Mapping the Implementation of the Heutagogy Model to Vocational Education Students in the Era of Education 4.0

Andika Bagus Nur Rahma Putra, Haris Anwar Syafrudie, Ahmad Mursyidun Nidhom, Jailani Md Yunos, Maizam Alias

*Abstract***:** *This study aims to: (1) mapping the components of the heutagogy model by lecturers; (2) analyzing the percentage of heutagogy model components by lecturers; and (3) interpret the components of the heutagogy model by lecturers to the era of education 4.0. The method used is quantitative methods. The population in this study is all vocational education lecturers at State University of Malang (UM), Indonesia. The sample in this study were 200 vocational education lecturers at UM. Data analysis techniques with SPSS 24 through descriptive statistics. The findings in this study include: (1) components in the heutagogy model include explore, Create, Collaborate, Connect, Share, Reflect; (2) the percentage of the components of the heutagogy model by lecturers includes explore (86.92%), Create (87.87%), Collaborate (87.42%), Connect (87.89%), Share (88.72), Reflect (89,30); and (3) all components of the heutagogy model are related to the Education 4.0 era.*

Keywords: Heutagogy, vocational education, education 4.0, enjoyable learning, prospective vocational education teachers

I. INTRODUCTION

The development of technology and learning systems in the era of education 4.0 is propagating very fast [1] - [4]. The era of education 4.0 is an era of change resulting from the impact of the industrial revolution 4.0 [5], [6]. In the era of education 4.0, there was a transformation of learning systems and technology, especially in vocational education. In vocational education, a lecturer is required to be able to be a facilitator as well as a stimulus for students to develop their abilities. It began to be fully implemented in developed countries such as France, Germany, Britain, Japan and other developed countries [3], [7]–[9].

On the other hand, several studies state that until now, the implementation of the learning system in vocational education has not been fully able to provide flexibility for students to improve their skills [6], [10], [11]. That is because the learning model used by the lecturer is incorrect. The learning model is the primary key to the continuity of a meaningful learning process. One innovative learning model is the heutagogy model. Heutagogy's emphasis is focused on improving learning, double-loop learning, overall learning opportunities, and self-focus on developing skills [12]–[16].

The heutagogical model to vocational education emphasizes the human nature of human resources, self-worth, ability, and recognizes natural systems of environmental interfaces and learning activities as opposed to teaching [17], [18]. Heutogogy provides a framework for learning that places students as responsible adults for advancing. In principle, heutagogy provides full opportunities for students to explore their potential and abilities by their capabilities. This is following the needs of the ability in the era of education 4.0 which is demanded to teach students according to their desires and capabilities [7], [10], [19], [20].

At present, the implementation of the heutagogy model in higher education needs to be developed. Especially in Asian countries, heutagogy modeles need to be developed thoroughly and conceptually [5], [21]–[23]. That is because the development of human resources continues to grow rapidly and is relatively difficult to control. Thus, an model is needed that can manage the desire of students to continue learning and developing themselves [21], [23]–[25]. In this research, the implementation of the heutagogy model in tertiary education especially in vocational education was photographed. Through this research activity, a component map of the heutagogy model will be produced as well as a percentage of the implementation of the heutagogy model in the learning process in vocational education.

II. METHOD

The method used in this research is a quantitative descriptive method. This method was chosen because it focuses on the interpretation of quantitative processing data using SPSS 24. Schematically, the stages of the implementation of this research are shown in Figure 1.

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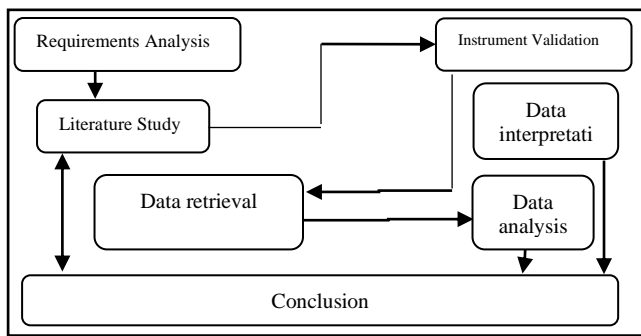

Fig. 1.Stages of research implementation

The population in this study is all vocational education lecturers at Universitas Negeri Malang (UM), Indonesia. The sample in this study was 200 vocational education lecturers at UM. Data analysis techniques with SPSS 24 through descriptive statistics.

III.   RESULTS AND DISCUSSION

The results and discussion in this study include three things. This is the component map on the heutagogy model, the percentage level of the heutagogy model component, and synchronizing the heutagogy model to the era of education 4.0. The results of this study indicate that there are six main components in the heutagogy model. These components are presented in Figure 2.

