learning is equipped with a discussion forum, the goal is to facilitate learners in communication, and learners can conduct discussions according to the forum per topic provided. Before using mobile learning, learners must log in first because it is an identity and for data-based programming in conducting discussions. In addition, the discussion forum is also conducted so that users can interact with each other and discuss the material or how to use the mobile learning application itself.
 - iv. Responsible self-confidence.
The discussion forum and contact us menu is one of the menus that serve to see the level of responsibility and self-confidence of students because, in this menu, you can see the interaction of students directly.
 - v. Creative is doing new things in new ways.
American Service mobile learning is equipped with various supporting materials. They started with text, video, audio-visual, and illustration. This diversity can motivate learners to be more creative in doing new things. This is following the results of research conducted by [23,24], namely students with good digital literacy skills will strive to select important information and understand, communicate, and convey ideas in the digital space, which will open up opportunities for learners to be rich, which ultimately leads to student success.
 - vi. Critical in responding to content.
American Service mobile learning is developed by allowing learners to think critically. In the materials presented, there are many triggering questions so that learners can think critically. In addition, learners are given a contact us menu that intends to address the content if they feel something needs to be added.

4. Conclusions

This research results in a learning media based on mobile learning American Service integrated through QR Code hyperlinks for material, video, and evaluation content. The utilization of current technology can facilitate improving student skills. One of the advantages of this product in the main page or home has a self-evaluation. The evaluation menu allows students to evaluate learning to measure the extent of students' understanding of learning. Learning conditions that require information and communication technology have implications for practicum learning, so emotional learning assistance is needed as digital literacy through mobile learning improves student skills. Mobile learning on American service as digital literacy can build independent, creative, professional characters.

The weakness of this study is that mobile learning on American Service material for the implementation of distance learning, especially in Restaurant Arrangement and Service courses, has not been equipped with other learning, so in the future, further research needs to be carried out for other courses.

Acknowledgement

This research is funded by BLU Fund POK Faculty of Engineering, State University of Jakarta. Based on the Decree of the Rector of State University of Jakarta Number: 1252/UN39.5. FT/AK/P2M/X/2022, Date: October 13, 2022. And the Assignment Agreement Letter of the Dean of the Faculty of Engineering Number: 062/UN39.5. F T/PP/IV/2022, Date: April 25, 2022.

