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HEUTAGOGY APPROACH IN 21ST CENTURY TEACHING AND LEARNING: PRACTICES AND CHALLENGES IN MALAYSIAN HIGHER EDUCATION

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Abstract

Heutagogy was first introduced by Steward Hase and Chris Kenyon in year 2000. It is a novel teaching and learning approach being implemented at Malaysian higher education institutions (HEIs), as a transformation initiative to improve the quality of education and to produce graduates who could meet the demands of the 21st century workforce. However, the extend of heutagogy principles being adopted and the challenges faced whilst implementing this new approach remains unclear. This study aims to fill in the knowledge gaps by conducting critical systematic reviews on the practices and challenges of heutagogy approach in teaching and learning at Malaysian HEIs. Research articles and policy papers on the practices of heutagogy approach in Malaysian higher education context were accessed through open-source and subscription databases. The results of systematic reviews found that four principles of heutagogy approach namely learner-centred, double loop learning, non-linear learning approach and a focus on skills development were being practiced at the local institutions. Nevertheless, the study also discovered several challenges, including lecturer, student, and environmental factors, that hinder the implementation of this new teaching and learning approach. The implications of the research findings were discussed in this paper.

Keywords: **21st Century Skills; Heutagogy, Higher education; Self-determined Learning**

1.0 INRODUCATION

Higher education has come a long way after undergoing continuous metamorphosis from pedagogy to andragogy and at the turn of the century, to heutagogy, which is known as the Pedagogy-Andragogy and-Heutagogy Continuum (PAH). Heutagogy or self-determined learning is a term first coined by Steward Hase and Chris Kenyon in 2000 (Hase & Kenyon, 2000). The

move towards heutagogy approach in teaching and learning is crucial in producing self-determined workforce that can meet the demand of a rapidly and perpetually changing labour market of the fourth industrial revolution (IR 4.0). Figure 1 shows the key principles of heutagogy approach, which are crucial in developing 21st century learners. This approach is based on four main principles namely (a) learner-centred, (b) double-loop learning, (c) non-linear learning and (d) capability & capacity development.

