Scientific Approach to Promote Scientific Writing Skills using Blended Learning System

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Abstract

This study explores students' scientific writing skills using the blended learning system. The qualitative method was used to improve students' scientific writing skills in learning the Indonesian language general course. The scientific approach is a learning process designed to observe, question, try, reason, and communicate. It encourages the development of attitudes, knowledge, and skills of students to meet scientific principles. This leads to factual, conceptual, procedural, or metacognitive knowledge, which can be obtained through sensory experiences from various sources. The current preliminary study is very good and appropriate in learning the Indonesian language general course, especially for non-Indonesian students. The presence of information technology also provides a wider learning opportunity for observation. Data were collected through qualitative observation, namely taking notes and recording humanistic counseling from interviews with Indonesian language general course lecturers. The result showed that one of the essential ways to improve students' scientific writing skills are by combining learning with a blended learning system. This can support their success in completing the final project and the workload of each course. A lecturer plays an important role in producing scholars with academic knowledge and also other skills using scientific approaches with blended learning system. Therefore, this study describes lecturers' scientific approach with a blended learning system from theory to practice.

Keywords

blended learning, writing paper, scientific approach

Introduction

The 2013 curriculum requires students to possess productive, creative, and innovative attitudes, skills, and knowledge. Productivity measures are vital high-level indicators of an economy's performance that is used to determine how resources are efficiently used to generate outputs and income. Higher education students use the blended learning system as knowledge in writing scientific papers in the Indonesian language general course. Indonesian language teaching materials containing a blended learning system prepare students with extensive knowledge and strong characters. Furthermore, scientific writing based on the blended learning system in the Indonesian language general course at higher education is under the theoretical and empirical enhancement as well as the abilities of students in scientific literacy. Scientific papers with a blended learning system can be learned orally or in writing. Therefore, this study develops a method to analyze argumentation skills with the Test of Scientific Argumentation (TSA). The results show that above-average students are better at manipulating claims, data, warrants, and supports than the below average, although all groups have similar rebuttal performance (Ho Ying, 2019). Evaluation instruments and scientific literacy can test the validity, reliability, and characteristics of measuring scientific literacy skills. Therefore, students use four scientific literacies, namely (a) science as a body of knowledge, (b) science as a way of thinking, (c) science as a way to investigate, and (d) the interaction between science, technology, and society (Rusilowati *et al*., 2016; Anggraini and Kusniarti, 2015; Bachtiar H & Simamora *et al.*, 2019; Setiawan *et al.*, 2017).

The use of a blended learning system in improving students' scientific writing skills is very important because it is part of the nation's characteristics. The blended learning model has a significant influence on student learning outcomes and an important means of national identity. This learning model can be applied to anyone, especially those with high mobility, and find it difficult to continuously meet with their teachers or lecturers. Internet helps to unite teachers from diverse contexts while engaging in meaningful and purposeful professional development that is universal in nature (Saddhono, 2015; 2018). The changes in instructional models from a traditional to online classroom teaching approach also influence the quality of teaching, learning, and interactions. In a

traditional classroom, teaching and learning are easier to assess and control using gestures, eye contact, physical and emotional characteristics, which symbolizes positive interaction qualities. This system is also a medium of collaborative learning for those in need of additional material to supplement the conventional learning in the classroom. Therefore, with blended learning, students can easily get new and up to date material from various sources and experts from all over the world. The basic principle of the blended learning model is optimizing the integration of face-to-face oral communication with online written communication. Therefore, this system is a combination of traditional learning characteristics and electronic learning environments. A blended learning system allows students to practice writing more because it enables them to write anywhere, irrespective of the time and location. Therefore, this research combines face-to-face learning with online learning as an alternative in the teaching and learning process (Agus Purnomo *et al*., 2016; Arifani & Yudhi et al. 2020**;** Rovai & Jordan, 2004; Jayanti, and Ningsih, Y, L, 2016; Martin & Beltrán *et al*., 2017; Malini Ganapathy *et al.*, 2020).

