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The role of the heutagogy approach in advanced adult education as rebuilding the vocational self-concept in the industrial era 4.0 and society 5.0

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ABSTRACT

Technical and Vocational Education and Training (TVET) is established by UNESCO and ILO as education and training beneficial for the community. The community will be able to develop when they can use their leadership skill properly. This is what makes adult vocational education very important in building the nation. One example of the role of adult vocational education is reducing unemployment through a heutagogy approach. The heutagogy approach centered on individual participants, where the individual has full autonomy in creating their learning. The heutagogy approach is also helpful for developing an individual's self-capacity and vocational self-concept. The individual vocational self-concept through the heutagogy approach can help students, graduates, alumni, and the community develop skills (re-skills, up-skills) and prepare to enter the world of work. The skill development can be done by forming (re-establishing) the individual's vocational self-concept. In the development of the industrial revolution 4.0 and society 5.0, the role of self-concept with a heutagogy approach in advanced adult education is to build vocational self-concepts so that they can be independent in learning, prepare work skills and utilize technology well as lifelong learning, and make an individual as a digital transformation society. Besides that, the heutagogy approach has a triple-loop learning process that aims to make the right decision on the learning power of vocational self-concept. With the preparation of work skills, the self-concept of vocational maturity means that the higher the self-concept, the higher the maturity in the industrial era 4.0 career and Society 5.0 or with the existence of vocational self-concept in the future can make mature decisions.

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INTRODUCTION

Human capital can be interpreted as a knowledge-based economy. That is, well-educated and well-trained personnel is the main capital to improve the welfare of life. In addition to Human Capital as the main capital of knowledge-based economic development, the skills of workers and experiences there are social capital can be social capital related to the values of shared and social culture, environment, and social tissue. This allows individuals or groups to trust each other and work together.

The review of this issue is supported by research on human capital development in migrant workers, where the goal is to examine the regulation of human capital of rural migrant workers to consider social capital as an increase in productivity. So that migrant workers do not view their human capital that is valued by companies (Sha & Taylor, 2019). Human capital in migrant workers who learn to reject management rules by relying on social capital networks (Sha & Taylor, 2019). Besides the problems that often occur in humans when one's identity is not correctly known. The impact of self-identity on unknown interests and talents can cause a weak vocational self-concept in individuals.

At the same time, the weakness of individual vocational self-concept causes increasing unemployment rates among graduates and others. This is because graduates who are not ready to work due to talent in person need to be developed into a skill or competence. Based on the problem of vocational self-concept (VSC) is important, since according to Rosenberg (1989) self-concept is the totality of thoughts and feelings that refer to ourselves and objects. As a reduction in the unemployment rate, the more important thing is to build human resources to become competent human beings as long as you find a vocational self-concept for survival.

Therefore, the importance of the vocational self-concept in vocational learning is to produce superior human resources. Based on these objectives and problems, this article reveals that adult education through a heutagogy approach plays an important role in rebuilding the vocational self-concept, as well as reducing unemployment among the community (graduates, adults, and the community), where human capital and social capital are the capital in education. Advanced adults because adult vocational education applies throughout life (life long learning). Therefore, this article contains the important role of the heutagogy approach to adult and continuing education in rebuilding the vocational self-concept in the Industrial Revolution 4.0 and Society 5.0.

The heutagogy approach is learning towards the maturity of students (Sudira, 2017). This is supported by research that heutagogy is a form of self-determined learning with practices and principles rooted in andragogy (Blaschke, 2012). Similarly, this approach has a main priority, i.e., the independence of students in learning achievement, determining their learning strategies, and developing their teaching materials autonomously (Sumarsono, 2019). Therefore, the heutagogy approach is appropriate for further adult education. This is supported by research that the perception of further education is very important for the success of a career or life (Triyono et al., 2018). The following supports and explains the elements of the heutagogy approach.