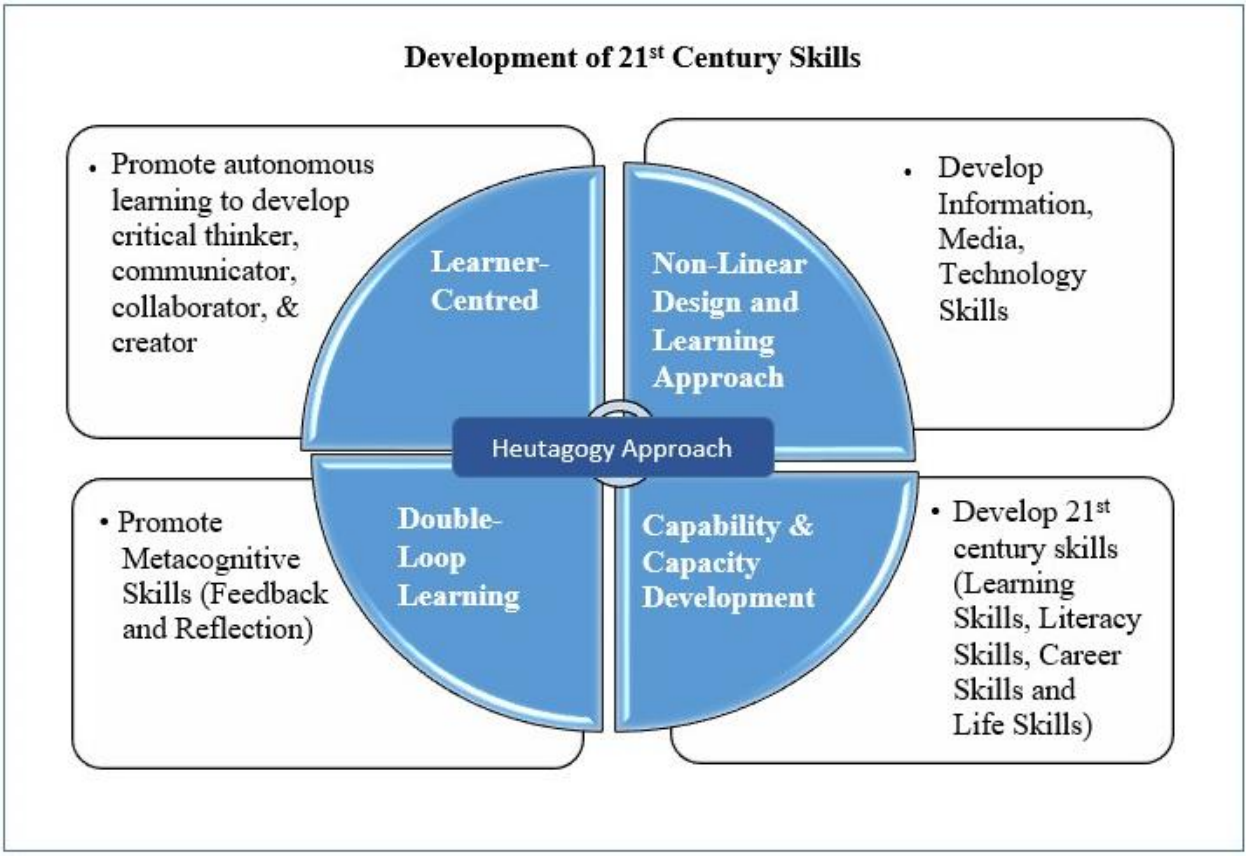

Figure 1: Principles of heutagogy approach in development of 21st century learners (Adapted from Blaschke, 2020; Agonács & Matos, 2019)

The emphasis on heutagogy approach is supported by a number of national policies such as the Malaysian Education Blueprint-Higher Education (2015-2025), the 11th Malaysian Plan (2016-2020), and the National Higher Education Strategic Plan (PSPTN)(2007-2020). Blaschke (2012) emphasized that heutagogy is the most appropriate approach for teaching and learning in higher education, especially at the postgraduate level. Under the 10th Malaysia Plan, the country aspires to produce 60,000 PhD holders by 2023 and the enrolment of Master and PhD students has since increased by ten folds (Ministry of Education, 2015). However, one in five students in master and PhD programs failed to graduate on time or have dropped out from their studies (Ministry of Higher

Education, 2016). A lack of self-determined learning skills, especially among university students (Filho & De Castro, 2017) could be the reason behind the high attrition rate and their failure to graduate on time.

As shown in Figure 1, heutagogy approach encourages learners to take central role of their own learning so as to develop the critical skills needed to learn and work efficiently in 21st century. This highly autonomous approach could produce self-determined learners and critical thinkers who are also excellent communicators, collaborators, and creator, as envisaged by the national higher education policy. The second principle of heutagogy approach is double-loop learning, which stresses the importance of developing students' metacognitive abilities, which include self-reflection, self-observation and self-evaluation skills (Blaschke, 2012). In single loop learning, the learners would focus on correcting errors, while in double-loop learning not only that the learners would detect and correct their errors, but also assess and alter their assumptions and learning objectives. For instance, they may ask questions like "*what is going on here*?", "*what are the courses for the mistake*?" and "*what should I learn in order to master this topic*?" By doing so, learners will gain deeper understanding of the learning topic and avoid making the same mistakes in future. It is, thus, important for lecturers to provide timely and effective feedback to help students engage in self-reflection.

Apart from that, heutagogy approach also emphasizes non-linear learning approach. The learning path is determined by the learner, not directed in a linear manner from the beginning to the end of the lessons by the lecturers. Non-linear learning often happens in online and blended learning environments, whereby learners use of online platforms and apps to personalize, drive and direct own learning, achieve meaningful goals, and engage in social learning through discussions with others. Learners are expected to demonstrate high extent of technologies use to construct new knowledge and to forge collaborations with others via blended, online and virtual learning. Finally, the fourth principle of heutagogy focuses on developing learners' capability and capacity such as 21st century skills (e.g., creativity, communications skills, collaborative skills, problem solving skills) (Ministry of Education, 2015). This is in tandem with the emphasis of outcome-based learning (OBE) in higher education, which is the main thrust that guides instructional practices at universities and colleges in Malaysia (Norhayati Mohd Zain et al., 2016). The development of students' capacity in terms of knowledge, competency and characters of the 21st century is crucial to prepare them for the challenges and uncertainty in the future.

1.1 Theoretical Framework

Heutagogy approach is grounded in the philosophical notion of self-determinism and rooted in the Agency Theory, Humanistic Theory and Constructivism (Blaschke & Hase, 2015) (Figure 2). Decades of research have shown that people are primarily motivated to foster self-determination and volitional behaviours.

