KnE Social Sciences
ICMScE
International Conference On Mathematics And Science Education
Volume 2024

Research Article

Analysis of Students' Perception of the Implementation of E-Learning USK: An Evaluation Using the CIPP Model

Andi Ulfa Tenri Pada[1]*, Marty Mawarpury[2], Mimie Saputri[1], Hendra Yulisman[3]

[1]Biology Education Department, Teacher Training and Education Faculty, Universitas Syiah Kuala, Banda Aceh, 23111, Indonesia.
[2]Psychology Department, Medicine Faculty, Universitas Syiah Kuala, 23111, Banda Aceh.
[3]*Teacher Training and Education Faculty, Universitas Syiah Kuala, Banda Aceh, 23111, Indonesia.*

ORCID
Andi Ulfa Tenri Pada: https://orcid.org/0000-0002-7774-0360
Marty Mawarpury: https://orcid.org/0000-0003-0361-8933
Mimie Saputri: https://orcid.org/0000-0001-7142-268X
Hendra Yulisman: https://orcid.org/0000-0001-8451-3070

Abstract.
Universitas Syiah Kuala (USK) has developed E-Learning USK, a Learning Management System to face the era of The Fourth Industrial Revolution. E-Learning USK was implemented thoroughly when the COVID-19 pandemic was enforced. However, information regarding the effectiveness of using this LMS is not yet available. Therefore, through this research, a survey was conducted to obtain an overview of the effectiveness of the implementation of E-Learning USK from the student's point of view. The research sample consisted of 504 students from various faculties at USK. The research instrument used was a Likert scale, which was developed based on the CIPP model indicators and distributed online using a Google Form. Data analysis was done descriptively. The results showed that students considered the application of E-Learning USK to be in the "good" category. However, they assume that there are still obstacles to the campus infrastructure. This study provides recommendations that will become input for strategies and policies for implementing LMS in Indonesia, especially at Universitas Syiah Kuala.

Keywords: Students' Perception, E-Learning USK, CIPP Model

Corresponding Author: Andi Ulfa Tenri Pada; email: andi_ulfa@unsyiah.ac.id

Published: 26 April 2024

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the ICMScE Conference Committee.

1. INTRODUCTION

The development of technology and innovation is a significant factor in the Industrial Revolution development [1]. Currently, we are at the stage of the industrial revolution 4.0, which offers high effectiveness and efficiency in a work environment. This also affects the world of education; in this case, it can facilitate the learning process during the Covid-19 pandemic [2].

One of the efforts to face the demands of the industrial revolution 4.0, Syiah Kuala University (USK) implemented blended learning, which integrates face-to-face and distance learning. [3]. Distance learning is facilitated by the E-learning program, where E-learning functions as a compliment and a supplement. However, during the Covid-19 pandemic, education is entirely carried out using this E-Learning feature.

The E-learning feature is built on a Moodle-based Learning Management System (LMS), E-Learning USK. This LMS was chosen because it is Open Source, supported by a global community, configurable, highly flexible, and feature-rich [4]. In fact, it has more features than similar systems [5]. Furthermore, the use of this LMS has been emphasized since 2018 through the Rector's Decree No. 1 of 2018 concerning Guidelines for the Implementation of Online Learning. Lecturers and students are asked to use this LMS effectively.

The use of E-Learning USK showed a significant increase. This can be seen from the increasing number of active courses in the E-Learning USK database. Based on data from the Information and Communication Technology Technical Implementation Unit (Unit Pelaksana Teknis Teknologi Informasi dan Komunikasi), in the odd semester of 2018, the data for active e-learning courses was 492; in 2019, it increased to 846, and in 2020 it became 1766, more than double the previous year. Furthermore, for the 2018 even semester courses, there are 729 active e-learning courses, and in 2019 there are 1142 courses.

The increasing number of courses in the E-Learning database cannot be used as the only factor for implementing e-learning effectively. Niederhauser & Lindstrom stated that the success of technology in learning is not only seen from the amount and availability of technology [6]. There are environmental, individual, organizational, and pedagogical factors that must be considered. Therefore, an evaluation is needed to assess the effectiveness of the E-Learning USK implementation based on these factors.