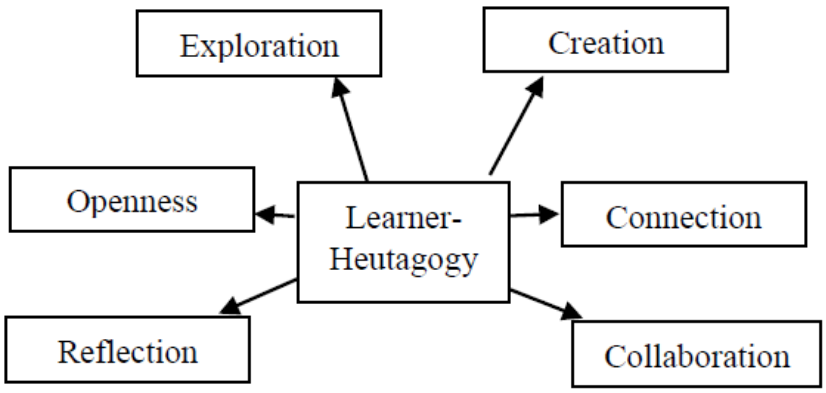

Figure 1. Heutagogy Design Elements

Based on Figure 1 about element heutagogy (Blaschke & Hase, 2016), the following is an explanation of each element: (1) Exploration; students will be allowed to explore the path of knowledge sources, be able to ask and answer questions and be able to develop and test hypotheses; (2) Creation; students will be given the to create something learned; (3) Collaboration; learners should be encouraged to collaborate in problem-solving, help each other in their learning, and be allowed to progress together. (4) Connections; students should be encouraged to connect with others in their discipline using available media, namely Twitter, LinkedIn, etc.; (5) Sharing; students should be allowed to share their knowledge and resources with friends; and (6) Reflection; students will be given enough time to write reflections on learning to increase the level of higher cognitive activities such as analysis and synthesis.

The heutagogy approach is very important. In addition to self-learning, this approach is useful when students use multimedia and online learning. Where learners do invaluable work for themselves through discovery and reflection (Parslow, 2010). Similarly, research supports that heutagogy learners learn from each other and do self-reflection (Dick, 2013). Learners are involved in what processes and how to learn worldwide (Hase & Kenyon, 2000). In addition, heutagogy is humanism and constructivism (Blaschke & Hase, 2015). At the same time, the starting point for learning in Heutagogy is a student (Jones et al., 2019). The heutagogy curriculum must be flexible considering the background of students and the results of students' learning. In contrast, the role of the teacher in the approach of heutagogy as the supervisor of students provides formative feedback according to their own learning needs. In addition, their learning environment provides opportunities for students to explore and understand what they are learning (Blaschke & Hase, 2015).

Vocational self-concept can be interpreted as personal views of themselves. Self-view can be interpreted as an assessment of self-assessment, self-evaluation, and self-characteristics, which can even include confidence in yourself. The purpose of forming a self-concept is so that an individual has a self-identity and knows himself. The formation of a vocational self-concept does not only apply to students or vocational school graduates, but also to the general public who have long graduated from school or those who have not yet found a job. It raises an understanding of the state of oneself and self-experience associated with awareness of the world of work which will form the individual's vocational self-concept (Ingarianti & Purwaningrum, 2018). The research support for vocational self-concept is the effect of career exploration intervention (CEI) on career maturity and self-concept in high school students in Malaysia (Lau et al., 2021). In other studies, self-concept will increase when there is an increase in social skills training as an increase in adolescent self-concept in Kibera (Okore et al., 2021).

In the development of the Industrial Revolution 4.0 and society 5.0, the role of self-concept with a heutagogy approach in advanced adult education to build vocational self-concepts so that they can be independent in learning, prepare work skills and utilize technology as lifelong learning and make an individual a digital transformation society. The Industrial Revolution 4.0 provides creative and systematic space for production processes and super-fast, accurate, effective, and efficient services. Meanwhile, society 5.0 can be described as a community life that lives a healthy life free from pollution of the physical and social environment, advanced, prosperous, happy, safe, peaceful, harmonious, and social justice for all with the support of industrial 4.0 technology and adequate science (Sudira, 2019).

Meanwhile, implementing industry 4.0 in education requires high readiness (Jamaludin et al., 2020). Society 5.0 balances Industry 4.0, where responsible economic development and solving individual social problems and changes in the social environment (Potočan et al., 2021). Similarly, the support of other research on discoveries demands socio-economic fusion to prepare a system (knowledge-based economy) as the basis and construction of social bridges (Konno & Schillaci, 2021).