References

- [1] Widjajarto, Adityas, Muharman Lubis, and Umar Yunan. "Architecture model of information technology infrastructure based on service quality at government institution." *Procedia Computer Science* 161 (2019): 841-850. <https://doi.org/10.1016/j.procs.2019.11.191>
- [2] Hariharasudan, A., and Sebastian Kot. "A scoping review on Digital English and Education 4.0 for Industry 4.0." *Social sciences* 7, no. 11 (2018): 227. <https://doi.org/10.3390/socsci7110227>
- [3] Berjón, Roberto, M^a Encarnación Beato, Montserrat Mateos, and Ana M^a Feroso. "SCHOM. A tool for communication and collaborative e-learning." *Computers in Human Behavior* 51 (2015): 1163-1171. <https://doi.org/10.1016/j.chb.2015.02.024>
- [4] Joshi Kaustubh, A., H. Kasar Yogita, V. Mahajan Mayuri, and G. Nikam Pooja. "Android Based E-Learning Application "Class-E"." (2017).
- [5] Al-Hujran, Omar, Enas Al-Lozi, and Mutaz M. Al-Debei. "Get ready to mobile learning: examining factors affecting college students' behavioral intentions to use m-learning in saudi arabia." *Jordan Journal of Business Administration* 153, no. 3301 (2014): 1-18.
- [6] Butler, Ashley, Mark Anthony Camilleri, Andrew Creed, and Ambika Zutshi. "The use of mobile learning technologies for corporate training and development: A contextual framework." In *Strategic corporate communication in the digital age*, pp. 115-130. Emerald Publishing Limited, 2021. <https://doi.org/10.1108/978-1-80071-264-520211007>
- [7] Ulfa, Saida, Ence Surahman, and Herlina Ike Octaviani. "Mobile Seamless Language Learning Framework to Improving Students' Speaking Skills for Junior High Students during Pandemic Covid-19: A Case Study in Indonesian Context." In *1st International Conference on Information Technology and Education (ICITE 2020)*, pp. 497-500. Atlantis Press, 2020. <https://doi.org/10.2991/assehr.k.201214.284>
- [8] Suartama, I., Punaji Setyosari, Sulthoni Sulthoni, and Saida Ulfa. "Development of ubiquitous learning environment based on moodle learning management system." (2020): 182-204. <https://doi.org/10.3991/ijim.v14i14.11775>
- [9] Ezell, Jason, and Lucy Rosenbloom. "Improv (is) ing research: Instructional design for serendipity in archival exploration." *The Journal of Academic Librarianship* 47, no. 1 (2021): 102257. <https://doi.org/10.1016/j.acalib.2020.102257>
- [10] Hu, Jie, and Rushi Yu. "The effects of ICT-based social media on adolescents' digital reading performance: a longitudinal study of PISA 2009, PISA 2012, PISA 2015 and PISA 2018." *Computers & Education* 175 (2021): 104342. <https://doi.org/10.1016/j.compedu.2021.104342>
- [11] Techataweewan, Wawta, and Ujsara Prasertsin. "Development of digital literacy indicators for Thai undergraduate students using mixed method research." *Kasetsart Journal of Social Sciences* 39, no. 2 (2018): 215-221. <https://doi.org/10.1016/j.kjss.2017.07.001>
- [12] Patelis, Nikolaos, Sean J. Matheiken, and Jonathan D. Beard. "The challenges of developing distance learning for surgeons." *European Journal of Vascular and Endovascular Surgery* 49, no. 3 (2015): 237-238. <https://doi.org/10.1016/j.ejvs.2014.09.001>
- [13] Baker, Yousef A., Al-Sammarraie Najeeb Abbas, and Shukur Ban Salman. "Mobile learning as a new e-learning strategy." *International Journal of Engineering & Technology* 7, no. 4.38 (2018): 876-879. <https://doi.org/10.14419/ijet.v7i4.38.27600>
- [14] Gangaiamaran, Ramya, and Madhumathi Pasupathi. "Review on use of mobile apps for language learning." *International Journal of Applied Engineering Research* 12, no. 21 (2017): 11242-11251.
- [15] Shdaifat, Sameer Aowad Kassab, Nidal AK Shdaifat, and Linda Ahmad Khateeb. "The Reality of Using E-Learning Applications in Vocational Education Courses during COVID 19 Crisis from the Vocational Education Teachers' Perceptive in Jordan." *International Education Studies* 13, no. 10 (2020): 105-112. <https://doi.org/10.5539/ies.v13n10p105>
- [16] Rabiman, Rabiman, Muhammad Nurtanto, and Nur Kholifah. "Design and Development E-Learning System by Learning Management System (LMS) in Vocational Education." *Online Submission* 9, no. 1 (2020): 1059-1063.
- [17] Syauqi, Khusni, Sudji Munadi, and Mochamad Bruri Triyono. "Students' Perceptions toward Vocational Education on Online Learning during the COVID-19 Pandemic." *International Journal of Evaluation and Research in Education* 9, no. 4 (2020): 881-886. <https://doi.org/10.11591/ijere.v9i4.20766>

- [18] Creswell, John W., and J. David Creswell. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications, 2017.
- [19] Arikunto, Suharsimi, and Cepi Safuruddin Abdul Jabar. "Evaluasi Program Pendidikan: pedoman teoritis praktisi pendidikan." (2014).
- [20] Dick, Walter, Lou Carey, and James O. Carey. "The systematic design of instruction." (2005).
- [21] de Sousa, Filipa, and Ingvill Rasmussen. "Productive Disciplinary Engagement and Videogames: A Teacher's Educational Design to Engage Students with Ethical Theories in Citizenship Education." *Nordic Journal of Digital Literacy* 14, no. 3-4 (2019): 99-116. <https://doi.org/10.18261/issn.1891-943x-2019-03-04-02>
- [22] Ibrahim, Nurdin, and Suyitno Muslim. "Develop of Hyperlinks Media to Learn Basic Wushu Techniques." *Journal of Computational and Theoretical Nanoscience* 17, no. 2-3 (2020): 825-832. <https://doi.org/10.1166/jctn.2020.8725>
- [23] Mertala, Pekka. "Fun and games-Finnish children's ideas for the use of digital media in preschool." *Nordic Journal of Digital Literacy* 11, no. 4 (2016): 207-226. <https://doi.org/10.18261/issn.1891-943x-2016-04-01>
- [24] Rohman, Baeti. "Development Of Digital Media For Learning Arabic Al-Qur'an Language For Blind Students."
- [25] Kumar, P. Mohan, and S. Gopalakrishnan. "Security Enhancement for Mobile Ad Hoc Network Using Region Splitting Technique." *Journal of Applied Security Research* 11, no. 2 (2016): 185-198. <https://doi.org/10.1080/19361610.2016.1137204>