The Practicality of the Blended Learning Model to Increase Cadets' Activeness in Makassar Aviation Polytechnic

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Abstract. The practicality of the blended learning model to increase cadets' activeness at Makassar Aviation Polytechnic is very effective. The model can be used as an alternative learning model to fulfill learning development and improve cadets' competencies. The development of the learning model in this research is a combination of models Plomp (1997); Dick & Carey (2005); Joyce et al. (2004). Plomp's model was used for the research and development stage of the model, Dick & Carey for instructional design, and Joyce et al. for model content. If the Va value falls within the "minimum valid" range, it can be assumed that the criteria used have a sufficient degree of validity and the instrument can be put to good use; similarly, if the percentage of agreements (PA) with the criteria for the tool sheet is greater than or equal to 0.70, the instrument can be considered reliable. The results of this study are the practicality of a valid, practical, and effective blended learning model to increase the cadets' activeness in learning both in individual and group discussion activities, analyzing information, being creative in solving problems, creating a way to solve problems, and using varied learning resources.

Keywords: Air Traffic Service · Learning Process · Learning Tools · Learning Model

1 Introduction

The development of the world of education continues to change significantly, so it changes the mindset of educators, from the mindset of educators who are lay and rigid to more modern. This is very influential in the progress of lecturers in Indonesia. Cadets must actively engage in learning in the 21st century to meet global issues. In other words, education can develop a competitive culture capable of competing with other nations [1, 2].

According to Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 22 of 2020 on the strategic plan of the Ministry of Education and Culture, improving the relevance of graduates is one of the priorities of educational development.

Based on preliminary data using questionnaire methods, interviews, and observations of cadets of the Makassar Aviation Polytechnic Air Traffic Management study program

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Batch IX Alpha and IX Bravo in learning Air Traffic Services still have difficulties with the teaching and learning process, and this is indicated by 68% of cadets who answered that they still had difficulties and 32% of cadets answered that they already knew. In addition, fewer cadets still ask and answer lecturers' questions during learning. On average, only one to two people in one class dare to ask the lecturer. One of the causes is the lack of cadets who actively think lack the motivation to seek information from various sources, and there are still many cadets who feel afraid or reluctant to ask their friends if they want to ask.

Furthermore, from an interview with one of the cadets, it was stated that the cause of cadets being less active in the learning process was due to the conventional learning model, namely lecturers explaining the material, giving examples, and giving practice questions to cadets. Air Traffic Service subjects are subjects that study various kinds of information services such as flight information service, alerting service, air traffic advisory service, and air traffic control service [3], where this subject is the main subject that cadets must master.

Blended learning combines learning delivery using face-to-face activities and computer-based learning offline and in a computer network (online). Blended learning is a face-to-face learning method supported by electronic-based learning (offline and online) so that the learning process will run optimally because the advantages of the two methods will be able to complement each other from the respective deficiencies of two learning methods. The blended learning model can be used in the learning process to improve student learning outcomes, increase learning motivation and foster critical thinking skills in students [4]. Based on some of the above, it can be concluded that the Blended Learning model is practical to increase cadet activeness and motivation and improve cadet learning outcomes.

2 Method

This research category encompasses Research and Development (R&D) research. According to Sugiyono [5], Research and Development (R&D) is a process used to develop and evaluate the efficacy of certain products. The components of the Research and Development (R&D) approach paradigm are utilized in this study. This study's development of learning models is a synthesis of models Plomp [6]; Dick & Carey [7], and Joyce et al. [8]. Plomp's model is utilized during the model's research and development phase, Dick & Carey for instructional design, and Joyce et al. for model content. This study collected both quantitative and qualitative data. These data provide data or an overview of the learning model's validity, applicability, and efficacy.

The subjects in this study were the cadets of the DIII Air Traffic Management study program Batch IX Alpha and IX Bravo, totaling 47 cadets. In contrast, the object of this study was implementing the Blended Learning model in Air Traffic Services (ATS) subjects to increase cadets' activeness.