Meanwhile, society 5.0 in the era of society 5.0 must go through the level of merging between virtual and physical worlds to balance economic progress and solve social problems by providing goods and services (Deguchi et al., 2020). Likewise, the benefits of society 5.0 deepen individual relationships, and technology encourages improvement in the quality of life and as a guide for development at the community level in terms of quality of life and sustainability (Ferreira & Serpa, 2018). As for the State of Japan, society 5.0 will seek to create a sustainable society for human

security and well-being through a cyber-physical system or as a collaborative ecosystem activity (Shiroishi et al., 2018). It is the same in Indonesia that Society 5.0 plays a role in increasing the competence of human resources.

RESEARCH METHOD

The preparation of this article used a literature review approach and a collaborative virtual learning system. This article is a type of research that used a descriptive, collaborative, multidisciplinary quality approach, a mindset, and a foresight approach. The object of research was the author herself. The purpose of this research collection is to describe in quality to the author herself the concept of individual vocational self-concept with a heutagogy approach. This approach helps individuals to reskill or up-skilling their abilities. This article used a collection of literature reviews from ScienceDirect sites (https://www.sciencedirect.com/), emerald (https://www.emerald.com/insight/), and Google Scholar. The keywords used in this article are heutagogy, further adult education, vocational self-concept, Industrial Revolution 4.0, and Society 5.0.

RESULT AND DISCUSSION

Result

The results of the role of the heutagogy approach in further vocational adult education. One example is the determination with the heutagogy approach, i.e., the virtual collaborative learning model (virtual collaboration learning). The virtual collaboration learning model is a collaboration model to increase collaboration competence and improve social culture (Hasler, 2011). It describes collaborating in the interests of either project, solving problems, learning, or virtual job training.

The skills that support the virtual collaborative learning model include collaboration skills, digital learning skills (Bower, 2017), sustainable professional skills (Cervai et al., 2013), interdisciplinary collaboration skills (Matias & Aguilar-González, 2017), technological skills, problem-solving skills, verbal and virtual communication skills, personal and interpersonal skills (employability skills) (Mitchell & Watstein, 2007), organizational skills (leadership) (Shah, 2016). In this case, aspects of vocational learning in the form of collaborative learning support the heutagogy approach in the implementation.

Lisa Marie Blaschke from Oldenburg University and University of Maryland University College (UMUC) explains that the concepts in heutagogy are double-loop learning and self-reflection (Hase & Kenyon, 2000). Double-loop learning occurs when the individual/student "questions and tests personal values (student reflections on improving learning how to learn" (Hase & Kenyon, 2000). Eberle and Childress (2009) explain that double-loop learning is when students consider the problem, action, and the resulting outcome. The following is Figure 2 about the role of heutagogy in advanced adult education in rebuilding individual vocational self-concepts in the design of single-loop learning and double-loop learning.

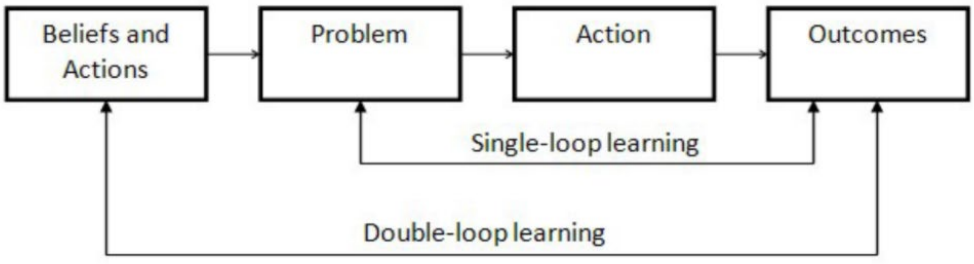

Figure 2. Double-Loop Learning Process

Based on Figure 2 about the double-loop learning process, the process greatly influences beliefs, actions, and problem-solving. One form of implementation is the role of heutagogy in adult vocational education. Therefore, it is necessary to design/principle of heutagogy for further adult education. Based on Figure 2, the key to heutagogy, namely double loop training, assumes that there is a role for heutagogy in adult vocational education to rebuild vocational self-concept in individuals in further adult education. Besides that, Figure 2 explains how the role of the heutagogy approach affects the individual's vocational self-concept, which explains physical and individual development, observations made by individuals on the field and work models, understanding of the work of adults, and general environmental influences and experiences in the workplace to get individuals through double-loop learning.