This study aims to provide a solution for the development and novelty of the general Indonesian language course in higher education. Therefore, scientific writing skills using a blended learning system in the Indonesian language general course at higher education are needed to support students' academic achievement and creativity. This phenomenon gave birth to the assumption that scientific writing is difficult to learn. The results of this research can also be seen from the evaluation score of the Indonesian course, which is lower than other courses. Furthermore, due to inadequate training in scientific writing and, sometimes, unethical practices, abstracts are often poorly written, lack critical information, and sometimes contain repetitions. The teacher still monitors the act of writing, and one of the indicators of successful teaching activity is determined by two essential factors, namely process-based and product-based outcomes (Arifani, 2019; Howes et al., 2008; Mashburn et al., 2008). In addition, student interactions in learning still exist in networks using devices without time and space constraints. The learning model that allows the concurrent use of various methods and interactions between teachers and students using technology is called blended learning, which can help write. Therefore, the interaction between students and their lecturers can be maximized, thereby fulfilling the assessment's transparency. The use of blended learning in learning to write makes the learning process more optimal. Science consists of a set of knowledge and a series of processes used to produce knowledge. However, there has been a shift to the integration of knowledge and processes, or a series of practices, on how science needs to be taught and assessed. The systematic analysis of scientific teamwork continues to influence science's progress and the production of valuable knowledge, which helps users quickly understand the implicit knowledge and intelligence using the reading method. There are several steps to the scientific approach to learning, namely exploring information through observation, asking questions, experimenting, processing and presenting data or information, analyzing, reasoning, concluding, and creating (Ministry of Education and Culture, 2013; Cannady *et al.*, 2019; Yu Shuo *et al.*, 2019; Zhang *et al.*, 2019; Andayani and Suyitno, 2014; Sanganyado, 2019; Plakans & Gebril, 2013; Aloesnita *et al*., 2012).

Writing is the last language skill acquired by students after listening and speaking skills. Since scientific research studies are generally perceived as applicable in the real world, the present simple tense effect in the Discussion move fosters generalizable results and offers universal and timeless statements to readers. One of the distinctive linguistic features found in the Discussion move is the use of modal auxiliaries, which showed the writers' degree of confidence while addressing statements. This was followed by actively acquired reading and writing skills. Therefore, the supporting concepts of this study show that (1) blended learning system in increasing students' scientific literacy was carried out properly using learning syntax, (2) there was an increase in the competency aspect to the high scientific literacy, such as in interpreting scientific data and evidence, procedural knowledge, local context, and attitude of interest towards science, and (3) the students' responses in the very good category. Therefore, the implementation of scientific writing skills using a blended learning system in the Indonesian language general course at higher education can improve students' science literacy (Arifin and Sunarti, 2017; *Kriangkrai Vathanalaoha and S*upong Tangkiengsirisin, 2018; Miftakhul Huda, 2018).

This study aims to determine (a) the advantages of a scientific blended learning system for students, (b) the problems associated with the learning process using this technique, and (c) the solutions to these problems. The

following is a supporting illustration of student academic achievement and creativity in implementing scientific writing skills using a blended learning system in Indonesian language general courses at higher education.

