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The increasing of scientific writing skills through a heutagogy approach in Indonesian higher education

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ABSTRACT
The purpose of this study was to find out and understand (1) the process of improving scientific essay writing skills through a heutagogical approach to online learning and (2) the effectiveness of applying the heutagogical approach to improving students' scientific essay writing skills. The method used is action research. The research was conducted on students at a university in Jakarta, Indonesia. This research is participatory and collaborative and takes place in two cycles. Each cycle consists of planning, implementing, observing, and reflecting. Data were collected through writing tests and observations. The writing test results were assessed using the speech writing assessment guidelines. The results showed that applying the heutagogical approach in online learning could improve students' scientific essay writing skills. The mean score on the initial test was 67.88, with only 37.2% getting a score of 75. In the first cycle, the average value increased to 74.49 with a success percentage of 60.5, and in the second cycle, the average value increased to 78.95 with a success percentage of 81.4%. From the research results, it can be concluded that the heutagogical approach can improve students' scientific writing skills.

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1. Introduction

The Covid-19 that hit the world, including Indonesia, has caused many changes in the social life sector in the past year. This change occurred from the economic, tourism, socio-cultural sectors to the education sector. In the field of education, teaching and learning activities have changed drastically from those initially conducting offline learning (outside the network), turning into online learning (in the network) (Walukow, 2020) (Oktafia Ika Handarini, 2020); (Sunarti & Mitroharjono, 2021). This change occurs in all levels of education from kindergarten, elementary, junior high, senior high schools to universities.

The application of online learning in higher education introduces lecturers to technological innovation, information, communication, and heutagogy (Ashton & Newman, 2006). In online learning, students who participate in learning activities are not as many as in offline learning activities (Msila & Setlhako, 2012). Lecturers are also required to be more creative in carrying out teaching and learning activities. Lecturers must be able to use technology to convey knowledge to students and ensure that the knowledge conveyed is well received and understood (Kaliky, 2013). So far, the role of lecturers in online learning is more focused on learning materials. Lecturers do not think about the existence of their students even though students in higher education are adult humans who already have their own way of dealing with and solving problems.

In addition, lecturers must be able to make maximum use of technology. The selection of learning approaches is also very influential on students' success in understanding the knowledge provided. Several errors in selecting learning approaches result in learning activities not running optimally. Many lecturers use rigid and monotonous learning techniques so that learning becomes

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boring and learning objectives are not achieved. The lecturer's focus should not only be conveying the material, but the lecturer should ensure that his students can understand the material presented. Therefore, it takes a learning approach that follows students' needs in online learning, one of which uses a heutagogical approach.

Heutagogy is the application of a holistic approach that is used to develop students' skills by learning as an active and proactive activity, and students act as the main agents in their own learning, which is obtained as a result of their personal experiences (Hase & Kenyon, 2007). This means that students play an active role in their learning, determine what learning activities take place, and determine what will be learned. Educators are only tasked with facilitating what students do.

This approach is a development of the andragogy approach that focuses on students' independence but in complex situations in the form of the necessity of using technology systems and devices (Blaschke, 2012). Heutagogy is also defined as an approach where the educator provides the resources, but the students themselves design the learning activities and negotiate them (Canțer, 2012). From this statement, it can be seen that this heutagogical approach is a learning approach that utilizes technology in the teaching and learning process and this approach is very suitable to be applied in online learning in universities at MKWU (General Compulsory Course) Indonesian in writing material, scientific essay.

Writing scientific essays is a systematic writing activity to obtain scientific answers to a problem by developing the science, technology, and art obtained through literature studies, a collection of experiences, research, and previous knowledge of others (Totok Djuroto, 2014); (Dwiloka & Riana, 2012). Therefore, the activity of writing scientific essays is very much needed by students because, in all learning activities, students are always asked to make scientific essays, which can be in the form of making papers, proposals, and reports.

Based on the results of pre-observations that the author did on the skills of writing scientific essays for 43 students, it can be seen the difficulties experienced. This difficulty is in the form of errors in spelling. Difficulty in expressing ideas or ideas, writing scientific papers that are not under the systematics of writing, grammar is still messy, and choosing diction that is not in the context of scientific papers (Nurgiantoro, 2001); (Hafizah, 2021).