The model that can be used for this evaluation is the Context, Input, Process, Product (CIPP) models, a management-based framework that can be used to carry out and report the results of a comprehensive evaluation [7], [8]. CIPP evaluates the components that come from the abbreviation of CIPP itself. Evaluation of the context component serves to determine goals, priorities, and assess the significance of the results. Evaluation of input components serves to meet needs as a means of program planning and resource allocation. Process component evaluation serves to guide activities and then help explain results. Furthermore, product component evaluation serves to help keep the process on track and determine effectiveness [7].

At this time, information regarding the use of the CIPP model in evaluating an ICT product such as an LMS is still limited. In general, the use of the CIPP evaluation model can be divided into the comprehensive evaluation and the specific evaluation. The comprehensive evaluation can be seen in the form of an evaluation within the scope of the institution, for example, evaluating the implementation of a curriculum in a health institution and training institutes [9], [10]. Furthermore, the specific evaluation can be seen in the form of using the CIPP model to develop, evaluate or change a learning program. For example, evaluation and redesign of online master programs [11], multidimensional curriculum evaluation [12], and evaluation of curriculum revision results [13]. Evaluation specifically focuses on using the CIPP model to evaluate a program with a specific function. Specific evaluation can be in the form of using the CIPP model to evaluate one element of learning, for example, online exams [14 – 16] and certain courses [17]. Furthermore, there is also the use of the CIPP model, which focuses on developing the CIPP model evaluation instrument [8].

The results of those studies indicate that there is still a gap that need to be filled regarding the evaluation of the implementation of the LMS program. In this study, we focused on evaluating the implementation of the LMS (E-Learning USK) by using the CIPP model and viewed from the students' point of view. The students' point of view is crucial in obtaining information related to the effectiveness of implementing a program. The students come from different backgrounds (economic, social, and demographic factors) and abilities (cognitive and psychomotor). Thus, their perception will provide a comprehensive result. Therefore, this study aims to analyze student perceptions of the application of E-Learning USK by using the CIPP evaluation model.

2. RESEARCH METHOD

This quantitative research was conducted using a survey data collection method, namely by distributing online questionnaires using the Google Form feature. The Google Form link was distributed to the sample via faculty representatives. Instrument filling will take place in September 2021. The time for filling out this instrument is two weeks since the link was first shared.

The population of this study was students from University. The determination of the sample was done by using the cluster random sampling method. Faculties are used as clusters, and students from various faculties are determined based on the number of students in the faculty. Based on the results of clustering, 504 students from multiple

faculties filled out the research questionnaire. Furthermore, secondary data obtained from UPT ICT were also used.

The researcher developed an instrument based on the principles of the CIPP framework. The instrument indicators are developed based on the conceptual framework of Aziz et al. and Stufflebeam [7, 18]. Before being used, the instrument was first tested for content validity, construct, and reliability.

Questionnaire validation was carried out using the Delphi technique. The Delphi technique in this study was used to obtain written responses from the validator in the form of expert judgment on the developed questionnaire. The validation of the questionnaire evaluation of the implementation of e-learning in distance learning at Syiah Kuala University was carried out by three validators to assess the questionnaire's construction, clarity, and relevance. CIPP analysis was carried out with descriptive statistics to overview each evaluation component.

Based on the test results, there are 7 statement items issued from the instrument, so the total instrument items consist of 78 statement items. The CIPP instrument is a Likert scale consisting of 5 answer options, namely Strongly Disagree, Disagree, Slightly Agree (neutral), Agree, and Strongly Agree.

Table 1: Components, indicators, and descriptions of the instruments used.

Components	Descriptions	Indicators	Total item	References
Context	Assesses needs, problems, assets, and opportunities within a defined environment	Objectives	8	Aziz et al. [18] and Stufflebeam [7]
		Missions	6	
		Goals	5	
Input	Provide information for determining the resources used to meet the goals of the program	Resources	3	
		Infrastructures	9	
		Curriculum	6	
		Content	5	
Process	Focuses on the running of the program and teaching-learning processes	Teaching and learning process	9	
		Co-curricular activities	9	
Product	Assesses the students' outcome	Results	8	
		Activities	10	

Questionnaire data in the form of responses were converted into numbers. Furthermore, the data are grouped based on the components and indicators of CIPP and then analyzed descriptively using Microsoft Excel software. The grouping of data follows the criteria shown in Table 2.