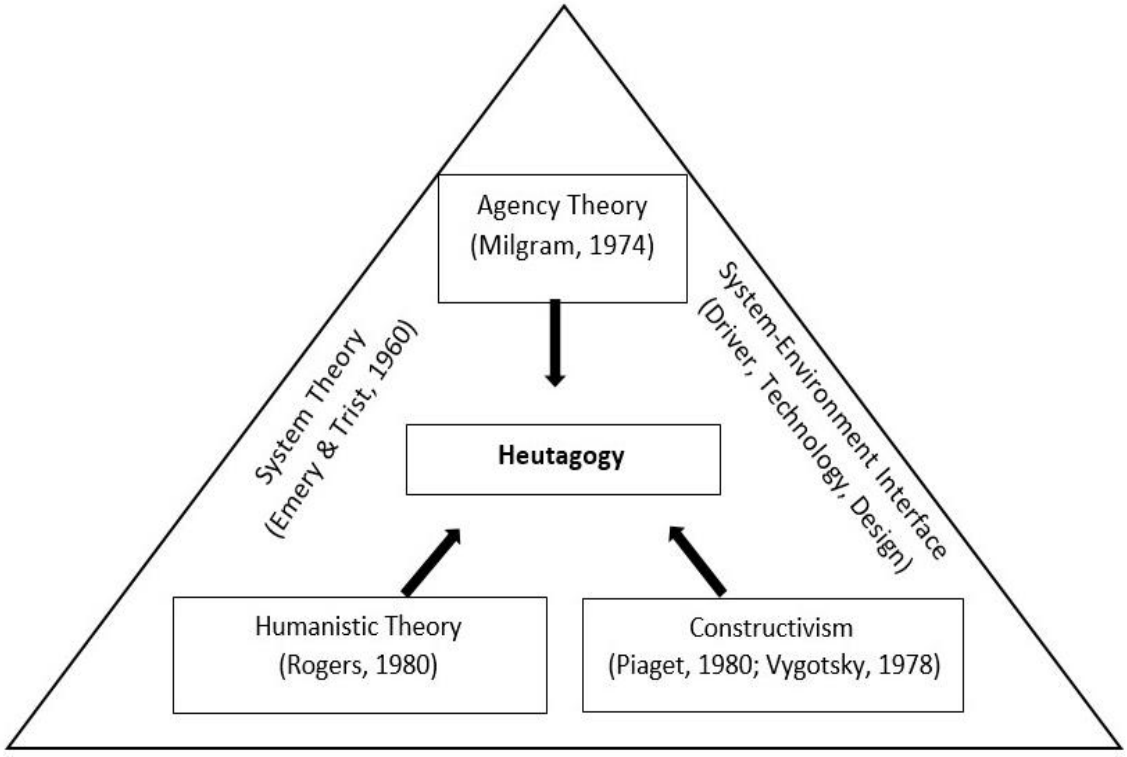

Figure 2: Theoretical framework underpinning heutagogy approach

According to the Agency Theory (Milgram, 1974), humans perceive themselves as origins of their own behaviour and are motivated to act upon opportunities that allow them to be the initiator of their own behaviour, particularly during the learning processes. This is in line with Humanism (Rogers, 1980) and Constructivism (Piaget, 1980; Vygotsky, 1978) that learners should be placed at the central of the learning processes. They should be encouraged to reflect upon their own learning and take the necessary actions to improve their performance. To do so, learner-centered approach must be practiced so that learners can engage in self-determined learning. In fact, effective and timely feedbacks by the lecturers would promote students' self-reflections and enhance their double-loop learning, an important feature in heutagogy approach. Heutagogy approach is also supported by the System Theory (Emery & Trist, 1960), which

proposes that learners need to drive their own learning actively by interacting with the learning environment and with other learners. The support of educational technology and the implementation of huetagogical design elements (exploration, creation, reflection, connection, assessment, and sharing) (Blaschke & Hase, 2016) during teaching and learning processes are the key enablers of self-determined learning. According to this theory, the application of information and Communications Technology (ICT) at HEIs, should be enhanced to promote active, non-linear and collaborative learning.