Implementation as a form of vocational self-concept through a heutagogy approach has a learning experience, one of which is the application of mobile heutagogy. The following is the design of the mobile heutagogy framework as a personalization dimension. Examples of serendipity results as heutagogy can be seen in Figure 4. The results of the role of heutagogy in further adult education as a rebuilding of the vocational self-concept are presented in Figure 5.

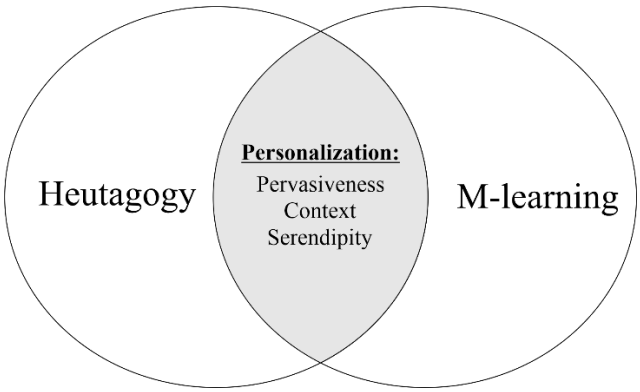

Figure 3. Mobile Heutagogy Framework Design as a Personalization Dimension

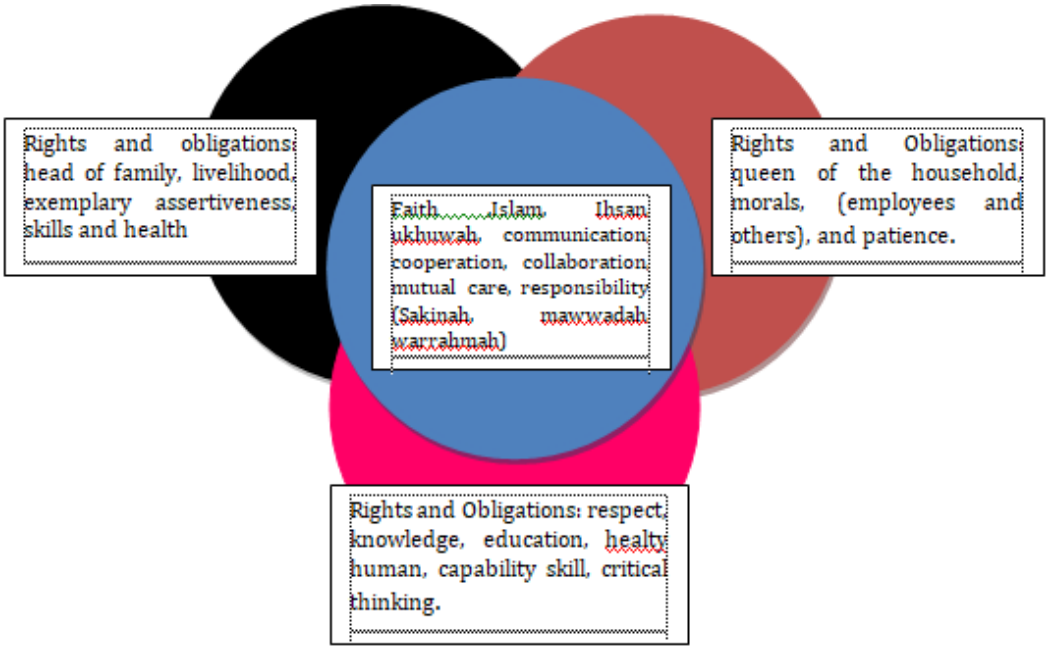

Figure 4. Family Life Shaping

Table 1. Results of the Literature Review of related research in the period 2015-2019