Based on the phenomenon of students' scientific papers, it is necessary to apply a heutagogical approach in Indonesian MKWU lectures to improve scientific writing skills.

2. Literature Review

Heutagogi

Heutagogy is a study of self-determined learning by the learner. It can also be seen as a natural development of previous educational methodologies, especially from capacity development, and may provide an optimal approach to learning in the twenty-first century. The difference between this approach and the andragogy approach is that there is still the role of educators (teachers, lecturers, and facilitators). In heutagogy, the role has been integrated because educators and students gain knowledge from each other and learn from each other. Educators here are not limited to providing knowledge, but their role is more than that, namely lifelong learners, learning leaders, learning resource directors, network diversity, and communication openers.

The characteristics of the heutagogical approach are as follows:

1. Using an open and flexible curriculum;
2. Learners as drivers in determining the learning path, its context, activities, and journey, not just the educator;
3. Learners engage in flexible and negotiable assessment design;
4. Learning is collaborative between educators and students, and educators must be active for the benefit of students based on questions posed by students;
5. Students create contextually relevant content according to their knowledge and learning needs;
6. Encourage reflective practice for learning in journals as a place to reflect on learning and research as a place for experimentation in the real world (Halupa, 2015); (Mohammad et al., 2019).

Writing Scientific Essay

Writing is a learning process in collecting scattered ideas. A writer must unite these ideas through writing and develop them rationally so that the reader can understand them. In addition to requiring experience, writing can be grown through habituation. Writing habits can be grown through the closest environment, namely family. Even teachers or lecturers can try various techniques to develop their writing and like writing lessons. Developing writing skills can make it easier for a person to organize thoughts and ideas, which can be put on paper. Good writing is not a writing skill that can be produced according to orders (Leonhardt, 2001). Letting children write according to their creativity and knowledge will be much better.

Writing is a language skill used to communicate indirectly, not face to face with other productive and expressive people (Tarigan, 2008). The writer must utilize graphology, language structure, and vocabulary in this writing activity. This writing skill will not come automatically but must go through a lot of practice and regular practice. Writing activity is an activity that does not stand alone, which is closely related to other matters, such as mastery of the material, understanding of research methods and writing methods, utilization of reference sources, mastery of language, habituation to practice, and the use of appropriate media and selection of reader segments. (Sutarno, 2008).

Scientific essays are essays made by a scientist who wants to develop science, technology, and art obtained through library research, a collection of experiences, research, and previous knowledge of others (Dwiloka & Riana, 2012). A similar definition also states that scientific writing is a writing activity based on research results that are systematically arranged following a scientific methodology that aims to obtain scientific answers to a problem (Djutoto & Supriyadi, 2002). This means that scientific essays are made to solve a problem using certain research methods based on observations in the field.

The assessment criteria in writing scientific essays are as follows:

1. Ideas or ideas are topics with themes that are expressed in writing;
2. The organization is the arrangement of scientific essays that must follow the existing writing systematics, use of appropriate references, use of paper, font size, and paper margins;
3. Grammar is the arrangement of sentences that are good and correct so as to produce paragraphs and continuous discourse;
4. Diction in the form of choosing the right words according to the context and using terms that are appropriate to the field of science;
5. Spelling in the form of rules in writing letters, words, numbers, abbreviations, acronyms following Indonesian spelling (Nurgiantoro, 2001).

Online Learning

Online learning (on the network) is a form of learning without face-to-face with a flexible time and place and supported by supporting facilities in the form of a network system such as the internet (Osguthorpe & Graham, 2003). This means that online learning utilizes the internet network in its implementation so that the time and place of learning can be adjusted according to needs.In line with the previous definition, online learning is a learning activity that utilizes internet and web technologies to create learning experiences (Horton & Katherine Horton, 2003). Online learning is considered innovative as a medium of good delivery, user-centered, interactive, and can be done flexibly. The platforms used in online learning are Google Meet, Zoom, Whatsapp, Google Classroom, e-learning using supporting facilities in laptops, smartphones, and tablets. Online learning aims to provide quality learning in a massive and open network to reach more and wider students. This research focuses on the use of a heutagogical approach. This approach is a new approach and is still rarely used in learning approaches, especially in improving students' scientific essay writing skills. This approach was based on the Covid-19 situation, which required universities to conduct online learning.