1.2 Implementation of Heutagogy Approach in Malaysian Higher Education

The implementation of heutagogy approach in teaching and learning at Malaysian higher education is crucial in order to produce talents that are self-determined and prepared for the challenges of the 4th industrial revolution (IR). Heutagogy is fundamentally a learner-centered approach that requires a paradigm shift in teaching and learning in higher education. At the international level, a lot of discussions on heutagogy approach are still at the philosophical and epistemology levels (e.g., Halupa, 2015). Even though the approach is recognised as a way forward at numerous higher education discourse and higher education policy forums, including the local context, many lecturers in higher education are still reluctant to adopt the heutagogy approach as they are more accustomed towards the traditional lecturer-centred approach (Embi, 2018). This could be due to the limited understandings of lecturers and university administrators and even students on the benefits of heutagogy approach. The scarcity of literature reviews on the practice of heutagogy approach in teaching and learning at local HEIs, draws uncertainty about its state of implementation. It is unclear to what extent the principles of heutagogy approach are being adopted in teaching and learning in the local higher education context and what are the challenges in implementing this new approach. To fill up the literature and knowledge gaps on these issues, two research questions were formulated:

1.3 Research Questions

1. To what extent the principles of heutagogy approach are being adopted in teaching and learning at Malaysian HEIs?
2. What are the challenges faced in implementation of heutagogy approach in teaching and learning at Malaysian HEIs?

2.0 METHODOLOGY

This study employed critical systematic reviews method to achieve the two research objectives. Critical systematic review is a methodological procedure functions to evaluate the evidence of many individual studies and literatures and come out with a summary of their results (Cook, Mulrow, & Haynes, 1997). Research articles on the practices of heutagogy approach in Malaysian HEIs were accessed through open-source database. Google Scholar was selected as the main database for the selection of relevant studies (Table 1). The studies reviewed included quantitative, qualitative, and mixed method research published within 2012 to 2019. Firstly, the key terms “heutagogy approach in higher education institutes” AND “Malaysia” were inserted in the search engine. The search yielded 286 results with 27 pages (10 studies per page). Secondly, all the available titles and abstracts were skimmed by the researchers. Exclusion was then made on duplicate and foreign studies that failed to meet the selection criteria. A total of 17 empirical studies met the criteria and were selected for the detailed analysis. Table 1 summarizes the characteristics of the literatures for the analysis and review purposes.

Table 1: Criteria of Selection

Criteria of selection	Criteria
Scope of studies	• 21st century learning
Type of reference	• Journal articles, book chapters,
	• policy paper,
	• higher education blueprint
Context of study	• Malaysia
Period of publication	• 2012-2021
Assess	• Online
Research Method	• Quantitative
	• Qualitative
	• Mixed method

3.0 RESULTS AND DISCUSSIONS

3.1 Implementation of Heutagogy Principles in Malaysian Higher Education

Critical systematic reviews were carried out to identify the principles of heutagogy approach being implemented in teaching and learning at Malaysian HEIs. The findings aim to answer the first research question of the study. The results showed that 26 empirical studies have reported the implementation of heutagogy approach in teaching and learning in the local context. However, only 12 studies have reported the application of all four principles (e.g., Haniffa et al., 2019; Suhana et al., 2019; Shahrin et al., 2019; Norini et al., 2018; Abraham & Komatti, 2017; Echempati, 2017; Prashanti et al., 2017; Chiew & Anothon, 2017) namely learner-centred learning, double-

loop learning, non-linear learning as well as capacity development. Among these principles, learner-centered and capability development were the two most widely practiced heutagogical principles (Table 2). Learned-centred approach has been reported in all the studies reviewed. This suggests that teaching and learning in local higher education institutions has moved from the traditional didactic teacher-centered approach to learner-centered approach.

Table 2： Practices of Heutagogy Principles in Teaching and Learning in Malaysian HEIs

Author (Year)	HEIs	Heutagogy Principles				Practices	
		LC	DL	NL	CD	Types	Practices and Effects
Rathakrishnan & Raman (2021)	University Utara Malaysia (UUM)	√	√	√	√	Online learning	Trello online learning applied heutagogy approach to enhance students' critical thinking and self-determined learning.
Yusof et al. (2021)	Universiti Teknologi MARA (UiTM)	Unspecified				Learning module	The study developed i–Aqrān Module based on principles of heutagogy in Arabic language course.
Hamdan et al. (2021)	Unspecified	√	-	√	-	Mobile heutagogy conceptual framework	The study proposed a M-Heutagogy conceptual framework to discuss factors affecting M-Heutagogy acceptance in higher education.
Mohaffyza et al. (2020)	Malaysian technical university	√	√	√	√	Heutagogical activities	The study identified the dominant heutagogical activities practiced among students.
Yunos et al. (2020)	Malaysian technical university	√	√	√	√	Heutogagical design elements	By measuring engineering lecturers' preferences of heutagogy, the findings could enhance heutagogical teaching and learning process.
Alias et al. (2019)	All HEIs	√	-	√	√	Heutagogy framework	Model of Technology-Supported Learning for Special Educational Needs Learners (MoTSEL) created heutagogic-inclusive environment which developed self-determined learning among students with