No.	Title	Journal	Author (Year)	Review
1	Transforming urban water governance through social (triple-loop) learning	Environmental Policy and Governance	Johannessen et al. (2019)	There is a need to design a more proactive governance structure for triple-loop learning that takes into account the barriers and supporting principles.
2	A systemic approach to processes of power in learning organizations: part1-literature, theory, and methodology of triple-loop learning	The Learning Organization	Flood and Romm (2018)	This power is in being responsible for making decisions and connecting the realities of existing life.
3	Using Triple loop learning to identify adaptive behavior of resilient supply Chain	Transpot Economic and Logistics	Świerczek (2018)	The triple loop provides the benefit of being able to present the basic components of an organization
4	Conceptualizing the lessons learned process in project management: towards a triple loop learning framework	International Journal of Project Manajement	McClory et al. (2017)	This research will enable future development of processes to leverage lessons learned around the world as well as project life cycles and organizations.
5	Managing Diversity Trough Triple Loop Learning: a Call for a paradigm shift	Human Resource Development	Kwon and Nicolaides (2017)	Triple loop benefits result in transformations in individual and organizational capacities for curiosity, compassion, and courage, which transcend the cognitive dimensions of double-loop learning.
6	Abstracting Technology-Enhanced Learning Design Principles	Design of Technology Enhanced Learning	Bower (2017)	Web 2.0-based learning produces different user procedures, including social networks, mobile learning, and the virtual world.
7	Measuring Supply Chain Knowledge Management performance based on double/ triple loop learning principle	International Journal of Productivity and Performance Management	Ramish and Aslam (2016)	Triple loop learning is concerned with the reflective and integrative aspects of learning and considering the goals of the organization concerning the vision and goals of the organization as a whole
8	The blind leading the blind Imprmptu leaderships are influenced by awareness in collaborative search	Aslib Journal of information management	Shah (2016)	Investigate aspects of collaboration by in a leadership style with organizational skills
9	Higher educational institutes as learning organizations for employer branding	Industrial and Commercial Training	Lenka and Chawla (2015)	Reflecting the conceptual framework of learning organizations, integrating variables at the individual, organizational, and team levels through communication skills and learning skills.

Table 2. Results of the Literature Review of related research in the period 2002-2014

No.	Title	Journal	Author (Year)	Review
1	Towards a theoretical mobile heutagogy framework	Proceedings of ASCILITE 2014 - Annual Conference of the Australian Society for Computers in Tertiary Education	Narayan and Herrington (2014)	Heutagogy is a new learning and teaching framework. This heutagogy advocates student learning and teaching strategies where learning is directed and determined by the learner. Besides that, students and learning make use of technology, time, and geographical continuum as well as possible, the dimensions of personalization include pervasiveness context, and serendipity.
2	Assessing the quality of the learning outcome in vocational education: The Expero model	Journal of Workplace Learning	Cervai et al. (2013)	Evaluating the quality of learning outcomes in vocational education and training using continuous professional skills.
3	Preparing students to collaborate in the virtual work world	Higher Education, Skill, and Work-based Learning	Long and Meglich (2013)	Builders of virtual collaboration skills to prepare students in a virtual work environment.
4	Heutagogy and lifelong learning: A review of Heutagogical practice and self-determined learning	International Review of Research in Open and Distance Learning	Blaschke and Hase (2015)	Heutagogy is a form of self-determined learning with principles rooted in andragogy. The heutagogy approach to the pursuit and learning of students is very autonomous and self-determined to produce students who are ready for the workplace.
5	Intercultural collaborative learning in virtual worlds	Cutting-Edge Technologies in Higher Education	Hasler (2011)	The importance of intercultural collaborative learning as a basis for exploring cross-cultural differences and learning work skills in the form of cross-cultural competencies.
6	Developing generic competencies in online virtual education programs at the University of Deusto	Campus-wide information systems	Gvaramadze (2011)	How to equip graduates with generic competencies that are appropriate for the world of work and citizenship through learning.
7	The places where students and scholars work, collaborate, share and plan	Reference services review	Mitchell and Watstein (2007)	Technological skills are problem-solving skills where there are verbal or virtual communication skills, personal and interpersonal skills as an important role in the learning environment and means of work.
8	Double Loop Learning: A concept and Process for Leadership Educator	Journal of Leadership Educator	Cartwright (2002)	Double-loop learning is an educational concept and process that involves teaching people to think more deeply about their assumptions and beliefs.