TABLE 2: Categories and criteria used for data analysis.

Category	Criteria
Very good	X ≥ (Mi+1.5 SDi)
Good	Mi ≤ X < (Mi+1.5 SDi)
Adequate	(Mi-1.5 SDi) ≤ X < Mi)
Poor	X < (Mi -1.5 SDi)

3. RESULTS AND DISCUSSION

E-Learning USK version 2 (Figure 1) has several advantages over version 1. The most prominent features are the integrated calendar and timeline. These two features greatly facilitate lecturers and students in planning and implementing learning activities. USK E-Learning version 2 builds on Moodle version 3.9.2+. So that the new features available in this version of Moodle, such as the addition of MoodleNet support, H5P (HTML5 Package), and Course Copy [19], automatically available in E-Learning USK version 2.

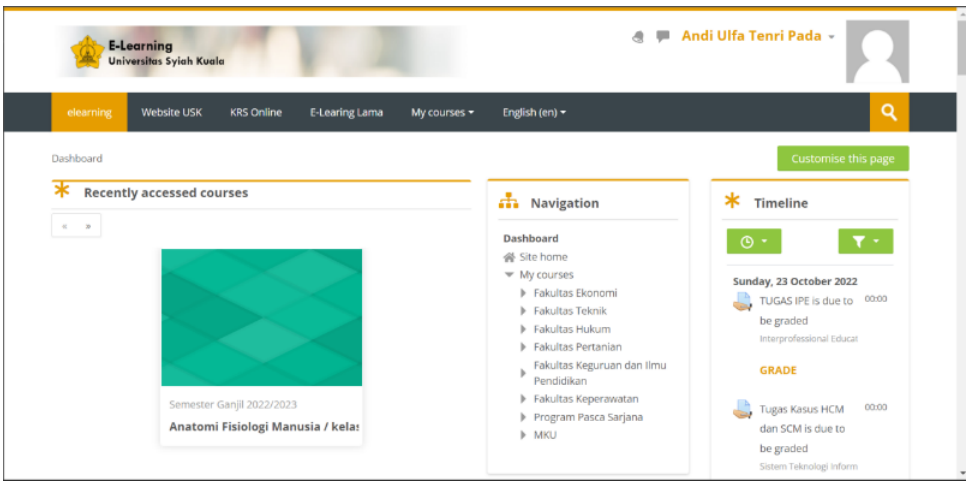

Figure 1: Screenshot from the latest version of E-Learning USK course page.

A general description of students' perceptions of the implementation of E-Learning USK was obtained by determining the average percentage of each statement in each component of the CIPP. The average percentage can be seen in Figure 2.

Figure 1 shows that students think that E-Learning USK has met their expectations. This can be seen from the percentage of "good" and "very good" categories which are

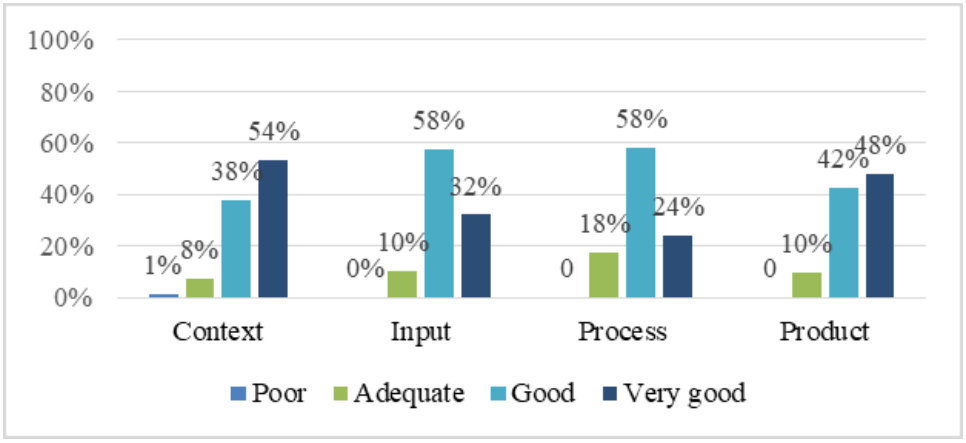

Figure 2: Student perceptions of E-Learning USK based on the CIPP evaluation model.