							disabilities in Malaysian higher education.
Kamrozzaman et al. (2019)	Universiti Kebangsaan Malaysia (UKM)	√	√	√	√	M-learning	M-learning via heutagogy approach particularly enhanced students' technology acceptance and ability to share and connect.
Hakim et al. (2019)		-	√	√	-	Heutagogy and digital information literacy	The study suggested the incorporation of heutagogical approach and digital information literacy to develop reflective thinking and non-linear learning.
Nurul Aisyah et al. (2019)	Universiti Kebangsaan Malaysia (UKM)	√	-	√	√	Mobile Learning	Applied in academic writing course. Provided learners with greater autonomy, interactivity and connectivity in an academic writing course.
Hawa et al. (2019)	Multimedia University (MMU)	√	-	√	-	Blended learning Non-linear learning	Blended learning enabled students to learn with lecturers via the use of various technologies (e.g., e-learning).
Low et al. (2019)	Unspecified private college	√	-	√	√	Non-linear learning	Interactive PowerPoint Presentation (iPP) were applied to enhance self-determined learning.
Mohammad et al. (2019)	Universiti Teknologi Malaysia (UTM) and Universiti Malaysia Sarawak (UNIMAS)	√	-	√	√	Heutagogy framework	The study proposed a heutagogy framework for structural steel design in civil engineering curriculum to conduct heutagogical approach in the course.
Haniffa et al. (2019)	Taylor's University	√	√	√	√	Online Self-directed learning	Online self-directed learning has improved students' deep learning and 21st century skills.

Suhana et al. (2019)	Institute of Teacher Education	√	√	√	√	Autonomous learning	The Pedagogy-Andragogy-Heutagogy Continuum Framework has promoted greater learners' autonomy, reflective learning, and 21st century skills.
Shahrin et al. (2019)	Universiti Teknologi Malaysia (UTM) & Universiti Malaysia Sarawak (UNIMAS)	√	√	√	√	Self-determined learning	Heutagogy framework and curriculum have provided a useful guideline for the implementation of heutagogy approach.
Wong et al. (2019)	Teacher institutions (IPG) and universities	√	-	√	√	Mobile Heutagogy & mobile technology educational tools	Self-determined learning and student-centred approaches with integration of mobile-related educational tools has enhanced learning in 21st teaching and learning.
Muhamad & Wan (2019)	Universiti Sains Malaysia (USM)	√	-	√	√	Self-determined learning	Self-determined learning took placed through self-exploration in artificial intelligence.
Razanawati et al. (2019)	University Technology of MARA (UiTM)	√	-	√	√	Online Self-directed learning	Students engaged in online learning have improved on student-centred learning and capability.
Noraini et al. (2018)	Sultan Idris Education University (UPSI)	√	√	√	√	Autonomous learning	Web 2.0 technologies have improved learners' autonomous learning and communication skills.
Chan et al. (2018)	Schools in Perak	√	-	√	√	Autonomous learning	Students' learning has improved through heutagogy approach
Wan et al. (2018)	Universiti Tun Hussein Onn Malaysia	√	√	-	√	Sustainable teaching & learning	Heutagogy approach can be integrated in ESD pedagogy for sustainable education.

Abraham & Komattil (2017)	Melaka-Manipal Medical College	√	√	√	√	Problem-based Learning	Learners' autonomy and supportive experiences improved with positive outcomes on increased cognitive engagement and progression in competencies and capabilities
Eachempati (2017)	Melaka-Manipal Medical College	√	√	√	√	Social Media - Facebook Discussion	Effective discussion and instant feedback helped to enhance individualised learning, learners' self-confidence, autonomy and flexibility in the learning process.
Prashanti et al. (2017)	Melaka-Manipal Medical College	√	√	√	√	Social Media - Facebook Discussion	Heutagogy approach in teaching and learning can be implemented using Facebook as a platform of discussion.
Chiew & Anthony (2017)	Unspecified	√	√	√	√	Autonomous learning	Learner's autonomy in teaching practices was promoted through freedom of choice, group work, discussion, reflection, selection of tasks, and activation of prior knowledge.
Mohd et al. (2014)	University Technology Malaysia (UTM)	√	-	√	√	Non-linear learning Blended learning	Non-linear learning (e-learning) and face-to-face activities could be applied to promote students' collaboration.