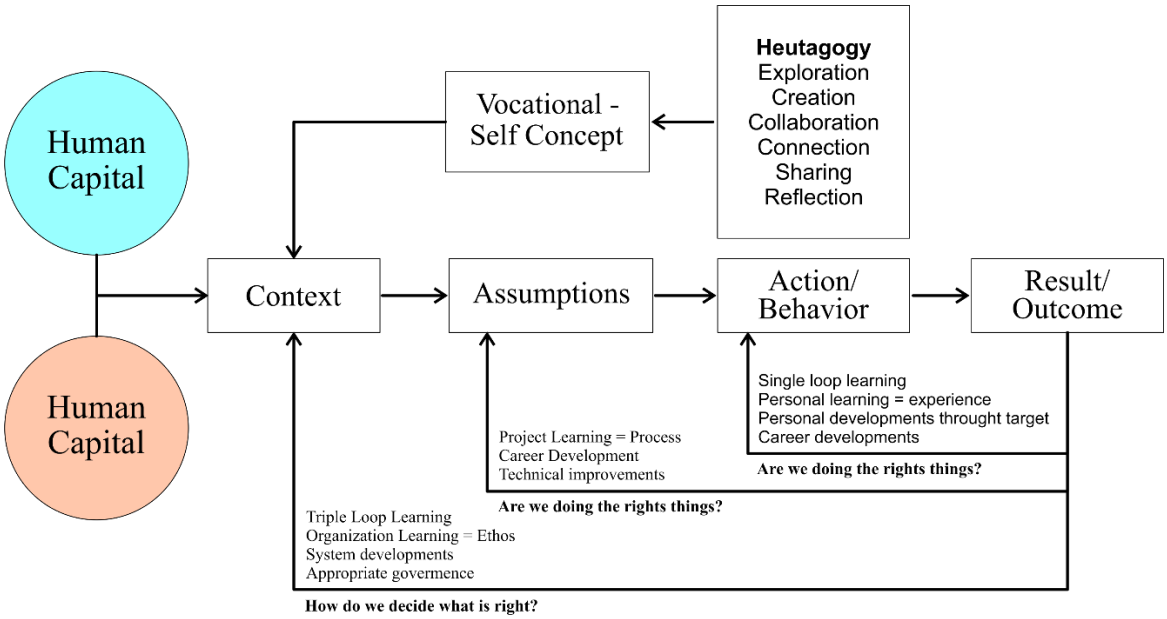

Figure 5. Single-Double and Triple-loop learning (Thorsten's Wiki) on Vocational Self-Concept in Advanced Adult Education

Discussion

The importance of self-concept in vocational learning with a heutagogy approach to produce superior human resources. In the heutagogy approach, self-concept is the determination of the direction of one's future. Anticipatory to meet self-needs and proactive to change (Sudira, 2017). Based on the principle of the heutagogy approach to self-concept produces findings, including the role of heutagogy in advanced adult education in rebuilding vocational self-concept in the design of Figure 2 with the support of research on vocational double-round learning (Hase & Kenyon, 2000). This quote results in the finding of a collaboration between the heutagogy approach to the vocational self-concept. Another finding is a serendipity of vocational self-concept in the heutagogy approach with the theme of family life-shaping.

The importance of serendipity as an unintentional discovery significantly impacts science learning, affecting the mindset and scientific reasoning (Amsad, 2019). The theory of self-concept, heutagogy, and dimensions of personalization support these findings. The vocational self-concept theory, according to Super and Forrest (1972), argues that self-concept is a self-image concerning the work to be carried out and the position he holds (vocational self-concept), which is part of the overall picture of oneself. Super and Forrest (1972) states that self-concept theory is an implication of an individual's self-concept on the career selection process or vocational self-concept. There is four formations of vocational self-concept, according to Super and Forrest (1972), including: (1) Physical and mental development; (2) Observations made on various fields and work models; (3) Understanding the work of adults; (4) Environmental influences in general.