3. Research Method

Action research is a process designed to empower all participants (students, lecturers, and other participants) to improve the practices carried out in the educational experience Hopkin (Emzir, 2011). The activity is carried out online for students in Jakarta, Indonesia. The research was carried out in the even semester of the 2020/2021 academic year, starting in April until June 2021. This period starts from pre-observation until the research is completed. Data were collected by conducting a

scientific essay writing test three times, namely once during the pretest, once during the post-test cycle 1, and once during the post-test cycle 2. The research procedure used was the Kemmis and Taggart model.

The stages of research data analysis start from (1) Doing pre-observation to find out the problems that exist in the field; (2) collecting data by conducting a scientific essay writing skill test and non-test in the form of attitudes and processes during learning; and (3) the data will be analyzed with quantitative and qualitative approaches. Quantitative is used to analyze the teaching and learning process data or compare student scores before and after the research activity is carried out. In this study, this quantitative data was obtained from the results of a scientific essay writing test using a heutagogical approach in the form of student worksheets. The data from the test results were analyzed using numerical calculations and described. From this qualitative approach, non-test data were obtained in a description of activities during the learning process using a heutagogical approach to online learning. The data is contained in written words from the observed sources. To check the validity of the data, the researcher refers to the validity criteria stated by Guba in Mills, namely credibility, relevance to context, testability, and validity (Geoffrey E. Mills, 2000).

4. Findings

Writing skills cannot be separated from other language skills. Writing skills must be supported by listening, speaking, and reading skills, especially reading skills. Because the more students read or listen, the more ideas, they can put into writing. Writing scientific essays is based on research results that are systematically arranged following a scientific methodology that aims to get a scientific answer to a problem. Scientific essays, especially scientific papers, are prepared based on the criteria, which must pay attention to the ideas or ideas outlined, the organization of the essay, the grammar used, the chosen diction, and the application of proper Indonesian spelling.

Online learning activities through a heutagogical approach are carried out by first agreeing on learning activities between researchers and students. The researcher here functions as a facilitator for students who inform the approach used in learning, namely heutagogy. In addition, the researcher also explains the definition of the heutagogical approach, how it is applied in learning, its advantages, and disadvantages. Students are required to determine their own learning process according to what they want. The researcher and the students also agreed on the assignments, assessment system, and technology tools to be used.

After that, students are asked to determine the material they want to learn for themselves. This is done by discussing and voting. Finally, an agreement was obtained regarding the material to be studied, namely, scientific essays, especially scientific papers.

The material has been decided. Then students find their own material about scientific essays. Students explore writing scientific essays, especially scientific papers, online, books, or other sources. They discuss the material that has been obtained. The facilitator is tasked with providing new information and adding information obtained from the results of student discussions.

Based on the pretest results, it is known that there are still many students who have difficulty writing scientific essays. Based on the pretest results, it showed that of the 43 students who took the pretest to write scientific papers, only 16 students, or 37.2%, met the standard value set, which was 75. The rest, 27 students or 62.8%, do not meet the standard value. Student score data can be seen in the graph below.

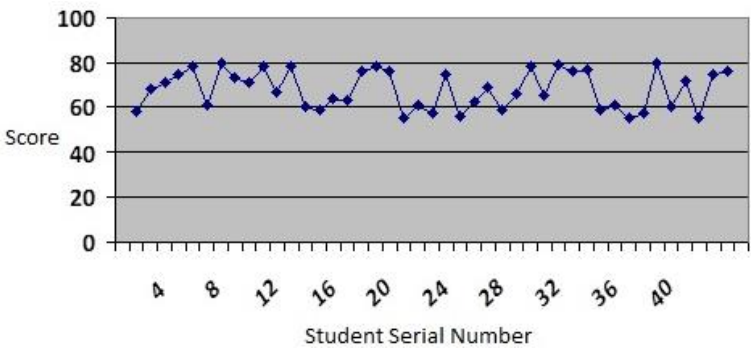


Figure 1. The score of the Student Pre-test

The graph above shows that the highest score of students is 80, the lowest is 55, and the average score is 67.88. The results of this pretest indicate that there are still many students who have difficulty writing scientific essays. This can be seen from students' difficulty in applying the five elements in writing scientific essays, namely choosing ideas, organizing writing, using correct grammar, choosing the right diction, and writing messy spelling.