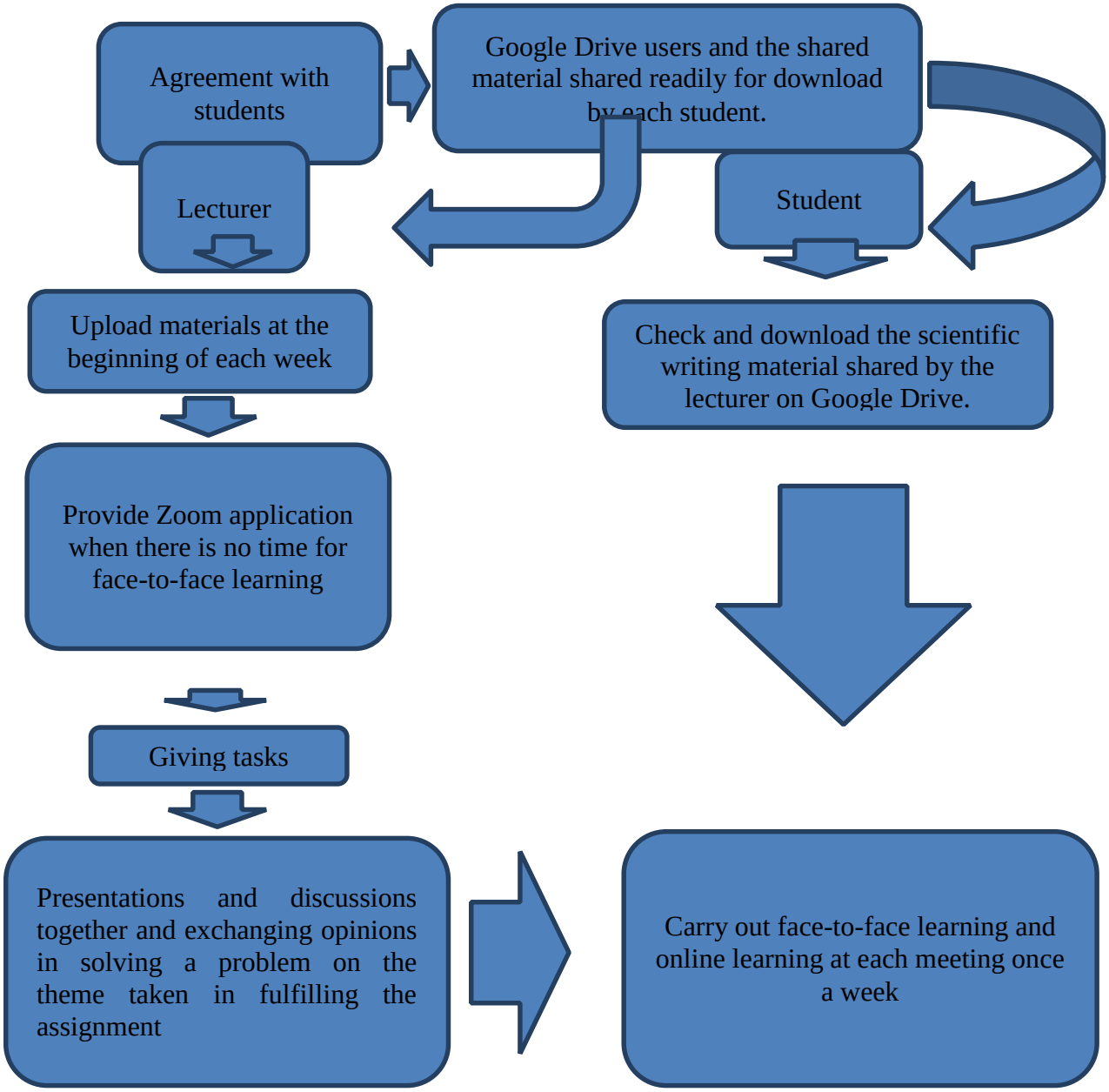

Figure 3: Learning Design as Supporting Student Achievement and Creativity in Writing Scientific Paper Using Blended Learning system.

Method

This research was carried out using the qualitative approach. According to John (2015), the characteristics of qualitative research include (1) natural environment setting, (2) researcher as the key instrument of data collection, (3) several data collection methods, and (4) inductive data analysis. This study's results using the qualitative method were adjusted to these goals in the form of international seminar publication articles and research reports.

Furthermore, Creswell (2013) defined qualitative research as a method used to explore and understand meanings ascribed to social problems. The process involves important activities, including asking questions, procedures, and gathering specific data from participants. Therefore, the data are inductively analyzed from specific themes before interpretation. Inductive research is focused on individual meanings and translates the complexity of a problem.