higher than other components in all CIPP components. This result also follows Prayogo's [17] results, which showed that they are successful in implementing distance learning. Although the results of this study examine the application of distance learning in only one course, the use of the CIPP model has shown comprehensive information related to the implementation of distance learning that they have done. The results obtained from Figure 1 are still general. Therefore, it is necessary to analyze based on the statements that make up each component of the CIPP. This aims to obtain information related to which parts are appropriate and which parts are not in accordance with student expectations so that it needs to be improved. The first component to be analyzed is the Context. This component consists of three indicators, namely objectives, missions, and goals. The results of the analysis are shown in Table 3.

TABLE 3: Student responses regarding the objectives, missions, and goals of implementing E-Learning USK.

Indicators	Score interval	Category	Frequency	Percentage	Average of the total score	Indicator category
Objective	>32	Very good	253	50%	31	Good
	24-31	Good	192	38%		
	16-23	Adequate	55	11%		
	<16	Poor	4	1%		
Missions	>24	Very good	315	63%	24	Good
	18-23	Good	155	31%		
	12-17	Adequate	28	6%		
	<12	Poor	6	1%		
Goals	>20	Very good	310	62%	20	Very good
	15-19	Good	169	34%		
	10-14	Adequate	19	4%		
	<10	Poor	6	1%		

Table 3 shows that the percentages of the three indicators are in the “good” and “very good” categories. This shows that the implementation of E-Learning USK is in accordance with the goals, missions, and goals that have been designed. However, 11% students chose the “adequate” category on the “objective” indicator. This is related to the fact that a small number of students think that the learning process is not running optimally, has not met the needs of the teaching and learning process in all subjects, and technical services are not easily accessible. The research from Cahyadi et al. also showed similar results. This is due to the different types of communication tools owned by students and the inadequate distribution of the internet network in all regions in Indonesia [20].

The Input component consists of indicators that impact the successful implementation of E-Learning USK, namely resources, infrastructure, curriculum, and content. The resource indicator contains statements about lecturers and students as E-Learning USK users. The infrastructure indicator contains statements about the impact of the physical aspect on the implementation of E-Learning. The curriculum indicator contains statements about the pedagogical ability of educators in using E-Learning. Furthermore, the content indicator contains statements about how E-Learning prepares to distribute teaching materials to students. The results of the input component analysis are shown in Table 4.

Table 4 shows that the four indicators are in the “good” and “very good” categories. This indicates that USK preparation to support smooth learning using E-Learning USK is good. However, 19% of students on the “infrastructure” indicator and 11% of students on the “content” indicator chose the “adequate” category. Their reasons are feedback feature was not optimal, slow internet access, and the unequal distribution of material for all subjects. These results are similar to the research from Tokmat et al. [11], which showed that if the distribution of material is not equally distributed, it will interfere the effectiveness of students in learning activities. Furthermore, there are problems related to the ineffective use of software in learning activities, such as GMeet and Webex. According to Cahyadi et al., these problems can be caused by the instability of the internet network, considering that the software requires a fast and stable internet connection [20].

The analysis of the Process component aims to obtain an overview of student responses to the implementation of E-Learning USK. The Process component contains statements about how E-Learning is ideally applied so that students can use it optimally. The results of the process analysis are shown in Table 5.

Table 4: Student perceptions of the resources, infrastructure, curriculum, and content of E-Learning USK.

Indicators	Score interval	Category	Frequency	Percentage	Average of the total score	Indicator category
Resources	>12	Very good	301	60%	11	Good
	9-11	Good	155	31%		
	6-8	Adequate	47	9%		
	<6	Poor	1	0%		
Infrastructures	>36	Very good	106	21%	31	Good
	27-35	Good	304	60%		
	18-26	Adequate	94	19%		
	<18	Poor	0	0%		
Curriculum	>24	Very good	292	58%	24	Very good
	18-23	Good	170	34%		
	12-17	Adequate	40	8%		
	<12	Poor	2	0%		
Content	>20	Very good	291	58%	19	Good
	15-19	Good	155	31%		
	10-14	Adequate	56	11%		
	<10	Poor	2	0%		

Table 5: Student responses regarding the learning process using E-Learning USK.