Physical and Mental Development

The existence of physical and mental growth and development with the formation of attitudes and behavioral mechanisms then becomes important in self-concept. This is supported by research that self-concept is a person's description of himself, both physically and psychologically (social, emotional, moral, and cognitive) (Reski, 2018). Besides, physical and mental growth and development with a heutagogy approach can foster mental health and maturity.

Observations Made on Various Fields and Work Models

In this process, there is a prevocational or job introduction from an individual to his self-concept. This starts when the individual realizes that work is an aspect of human life.

Understanding the Work of Adults

In this phase, an individual begins to try a job as an experience. If the individual gets a positive experience from a job, the individual includes the choice of the job as an aspect of his self-concept for job decisions. This is the best opportunity to get job satisfaction. This is suitable in the establishment stage as a stage of individual development.

Environmental Influences in General

The existence of environmental influences causes the individual's self-concept to be able to play roles and fantasize about life. At the same time, the theory of heutagogy is that the teaching and learning of students are very autonomous and self-determined (Blaschke, 2012). Another theory about the personalization dimension in overlapping heutagogy and m-learning relates to learners with learning anywhere and equates technology, time, and geographic continuums (Narayan & Herrington, 2014).

Based on the theory and findings, there is a form of a concept of the important role of heutagogy in advanced adult education in rebuilding vocational self-concepts with superior human capital and social capital where having a vocational self-concept with a heutagogy approach can rebuild vocational self-concept through skills owned in the future.

In the era of industry 4.0 and society 5.0, the vocational self-concept can develop into the future with a heutagogy approach and future skills that apply in the 21st century, such as making mature decisions. This is supported by research on an individual having a positive self-concept, so he will think maturely in making decisions (Wutsqo et al., 2020). This is evidenced by using the triple-loop learning approach as organizational learning, one of which can make organizational decisions. Triple-loop learning is composed of single-loop learning and double-loop learning, but it starts from a context and then continues with assumptions, actions, and outcomes. There is a self-concept influencing factor during the process with a heutagogy approach.

The vocational self-concept also plays a role in world education, helping to give a picture of the future when an individual knows his/her self-concept. The vocational self-concept also plays a role in world education, helping to give a picture of the future when an individual knows his/her self-concept.

Education for Occupation

Education prepares an individual to be ready to enter the world of work (Billett, 2011). Education for work is closely related to vocational education and self-concept. This means that when someone knows about their self-concept through vocational education with a hautagogy approach, they can prepare for future occupation skills.

Education for career development

Career development is closely related to individual development and education for work, meaning that career development in education affects one's work performance in the nearest or future (Pangestuti, 2019).

Education for professional development

Education for professional development plays a role in improving the quality of adult education and is very important in improving the quality of educational services, encouraging innovation, and facilitating change. Professional development should promote active learning and promote meaningful change to data-driven job vacancies and assess changes in participants' knowledge, skills, and practices.

CONCLUSION

Single–double and triple-loop learning (Thorsten's Wiki) on vocational self-concept in further adult education is learning with a heutagogy approach starting from what we do right, whether we do something right and how we decide what is right. The starting point of the heutagogy approach

is the student, where students carry out self-determined learning. The approach used in this learning uses virtual collaboration learning in the world of advanced adult education and training. Meanwhile, based on the purpose of the role of the heutagogy approach in nation-building in the industrial revolution 4.0 and society 5.0. The main capital of human capital and social capital is through a context that is collaborated by elements of design heutagogy and then assumed through belief and action, action, and getting the outcome of the vocational self-concept. This is processed with a foresight approach to producing a correct decision. The purpose of the single-double and triple-loop learning process is to make the right decision. Personalization which consists of pervasiveness, context, and serendipity as a slice of the heutagogy and m-learning approach in industry 4.0 and society 5.0 with a virtual collaboration approach and cross-culture competence, can bring benefits between preparing future work skills through education and training, human resources competent, advanced adult education and development of a nation both in terms of economy, culture, and social.

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