Note: Learner Centred (LC); Double-loop Learning (DL); Non-Linear Learning (NL); Capacity Development (CP)

The promotion of learner-centered practices in Malaysian HEIs was driven and mandated by various national policies, such as the National Higher Education Strategic Plan Beyond 2020 and the National Graduate Employability Blueprint (2012-2017). On top of that, the Malaysian Qualification Agency (MQA), headed by the Ministry of Education Malaysia, also emphasised, and monitored the implementation of student-centered learning practices in Malaysian HEIs (Vighnarajah, 2014). With clear policy guidance, the implementation of learner-centered learning, the first heutagogical principles, was found to be positive. Capacity development, on the other hand, focuses on the development of critical 21st century skills such as lifelong learning skills,

communication skills, critical thinking skills and problem-solving skills as highlighted in the Outcome-Based Education (OBE) framework implemented by Malaysian higher education (Biggs & Tang, 2011). Mastery of these generic skills are crucial for student development in higher education, which is in line with Outcome-based Teaching and Learning (OBTL) implemented by Malaysian HEIs (Mamat, Rasul & Mustapha, 2014). In fact, 22 out of the 26 studies reviewed have reported an emphasis on skills development in teaching and learning. Razanawati, Rosliana, Marzlin, Roziya, and Azlan (2019)'s study, for instance, has reported successful outcomes in improving students' language and soft skills via online learning and student-centred learning activities. In fact, heutagogy approach was found to be effective in promoting learner autonomy through distance learning and the result was promising as students have demonstrated high degree of self-directed and self-determined learning that are crucial for lifelong learning (Ng & Confessore, 2011). These findings indicate that heutagogical principle has been applied in Malaysian HEis to promote the development of 21st century skills. It is congruent with the programme learning outcomes (PLO) outlined by the Malaysian Qualification Framework (MQF) to produce graduates with high 21st century competencies and capability (Malaysian, Qualification Framework, 2007).

In terms of non-linear learning, the systematic reviews showed that most studies have adopted this approach (Table 2) (e.g., Alias et al., 2019; Hamdan et al., 2021; Kamrozzaman et al., 2019; Rathakrish & Raman, 2021). The utilization of ICT tools and platforms (e.g., Massive Open Online Courses-MOOC, Web 2.0, Facebook, Interactive Power Point Presentation) could enhance non-linear learning, as proposed by the Agency Theory (Milgram, 1974). Online learning discussions and small-group collaborations were carried out in non-linear manner, which allowed students to convey and share thier ideas and materials freely. According to the System Theory (Emery & Trist, 1960), learners play a key role in driving their own learning with the support of ICT. In fact, the key principles of heutagogy (e.g., learner-centred, double-loop learning and non-linear approach) can be integrated in online discussions and interactive problem-solving activities. Facebook, for instance, may serve as a platform to facilitate knowledge construction between lecturers and students without being time and space constraints (Piaget, 1980; Vygotsky, 1978). In addition, social media and the Learning Management System (LMS) have been utilized by lecturers to promote connectivity and active learning. The practice of non-linear learning in local institutions was supported by the studies reviewed.

Another deduction drawn from the systematic reviews concerns the double-loop learning principle of heutagogy approach. This study found that only nine out of the 20 studies reviewed

have reported that lecturers provide systematic feedbacks and emphasize students' reflection in teaching and learning. This finding suggests that the practice of double-loop learning is still limited in higher education. In fact, the results of the analysis showed that only few studies have focused on feedback provision and students' reflection. In other words, the development of students' metacognitive skills was not reported in any of the past studies reviewed. However, there were also possibilities that feedbacks provided by the lecturers and tutors took place at a more personal level (e.g., during individual face-to-face consultation, tutorials, quiz time and other ongoing discussions) which were beyond the scope of the studies reviewed.

In short, there was literature support that heutagogy approach has been practiced in Malaysian HEIs, with more emphasis on learner-centered, skills development and non-linear learning while the least adopted principle was double-loop learning. Nevertheless, only a handful of studies have reported the implementation of all four heutagogical principles. This suggests that many lecturers may not be familiar with this new approach or may not be competent enough to implement all the four heutagogy principles in teaching and learning.