According to Jhon (2015), research data are usually in the form of words, phrases, clauses, sentences or photographs, and obtained from various sources, such as interviews, observations, and documentation. The data sources in this study were interviews with Indonesian language lecturers and students, as well as observations and field notes. In addition, the results of the audio-visual documentation are photographs, recordings, etc. Jhon (2015) also defined data validity in accordance with data triangulation, member checks, length of time, repeated observations at study sites, colleagues, and data collection strategies. The analysis activity was carried out with several steps using Miles and Huberman (1984) technique. The first step was collecting students' data during interviews, documentation, and direct observation using two types of field notes, namely reflective and descriptive. A descriptive note is a natural note of the results seen, felt, heard, and experienced by the students during the data collection process. The second step is data reduction from the relevant data that focus on problem-solving. The third step is the presentation of data from the result of writing scientific papers, and the last is the conclusions drawn from the entire research to make it easier for the reader to conclude. The institutional quality factors were captured using a structured questionnaire in six dimensions, namely location, academics, infrastructure, costs, personnel, and overall satisfaction. Prabowo (2015) and Sudharani *et al.* (2012) defined the learning process as a process that contains a series of actions by lecturers and students based on reciprocity that occurs in educational situations to achieve certain objectives.

Results and Discussion

Research Object Description

This study was carried out on the second-semester students of the Faculty of Economics and Business in DKI Jakarta. Al-Azhar University Jakarta was chosen because it offers the Indonesian language general course to the second-semester students, and it meets the study's need. The total number of students in the management study program is 27, while in accounting, 1 (2A) out of 3 classes was taken, culminating in 39 students. Data collection techniques in this study refer to the concept of Cohen (2000) as follows:

1. Collecting the results of in-depth interviews in a flexible and standardized manner from all the respondents, policymakers, lecturers, and students on various matters relating to blended learning, especially in scientific writing.
2. Observation carried out in a planned and controlled manner using forms, checklists, or a table of contents prepared in advance. The study made observations of the previous research for analysis. Indonesian language lecture activities were undergone by cultivating blended learning in writing scientific papers with a scientific approach for students taking the general course.
3. Document analysis by analyzing, studying, and reviewing documents related to research. In this study, document analysis was carried out to determine the students' scientific writing skills using a blended learning system in the Indonesian language general course at higher education, which has been carried out normatively.

The data analysis was performed using the McDonough & McDonough model (Cohen *et al*., 2000), with the following steps: (a) data analysis on the component of blended learning in writing scientific papers with the conventional scientific approach, (b) data revision which includes the networks between aspects of language structured summaries, and material manuscript, and (3) data verification using peer-debriefing to obtain accurate findings.

McDonough & McDonough's data analysis model was performed in the peer-debriefing activity, which is a technique to test the credibility of previously obtained research data by asking questions to the interviewees and subjects that have never been studied (Cohen, 2000). In this study, lecturers in an Indonesian language course in the Academic Working Group that teach Indonesian language courses at Universitas Al-Azhar Jakarta were interviewed.

Based on these two aspects, a blended learning system's values need to be instilled in all circles, one of which is the younger generation. Internalizing a blended learning system's values is very important, considering that current technological developments and the influence of globalization are increasingly eroding the national identity. The internalization of blended learning system values can be carried out in various ways, such as education. Through this process, students acquire a variety of knowledge and values to associate with others.

Dwiningrum (2016) stated that humans acquire education in three environments, namely family, school, and community environment.

Scientific Writing Skills of DKI Jakarta Students

Observations show that students have diverse skills that are active, with the majority classified as passive with adequate high initiative. However, students' scientific writing skills are still low, as evidenced by their low participation in the Campus Press organization. The scientific writing training from the study program organized by students can hone their ability to write scientific papers creatively. However, it cannot accommodate all students' writings because the training is only held once a year. In addition, students' involvement is still lacking in Hypno Writing training (Saddhono et al., 2019).

The questionnaire results to respondents show that students' interest in writing scientific papers is still low. Generally, approximately 80% of students undertake scientific writing activities to fulfill their college assignments. However, some also write for themselves in the form of room poetry to upload on social media such as Facebook, Instagram, or personal blog. Good academic writings such as studies are only made when assignments are given by the lecturer, which is usually not optimal.