Indicators	Score interval	Category	Frequency	Percentage	Average of the total score	Indicator category
Teaching learning process	>36	Very good	86	17%	30	Good
	27-35	Good	304	60%		
	18-26	Adequate	114	23%		
	<18	Poor	0	0%		
Co-curricular activities	>36	Very good	329	65%	38	Very good
	27-35	Good	147	29%		
	18-25	Adequate	28	6%		
	<18	Poor	0	0%		

Table 5 shows that the two “Process” indicators are in “good” and “very good” categories. Based on these results, it can be said that the learning process using E-Learning USK runs smoothly. However, there are 23% of students from the Teaching learning process indicator choose the “adequate” category. Students still prefer face-to-face learning to online learning, especially in controlling their learning progress and interacting with lecturers and fellow students. They also consider face-to-face learning

is better than online learning. According to Cahyadi, this can be caused by technical problems experienced by students [20]. This problem is also caused by the limited specifications of the equipment used by their sample students. The results of the Product component analysis are divided into two indicators, namely result and impact (Table 6). The Result indicator shows student responses regarding the results of the E-Learning USK implementation. Furthermore, the impact indicator shows students' responses to the impact of implementing E-Learning USK on their learning conditions and personal abilities.

TABLE 6: Student responses regarding the results and impact of implementing E-Learning USK.

Indicators	Score interval	Category	Frequency	Percentage	Average of the total score	Indicator category
Results	>32	Very good	278	55%	31	Good
	24-31	Good	191	38%		
	16-23	Adequate	35	7%		
	<16	Poor	0	0%		
Impacts	>40	Very good	253	50%	38	Good
	30-39	Good	196	39%		
	20-29	Adequate	55	11%		
	<20	Poor	0	0%		

Table 6 shows that the two "product" indicators are in the "good" and "very good" categories. These results indicate that implementing E-Learning USK is beneficial in improving their IT skills and is suitable for use during the Covid-19 pandemic. However, there are 11% of students on the "Impact" indicator choose the "Adequate" category. They find it challenging to collect assignments on time. This result is different from Cahyadi et al. [20], where the sample of students stated that the implementation of e-learning offers high flexibility, which gives them the flexibility to collect assignments whenever and wherever they are.

This study shows the need for several improvements to the E-Learning USK, such as improvements in terms of the LMS system itself, the way lecturers use and implement learning through E-Learning USK, as well as increasing students' awareness to use E-Learning USK regularly. The steps that have been taken to overcome these problems are increasing the bandwidth of E-Learning USK, providing training to lecturers in the USK regarding the use of E-Learning, and providing grants for lecturers who have implemented E-Learning USK optimally. In relation to increase student awareness in the use of E-Learning USK, the university still hopes from the contribution of lecturers

in teaching using the LMS. So, it is necessary to conduct a special event in order to increase student interest in using the E-Learning USK.

4. CONCLUSION

Student perceptions regarding the implementation of E-Learning USK showed a positive response. This result can be seen in the high percentage of “good” and “very good” in all CIPP components. Several things must be improved by E-Learning USK, such as a stable and smooth E-Learning system, internet/intranet, and adequate technical services. This study provides crucial information for institutions implementing e-learning in Indonesia. The application of e-learning is not just giving e-learning facilities. However, it is necessary to listen to the users, such as lecturers and students. So that it affects the increase in the number of users, the learning proceeds effectively, and e-learning will continue to be used.

Acknowledgments

We would like to thank Institutions of Research and Community Service, abbreviated as LPPM (Lembaga Penelitian dan Pengabdian Kepada Masyarakat) Universitas Syiah Kuala, for who supported us through the provision of grants and UPT ICT Universitas Syiah Kuala, which provided the initial data for this research.

References

[1] Nafea RM, Toplu EK. Future of education in industry 4.0. In: Tunç AÖ, Aslan P, editors. Business Management and Communication Perspectives in Industry 40. Istanbul, Turkey: IGI Global; 2020. pp. 267–87.