3.2 Challenges in Implementing Heutagogy Approach in Malaysian HEIs

In view that heutagogy is still a new approach in teaching and learning at Malaysian HEIs, it is crucial to unveil the challenges faced in its implementation. Figure 3 shows the results of the critical systematic reviews. Several challenges, including lecturer, student, and environmental factors, were found to hinder its implementation in teaching and learning. Some lecturers felt challenged to adopt heutagogy approach as they were reluctant to use innovative ICT tools in teaching and learning (e.g., Mobile-heutagogy), particularly in science-related fields (Wong, Mazura, Norazilawati, & Analisa, 2020). For instance, lectures' perception towards Mobile-Heutagogy was negative and felt that they lack the skills to apply it. Such perceptions could limit the optimization of technology in teaching and learning processes.

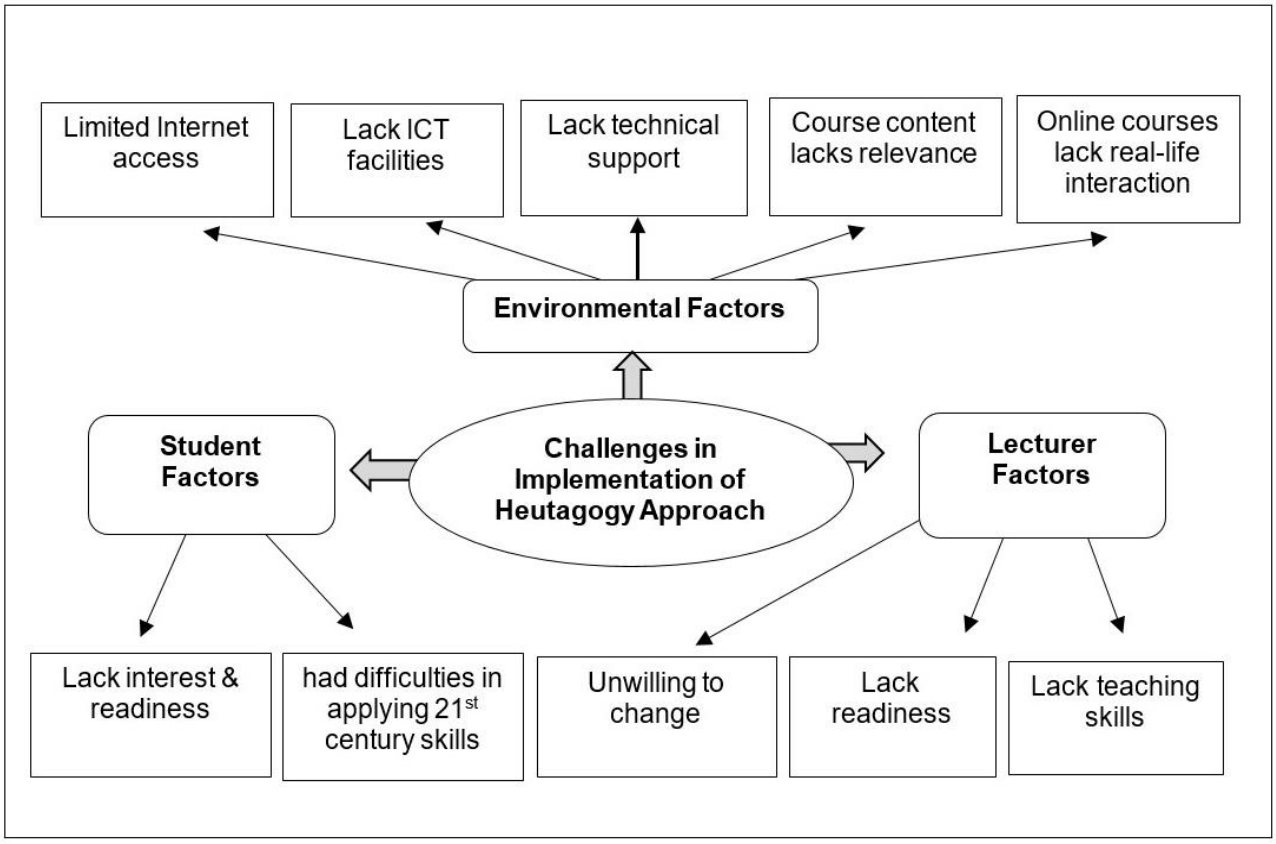

Figure 3: Challenges hindering the implementation of heutagogy approach in Malaysian HEIs

Similar challenge was mentioned in a qualitative study by Annamalai (2019), which unveiled that lectures in Malaysian HEIs have doubts about the use of digital platform in their courses. For example, lecturers were concerned about the integration of MOOCs to achieve the intended learning outcomes such as higher order thinking skills. In fact, most lecturers were not comfortable with MOOC classes as their readiness for this teaching and learning approach was low (Chiew & Anthony, 2017; Wong et al, 2020). The critical reviews also unveiled that lecturers were unwilling to change their teaching method, which is a major stumbling block to promote the implementation of heutagogy approach in Malaysian HEIs.