The Application of Scientific Approach to Promote Scientific Writing Skills Using Blended Learning System in Fostering Student Creativity in DKI Jakarta

The Indonesian language general course's scientific approach is carried out by continuously writing scientific papers based on a blended learning system in each cycle through preparation/planning, implementation, observation, and reflection. Standard competencies to be achieved include (1) the students' ability to explain the scientific, semi-scientific, non-scientific, and fictional works, (2) ability to arrange effective sentences, paragraphs, (3) write scientific papers, essays, critical opinions, and (4) compile a Student Creativity Program (PKM) proposal according to the provisions of the Minister of Research, Technology, and Higher Education. These standard competencies are focused on promoting skills to write scientific articles and prepare PKM proposals following the focus of competencies to be achieved.

The Results of the Application of Scientific Approach in the Indonesian Language General Course to Foster Students' Scientific Writing Skills in DKI Jakarta on Blended Learning System

This model can make students more active and directly involved in writing scientific papers using a scientific approach. They are challenged to create products by writing maximally. Although the classroom atmosphere with the adoption of a product-based scientific approach is rather noisy because students gather with their groups to discuss, argue, criticize, or respond to their friends, they remain focused on achieving the learning objectives. The quality learning process makes it easier to achieve the needed goals. The process of improving the quality of learning to write scientific papers is shown in the following factors.

a. Student Activeness
   Students' activeness in learning increases as seen from the attitude assessment sheet (affective) consisting of (1) discipline, (2) interests, (3) cooperation, (4) activeness, and (5) responsibility. Student activeness was observed during the learning process.
b. Student Interest and Motivation
   Students' interest and motivation to participate in learning to write scientific papers determine their success. Furthermore, the scientific approach used to improve students' scientific writing skills with blended learning systems can foster their internal motivation and love for the environment and the surrounding culture.
c. Responsibility and Courage
   Scientific writing skills with a blended learning system in the Indonesian language general course at higher education can train students' social skills, such as a sense of responsibility for the success of learning with their friends in one group. This helps to increase their responsibility and courage in the learning process.
d. Lecturer Skills in Managing Class
   Lecturers are more skilled in carrying out the learning process and readier, starting from the preparation phase of the RMP (quality plan for implementing activities), preparation of material, and learning media. The lecturer needs to have adequate control of the students in order to condition the classroom into small

groups. The lecturer's role needs to increase from cycles I, II, to III with their ability to manage the class better and create a fun learning atmosphere.

e. Improvement of Students' Scientific Writing Skills

The improvement of students' skills in writing scientific papers is seen from their writing assessment scores, which range from papers, scientific articles, popular papers, and PKM proposals. The assessment was carried out in accordance with the specified indicators, and the results increased based on the average score in Management and Accounting Class 2A, respectively.

Conclusion

Scientific writing plays an important role in the learning process. However, there are still misconceptions in the scientific writing of students with concepts that need alternative strategies. Therefore, due to the important role played by lecturers in preventing misconceptions among students, the scientific writing skills using blended learning system in the Indonesian language general course at higher education are needed to support student academic achievement and creativity. From the results, it can be concluded that the scientific approach is a new formulation to be applied consistently by all educators to shape a nation's character using a blended learning system to enable students to construct their own knowledge of the material and its values optimally. Therefore, lecturers need to create scholars that are superior in academic knowledge with strong and intelligent characters.

Recommendations

Please use 10-point font size. Please margin the text to the justified. Manuscripts should be 1.5 times spaced. Footnotes and endnotes are not accepted. All relevant information should be included in main text. Do not indent paragraphs; leave a space of one line between consecutive paragraphs. Do not underline words for emphasis. Use italics instead. Both numbered lists and bulleted lists can be used if necessary. Before submitting your manuscript, please ensure that every in-text citation has a corresponding reference in the reference list. Conversely, ensure that every entry in the reference list has a corresponding in-text citation.

Subdivide text into unnumbered sections, using short, meaningful sub-headings. Please do not use numbered headings. Please limit heading use to three levels. Please use 12-point bold for first-level headings, 10-point bold for second-level headings, and 10-point italics for third -level headings with an initial capital letter for any proper nouns. Leave one blank line (1.5 times spaced) before and after each heading. (Exception: no blank line between consecutive headings.) Please margin all headings to the left.

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