Based on the pretest results, it was found that the students' scientific writing skills did not meet the assessment standards, so the researchers took action learning through a heutagogical approach in cycle 1. The student essay writing test results in cycle one are known to have increased but have not met the assessment criteria, namely 75% of students received a test score of 75. In the pretest conducted on Tuesday, May 25, 2021, the results were recorded from 43 students, only 16 students (37.2%) who can meet the standard assessment criteria. A total of 27 students (62.8%) have not obtained a score of 75. After the action was carried out in cycle 1, there was an increase in student scores. There were 26 students (60.5%) who had met the standard scores. The rest, 17 students (39.5%), have not met the standard value set. Student score data can be seen in the graph below.

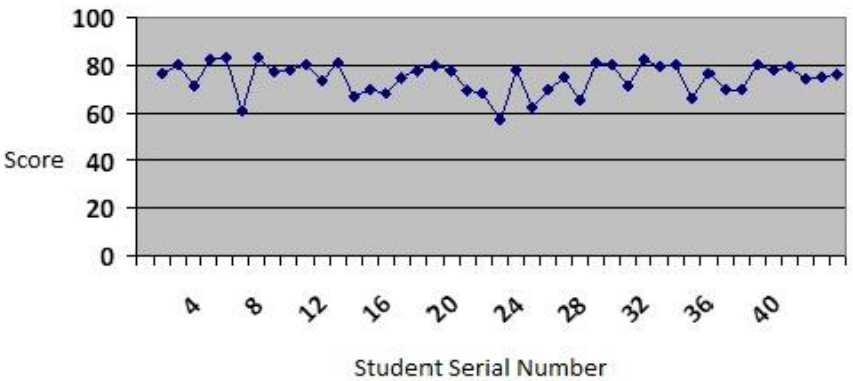


Figure 2. The score of the Student in Cycle 1

Based on the results of the tests and reflections above, the application of the heutagogy approach can improve the skills of writing scientific essays for students even though they have not yet reached the indicators of research success. Therefore, this learning model needs to be continued in cycle 2 with various improvements.

Cycle 2 was carried out by applying the heutagogical approach. Of the 43 students, 35 students (81.4%) have met the standard value. The rest, eight students (18.6%), have not met the standard value set. There is an increase of 18.6% compared to the first cycle. This means that the learning objectives with the heutagogical approach have been achieved because 81.4% of students have obtained a test score of 75. Student score data can be seen in the graph below.

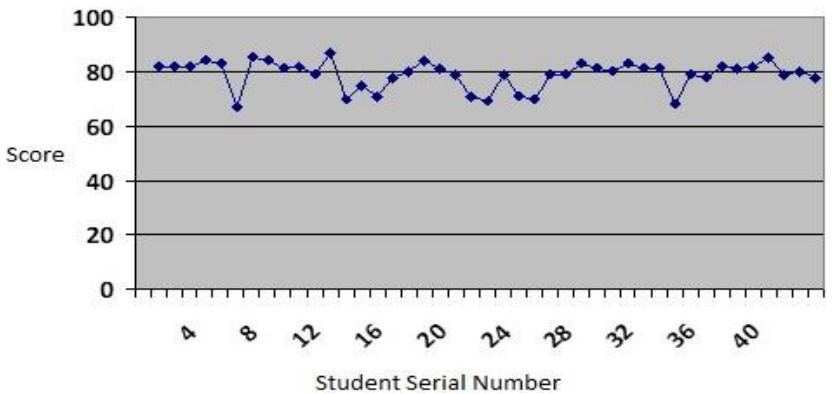
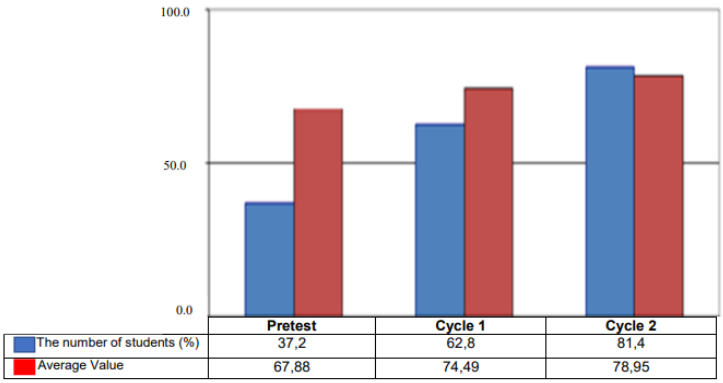