[2] Widya I, Pratomo P, Wahanisa R. Pemanfaatan teknologi Learning Management System (LMS) di UNNES masa Pandemi Covid-19. Seminar Nasional Hukum Universitas Negeri Semarang. Semarang; 2021. p. 547–560.

[3] Amir LR, Tanti I, Maharani DA, Wimardhani YS, Julia V, Sulijaya B, et al. Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia. BMC Med Educ. 2020 Oct;20(1):392.

[4] Young B. Top 3 advantages of moodle.

[5] Al-Ajlan A, Zedan H. Why moodle. 2008 12th IEEE International Workshop on Future Trends of Distributed Computing Systems. Kunming, China; 2008. pp. 58-64. https://doi.org/10.1109/FTDCS.2008.22.

[6] Niederhauser DS, Lindstrom DL. Instructional technology integration models and frameworks : Diffusion, competencies, attitudes, and dispositions. In: Voogt J, Knezek G, Christensen R, Lai KW, editors. Handbook on Information Technology in Primary and Secondary Education. Cham: Springer; 2018. pp. 1–21.

[7] Stufflebeam DL. The CIPP Model for evaluation. In: Stufflebeam DL, Madaus GF, Kellaghan T, editors. Evaluation Models. Dordrecht: Kluwer Academic Publishers; 2000. pp. 279–317.

[8] Hakan K, Seval F. CIPP evaluation model scale: Development, reliability and validity. Procedia Soc Behav Sci. 2011;15:592–9.

[9] Mirzazadeh A, Gandomkar R, Hejri SM, Hassanzadeh G, Koochak HE, Golestani A, et al. Undergraduate medical education programme renewal: a longitudinal context, input, process and product evaluation study. Perspect Med Educ. 2016 Feb;5(1):15–23.

[10] Sudarsono S. Evaluasi inovasi penyelenggaraan ujian dan penilaian online pada Balai Diklat Keagamaan Denpasar Tahun 2018. Jurnal Widyadewata. 2019;2(1):1–10.

[11] Tokmak HS, Baturay HM, Fadde P. Applying the context, input, process, product evaluation model for evaluation, research, and redesign of an online master's program. Int Rev Res Open Distance Learn. 2013;14(3):273–93.

[12] Hutahaean B. Pengembangan model evaluasi kurikulum multidimensi untuk Kurikulum Berbasis Kompetensi. Jurnal Cakrawala Pendidikan. 2014;2(2):170–85.

[13] Kool B, Wise MR, Peiris-John R, Sadler L, Mahony F, Wells S. Is the delivery of a quality improvement education programme in obstetrics and gynaecology for final year medical students feasible and still effective in a shortened time frame? BMC Med Educ. 2017 May;17(1):91.

[14] Irawan S, Prasetyo D. The evaluation of online school examination implementation using CIPP model. Jurnal Penelitian dan Evaluasi Pendidikan. 2020;24(2):136–145. https://doi.org/10.21831/pep.v24i2.33032.

[15] Putra RL, Maulana A, Iriani T. Evaluasi program pelaksanaan ujian online dengan menggunakan Learning Management System Moodle Berbasis Android di SMK Negeri 1 Jakarta. Jurnal PenSil. 2019;8(1):47–54.

[16] Mustofa Z. Evaluasi penyelenggaraan Ujian Semester Berbasis Komputer (USBK) menggunakan Model CIPP. Jurnal Teknodik. 2020;24(1):15–26.

[17] Prayogo D. Evaluasi distance learning mata kuliah ilmu bahan saat pandemi Covid-19 menggunakan Model CIPP. Jurnal Pendidikan Teknik Mesin. 2020;7(2):91–8.

[18] Aziz S, Mahmood M, Rehman Z, Report A. Implementation of CIPP Model for quality evaluation at school level: A case study. Journal of Education and Educational Development. 2018;5(1):189–206.

[19] Verdaguer J. What's coming in Moodle 3.9. 2020.

[20] Cahyadi A, Hendryadi S. Widyastuti, Suryani. "COVID-19, emergency remote teaching evaluation: the case of Indonesia.," Education and Information Technologies. 2021.