Fig. 2.The main components of the heutagogy model

In Figure 2. It can be seen that there are six main components in the heutagogy model. Components in the heutagogy model include explore, Create, Collaborate, Connect, Share, Reflect. All six components have a key concept in heutagogy is that of a double cycle of learning and self-reflection. In a double cycle of learning, students consider the problems and actions produced and results, in addition to reflecting on the problem-solving process and how it influences the students' own beliefs and actions [26]–[28]. The heutagogy model can be seen as a development from pedagogy to andragogy for heutagogy, with students also advancing in maturity and autonomy [29]–[31]. On the basis of andragogy, heutagogy further extends the andragogical model and can be understood as a continuum of andragogy.

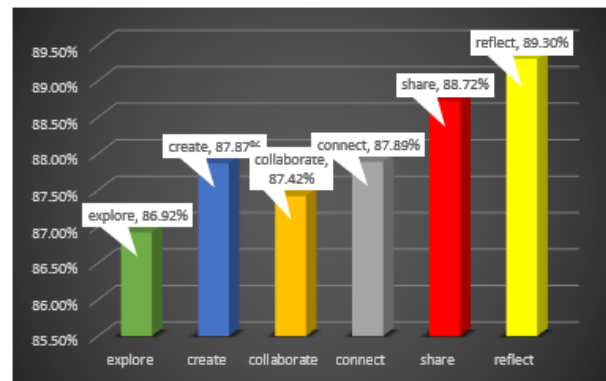Next, the percentage level of the heutagogy model component by the lecturer is shown in Figure 3.

Fig. 3.The percentage level on the components of the heutagogy model by lecturers

In Figure 3., it can be interpreted that each component of the heutagogy model has different levels of implementation. In the explore component, the level of implementation was 86.92%. in the create component, the performance level is 87.87%. in the collaborate component, the implementation level is 87.42%. in the connect component, the performance level is 87.89%. in the share component, the performance level was 88.72%. in the reflect component, the level of performance was 89.30%. Furthermore, the average value of data collection results from each component is shown in Table 1.

Table-I: Descriptive Statistics

Elements	N	Minimum	Maximum	Mean	Std. Deviation
Explore	200	1.50	5.00	4.3458	.53856
Create	200	1.50	5.00	4.3933	.58098
Collaborate	200	1.83	5.00	4.3708	.52663
Connect	200	1.50	5.00	4.3942	.56739
Share	200	1.83	5.00	4.4358	.53302
Reflect	200	2.00	5.00	4.4650	.53378
Valid N (listwise)	200				

In Table 1. it can be seen that the average of the six heutagogy components has values above 4, meaning that all heutagogy components have been implemented well in the learning process so far. There is a component that has the highest average value, the reflect component. In the reflect component, the average value is 4,465 with a minimum value of 2.00 and a maximum of 5.0. It can be interpreted that the implementation of the reflect component in learning is quite good and complex. In principle, in heutagogy lecturers do not need to need a lot of control over students [12]–[14], [30], [31]. In the six components of heutagogy, the main aspects are dominated by learning in accordance with the competencies and abilities of students. Lecturers must master the six components of heutagogy, in order to be able to create a structured system of learning. For example, in the share component, the lecturer must master several methods and techniques such as Public speaking, Discussion, Online learning, and Presentation. These techniques and methods must be supported by relevant learning activities [28], [32], [33].

Another example of the implementation of the explore component. In this component, there are five methods and techniques used. The techniques and methods include Problem Solving, Webquest, Questioning, Experiment, and Concept mapping. In the implementation of explore, lecturers need to be active in preparing learning resources as facilities for students to hunt and explore topics [34]–[36].

The synchronization of the heutagogy model to the era of education 4.0 has been proven from the results of this study as well as several supporting studies. The era of education 4.0 is defined as the era where technology begins to shift fully towards digital and massive technology [7], [37], [38]. This era was the impact of the industrial revolution 4.0 era. As a result, all technologies used in learning underwent a sporadic transformation towards multi-digital and multi-disciplinary. In principle, heutagogu has fulfilled the demands of the era of education 4.0. it can be seen from its components which are dominated by activities that utilize technological sophistication, especially internet technology [4], [9], [37], [39].

Because of the usefulness aspect, the heutagogy model encourages lecturers to continue to create learning innovations according to the needs of students actively. Lecturers must be smarter in engineering learning technology by reflecting on the needs of students in the era of education 4.0 [40]–[42]. Heutagogy applies a holistic model to develop students' abilities by learning as an active and proactive process, and students serve as "the main agents in their own learning, which occur as a result of personal experience. Based on that, the heutagogy model is the most critical factor in sustainability. The era of education 4.0 which is complex, massive, and focuses on the future of education [43]–[45].

IV. CONCLUSION

The conclusions in this study include three things. First, the components of the heutagogy model include explore, Create, Collaborate, Connect, Share, Reflect. Second, the percentage of the components of the heutagogy model by lecturers includes explore (86.92%), create (87.87%), collaborate (87.42%), connect (87.89%), share (88.72), reflect (89.30). Third, all components of the heutagogy model are related to the Education 4.0 era.

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