Adapted from the categorization criteria, the categorization criteria are used to decide the validity category of each assessed aspect or all assessed aspects. According to Bloom et al. [9] shown in Table 1.

The criteria used to decide that the instrument used has an adequate degree of validity if the (Va) value is in the minimum valid category.

Table 1. Validity Category

			Criteria
0.80	< Va ≤	1.00	Very Valid
0.60	< Va ≤	0.80	Valid
0.40	< Va ≤	0.60	Fairly Valid
0.20	< Va ≤	0.40	Less Valid
0.00	< Va ≤	0.20	Not Valid

Furthermore, to determine the level of instrument reliability using a percentage of agreements by Unrau et al. [10], with the following formula:

$$\%A = \frac{A}{D + A} \times 100\% \tag{1}$$

Description:
A = Frequency of matches between the data of two validators/observers.
D = Amount of frequency that does not correspond with the observations of two validators/observers. R represents the degree of instrument reliability. If the dependability value for the instrument sheet criteria is less than 0.70, then the criteria are deemed reliable.

3 Results and Discussion

The initial stage of this research consisted of an investigation into the initial conditions of the research participants. Additionally, the model, equipment, and instruments were brought to life. Before testing, subject-matter experts and practitioners validated all instruments, blended learning model guidelines, and learning tools. After the validation phase, individual trials, small group trials (limited trials), and extended trials were conducted (field trials).

3.1 Initial Investigation

The initial investigation phase is conducted by gathering information on identifying learning objectives and analysis, cadet characteristics, and learning problems.

3.2 Realization of the Model

Realization is based on the outcomes of the pre-development phase (first study), which are then reexamined and redirected toward the creation of prototypes: (1) blended learning model guidelines; (2) learning tools; and (3) instruments.

3.3 Validation

The next stage after design and realization is the validation stage. The validation stage aims to determine the feasibility of instrument validation and blended learning model guidelines. The instruments used in the development of the blended learning model are assessed for their feasibility by the Expert/Validator. The feasibility assessment of each instrument is reviewed based on 3 (three) aspects: Instructions for use, material (content), and language. The results of the instrument feasibility assessment are summarized in Table 2.

Based on the data in Table 2, it can be stated that all learning tools meet valid criteria. Lecturer experts and practitioners conducted the validation of the blended learning model guideline before it was tested. Validation activities were carried out by giving the validators the manuscript (blended learning model guidelines) along with the validation sheet. The summary of the validator's assessment results of the blended learning model guidelines is presented in Table 3.

Based on the data in Table 3, it can be concluded that the blended learning model guidelines are very valid.

As a continuation of the validation results of the initial prototype of the blended learning model and learning tools, the next step is to conduct a series of trials (empirical validation) to test the results of expert and practitioner validation of the blended learning model developed are supported by empirical data in the field. Through a series of trials, information will be obtained about the practicality and effectiveness of the blended learning model developed. The testing activities in this research were conducted 3 (three)

Table 2. Learning Device Validation

Learning Tools	Result	Criteria
Lesson Plan	0.81	Very Valid
Teaching Material	0.82	Very Valid
Competency test for cadet learning outcomes	0.89	Very Valid

Table 3. Results of Validation of Blended Learning Model Guidelines

No.	Aspect Assessed	Result			Average	Criteria
		1	2	3		
1	Introduction	1.00	0.50	1.00	0.83	Very Valid
2	Content of blended learning model					
	a) Problem Identification	0.83	0.83	0.83	0.83	Very Valid
	b) Model Structure & Components	1.00	1.00	1.00	1.00	Very Valid
	c) Model Completeness	0.80	1.00	0.80	0.87	Very Valid
	d) Model Syntax	0.83	1.00	1.00	0.94	Very Valid

times, namely individual testing, small group testing (limited testing), and expanded testing (field testing).

The development of the blended learning model was adjusted to the principles and characteristics of learning at Makassar Aviation Polytechnic. A blended learning model was obtained based on the validity test, which met the validity criteria.