Apart from lecturer factor, Chiew and Anthony (2017) reported that student factor is another challenge that hinders the implementation of heutagogy approach. Students tend to have passive learning attitudes and lack readiness to be self-determined learners. They are more comfortable with the teacher-centered approach. Other than that, students also had difficulties in capacity development as they could not apply 21st century skills (e.g., critical thinking skills,

communication skills, collaborative skills and innovative thinking) effectively. In terms of environmental factor, the reviews discovered that technological issues such as limited Internet access, the lack of ICT facilities and technical support limit the promotion of non-linear learning, one of the main principles of heutagogy approach (Ruslin, Hamidun, & Mohd, 2018). In addition, students also highlighted the lack of real-life interactions in online courses (e.g., online courses, MOOCs, distance learning courses). This shows that they do not realize how technology and social media could be used as an effective medium to learn, connect and share knowledge with the relevant society and industry. For students to make a paradigm shift, they must understand how heutagogy approach can help them to learn effectively, develop their capacity development, and prepare them for the challenges in the fourth Industrial Revolution (IR 4.0). Workshops, seminars, and conferences can be carried out by HEIs to enhance students' awareness and understanding about heutagogy approach.

4.0 CONCLUSION

In conclusion, this study found that heutagogy approach has been practiced in teaching and learning at Malaysian HEIs. The results showed that its implementation is still at an emerging stage. Learner-centered and skills development were the two most practiced principles, followed by non-linear learning. Double-loop learning was the least practiced principle of heutagogy approach. The study uncovered three major challenges namely lecturers, students, and environmental factors that hinder the implementation of heutagogy approach. To address issues faced by the lecturers, continuous professional development (CPD) courses should be provided to equip lecturers with the necessary attitudes, knowledge, and practical skills to implement heutagogy approach. Lectures need to understand how the heutagogic elements (explore, create, collaborate, share, connect, and reflect) could be applied to promote constructivism and active learning among students (Blackshke & Hase, 2015). More importantly, the training programs should focus on providing practical skills and hands-on experiences to lecturers, Lecturers must know how to design heutagogy learning activities and assessment for their own courses. In terms of learning content, the curriculum should be reviewed and updated regularly to ensure that it is relevant to 21st century and IR 4.0 (Yusof, Khoo, Norwani, & Jaafar, 2018).

To overcome the challenges faced by the students, relevant trainings should be offered to enhance their readiness for learner-centered learning, double loop learning, non-linear learning and capacity development (Hase & Kenyon, 2013). As for the environmental barriers such as limited Internet access, ICT facilities and technical support, HEIs play important role in upgrading

and strengthening technical supports at the institutional level. This is to ensure that lecturers and students have access to the various ICT tools and applications (e.g., MOOC, Web 2.0, Facebook, and Interactive Power Point Presentation). In addition, funding support from the government is needed to upgrade the technological tools, computer rooms and Internet facility to facilitate active and non-linear teaching and learning. In addition, strong policy support from the Ministry of Higher Education and MQF is needed to promote the implementation of heutagogy approach in local HEIs.

In conclusion, heutagogy approach is still an emerging concept in Malaysian higher education context, more research should be carried out, particularly to identify good practices that could promote its implementation. As the findings suggest, a lot of work and efforts are still needed to narrow the gaps between policy and implementation. Successful implementation of this new approach will not only improve the quality of teaching and learning but also pave way for Malaysian HEIs to produce graduates that could meet the demands of the 21st century workforce. To date, there are still limited studies, particularly in the local context that examine the effects of heutagogy approach on students' learning and performance. This literature gap can be filled by investigating the impact of heutagogy approach according to levels of studies (e.g., undergraduate vs postgraduate), disciplines (e.g., science vs non-science), and learning environment (e.g., online vs blended) in the future.

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