Figure 3. The score of the Student in Cycle 2

Based on the post-test cycle 2, the indicators of research success have been achieved. The highest score obtained by students is 85, and the lowest is 67. Thus, this action research does not need to be continued to the next cycle.

By giving actions in cycle 1, students begin to understand and understand the nature of ideas/ideas when writing speeches. Students are able to determine ideas well. The delivery is sequential and well organized. From paragraph elements, students begin to understand how to express ideas so that readers can well receive them. In the element of the organization, students have begun to understand the proper arrangement of papers. And student was able to make the background of the problem quite well. In addition, students know the mistakes they made and correct them. Students have also begun to understand grammar compose good sentences coherent paragraphs so that their writing becomes continuous. They began to choose the right diction according to the context of the sentence, and the spelling used was much better. Improvements continued to occur in cycle two so that only a few of the students still made mistakes. The following increase in students' percentages and average scores can be illustrated in the graph below.



	Pretest	Cycle 1	Cycle 2
The number of students (%)	37,2	62,8	81,4
Average Value	67,88	74,49	78,95

Figure 4. Improvement Of Scientific Writing Skills Every Cycle

From the graph above, it can be seen that an increase occurred from the pretest to cycle 1, namely the percentage of students who met the standard value from 37.2% to 62.8%. The average score of students also increased from 67.88 to 74.49. In cycle two, there was also an increase in the percentage of students writing scientific essays through the heutagogical approach, from 62.8% to 81.4%, and the average score also increased from 74.49 to 78.95. with this percentage, the application of the heutagogical approach was declared successful in improving scientific essay writing skills.

The difficulties encountered by students were in the form of difficulties in applying the five elements in writing scientific essays, namely pouring out ideas/ideas, organizing essays, grammar, selected diction, and applying proper Indonesian spelling.

First, in pouring ideas or ideas, many students are still confused about determining the contents of the titles that have been determined or chosen, copy and paste from other people's writings so that the level of plagiarism is high, and the pouring of problems in the background does not match the problems to be discussed. The ideas expressed do not focus on the problems discussed. Second, the organization of scientific papers is also not following existing rules. Sometimes students write papers with different systematics, and this happens very often. The systematics of scientific papers consists of an introductory chapter, a content chapter, and a concluding chapter. Third, the grammar used is also not appropriate, the arrangement of sentences, paragraphs, and discourse. This must be addressed so as to create a coherent discourse. Fourth is the choice of diction. In the choice of diction, many students do not use the right choice of words, and they still use words with connotative meanings and synonyms. Finally, in writing spelling, students still experience errors in writing capital letters, italics, bold letters, writing derivative words, combining words, writing numbers, and using punctuation marks. Students write spellings without following the rules.

5. Conclusion

Based on the results of research and discussion on improving scientific essay writing skills through a heutagogical approach to students at a university in Jakarta, Indonesia, it can be concluded that the heutagogical approach can increase students' enthusiasm and motivation in accepting online learning. In the beginning, learning was still conventional by lecturing so that students felt bored and unenthusiastic in accepting learning. The heutagogical approach can also increase students' scientific essay writing skills, which is marked by an increase in the average value of writing scientific essays. In addition, the heutagogical approach in online learning can foster a critical attitude of students about learning. This approach also makes students more active, innovative, and initiative in the learning process carried out. The limitations of this study are the results of research that cannot be generalized or used in general because they are only related to certain groups of students.

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