The blended learning model fits both theoretical and empirical practical criteria. Theoretically, expert and practitioner evaluations indicate that the blended learning paradigm can be implemented. The test results indicate that the blended learning model satisfies the implementation indicators of the practical criteria for managing to learn. According to Nieveen [11], practicability is related to two factors: (1) if experts and practitioners believe the learning materials generated can be utilized; and (2) whether the learning materials can be applied in the field.

With the practicality of this blended learning model, cadets actively follow the learning steps following the syntax of the blended learning model. In addition, there is an increase in discussion activities both individually and in groups, analyzing information, being creative in solving problems, creating a way to solve problems, and using varied learning resources. So that the practicality of the blended learning model can increase the cadets' activeness in learning. This is in line with the results of Herliana's [12], which states that the blended learning model stimulates cadets to play an active role and develop thinking skills, analyze problems in learning activities; cadets who use this model can produce many strategies for solving a problem compared to cadets who use the direct learning model.

Cadets will attain their learning objectives if they actively build their knowledge through learning [13]. Therefore, the efficacy is also impacted by the cadets' learning activities. This is consistent with Eggen and Kauchak's [14], assertion that learning is practical if cadets actively organize and discover information (knowledge) and the relationship of the information presented. Such learning outcomes improve cadets' comprehension, proficiency, and critical thinking abilities. Consequently, it is vital to observe how cadets organize their lectures and information. Therefore, the more active the cadets are, the greater their accomplishment of learning competencies and the more successful their learning.

4 Conclusion

The blended learning model at Makassar Aviation Polytechnic meets the Practical criteria as indicated by implementing the blended learning model and cadets' activities in learning to manage to learn. The practicality of the blended learning model can increase the cadets' activeness in learning both in individual and group discussion activities, analyzing information, being creative in solving problems, creating a way to solve problems, and using varied learning resources.

References

1. T. Wagner, *The global achievement gap: Why even our best schools don't teach the new survival skills our children need-and what we can do about it*. ReadHowYouWant. com, 2010.

2. J. Smith, *Educating international security practitioners: Preparing to face the demands of the 21st century international security environment*. DIANE Publishing, 2001.
3. ICAO Annex 11, *Air Traffic Services*, Thirteenth. Montreal: International Civil Aviation Organization, 2001.
4. K. Wihartini, "Analisis Manfaat Penggunaan Model Pembelajaran Blended Learning Dalam Proses Pembelajaran," 2019.
5. Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. Bandung: Alfabeta, 2011.
6. T. Plomp, "Educational design research: An introduction," *Educ. Des. Res.*, pp. 11–50, 2013.
7. W. Dick, L. Carey, and J. O. Carey, *The systematic design of instruction*, 5th ed. 2001.
8. B. R. Joyce, M. Weil, E. Calhoun, and B. R. Joyce, "Models of teaching," vol. 499, 2003.
9. H. Bloom, *Handbook on Formative and Summative Evaluation of Student Learning*. New York, United States: MacGraw-Hill, 1971.
10. Y. A. Unrau, P. A. Gabor, and R. M. Grinnell, *Evaluation in social work: The art and science of practice*. Oxford University Press, 2007.
11. J. Van den Akker, K. Gravemeijer, S. McKenney, and N. Nieveen, *Educational design research*, vol. 2. London, United Kingdom: Routledge, 2006.
12. F. Herliana, Y. Supriyati, and I. M. Astra, "Pengaruh model pembelajaran berbasis blended learning dan motivasi belajar terhadap hasil belajar fisika siswa SMA," in *Prosiding Seminar Nasional Fisika (E-Journal)*, 2015, vol. 4, pp. SNF2015-II.
13. L. S. Vygotsky and M. Cole, *Mind in society: Development of higher psychological processes*. Harvard university press, 1978.
14. P. Eggen and D. Kauchak, *Strategies and models for teachers: Teaching content and thinking skills*. Pearson Higher Ed, 2011.