Practices Of Heutagogical Activities Among Malaysia Technical University Students

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Abstract: Heutagogical activities aim to produce learner with qualities such as independence, creative, curiosity, resourceful and able to evaluate. It is the needs of learner that will be met along with the lesson. Since this approach provides full autonomy to students in their learning process, the students' readiness needs to be assessed. Thus, this paper aims to identify the dominant heutagogical domains practiced among technical university students. A survey method was used. Data were obtained from 308 randomly selected respondents through a set of questionnaire. the questionnaire was developed beforehand in the previous stage in the research. The data from the survey were analyzed using descriptive statistics. The findings show that the dominant heutagogy domain practiced by the technical university students is Create and the least practiced is the domain of Reflect. This study has an implication on increasing the readiness and application of heutagogy activities among the technical university students.

Index Terms: Heutagogy activities, Self-Directed Learning, Descriptive analysis, Technical university student.

1 INTRODUCTION

Heutagogy as defined by [1] is the study of self-determined learning and applies a holistic approach to developing learner capabilities with the learner serving as the major agent in their own learning, which occurs as a result of personal experience. Its aim to produce learner with the qualities such as independence, creative, curiosity, resourceful and able to evaluate. It is the needs of learner that will be met along the lesson. At the end, learner will becomes increasingly self-directed as they matured. There are six elements in designing heutagogical learning environment based on the negotiated learner contract. The elements are explore, create, collaborate, connect, share and reflect [2]. In the era of 21st Century, the nature of learners change accordingly to the development of the technologies. Gone are the day where learners were spoon-feed by the lecturers in classroom. With all the technologies, the access to the knowledge and information has become easier and better. Coin as heutagogic learners, [2] stated learners need to be highly skilled learners as well as good researchers with appropriate digital literacies. On the other hand, [3] also had listed digital natives as one of the criteria of 21st Century learners. With all these requirements, the approach of teaching and learning in classroom has changed as well. Historically, heutagogy approach was an extended version of andragogy approach.

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The transition of the self-directed learning towards the self-determined learning was due to the changes and development of the technologies itself [4]. With the influence of technologies such as Web 2.0 and media, heutagogy approach is deem to be able to fulfil the criteria of future learners as mention above. With the development of technology, students have become more independent and are encourage learning by themselves without the monitoring of the teachers. The main factors in self-directed learning are the technology itself especially the internet or the Web. Learner also has to direct their own learning which will give them a new learning experience. Direct their own learning include deciding own time, places and subject they want to learn. This will lead to the autonomy for the learners to design their own learning environment. The autonomous learner will have more power in deciding their learning environment The application of heutagogy approach among the learners need to be assess. Since this approach gives full control of the learning process to the student, it is important for them to be prepared and aware of the approach. This will require a shift in their attitude as well as the course design process for the development of learner autonomy skills [4]. Thus, this study aim to identified the dominant heutagogical approach practiced among the technical university students.

2 METHODOLOGY

Data in this paper is drawn from a larger descriptive study involving 308 Malaysia technical university students, which were randomly selected as respondents. A set of questionnaire was used to collect the data. This questionnaire was developed beforehand in the previous phase of the overall research. The questionnaire are divided into two parts, Part A and Part B. Part A consist of demographic of the respondents related to gender, faculty, and year of study. Part B consist of item related to the practice of the heutagogical domain in the student's learning activities. The domains are explore, create, collaborate, connect, share and reflect [2]. The questionnaire was tested beforehand for reliability. Its indicate a high reliability coefficient, $\alpha = 0.977$. Data were analysed using descriptive analysis involving frequencies and percentage for demographic data, and mean scores and standard deviation based on five categories of Likert Scale: Never, Rare, Sometimes, often and Always for the practice of heutagogical domains. All data were analysed using SPSS software.

3 FINDING AND DISCUSSSION

The demographic data of the responded are presented in Table 1 involving gender, faculty and year of study. There were 308 students participating in this study. Out of it, 67.2% of the respondents are of male students and 32.8% are female students. There were seven faculties involved and most of the respondents comes from the Faculty of Computer Science and Information Technology (f=92, 29.9%). Furthermore, majority of the respondents are the first year students (f=224, 72.7%). Table 1 shows the descriptive analysis of the demographic data

TABLE 1
DEMOGRAPHIC DATA OF THE RESPONDENTS

Item	f	Percentages (%)
Gender		
Male	207	67.2
Female	101	32.8
Faculty		
Faculty of Civil and Environmental Engineering	46	14.9
Faculty of Electrical and Electronic Engineering	63	20.5
Faculty of Mechanical and Manufacturing Engineering	41	13.3
Faculty of Technology Management and Business	50	16.2
Faculty of Computer Science and Information Technology	92	29.9
Faculty of Applied Sciences and Technology	5	1.6
Faculty of Engineering Technology	11	3.6
Year of study		
Year 1	224	72.7
Year 2	37	12.0
Year 3	26	8.4
Year 4	18	5.8
Year 5	3	1.0

3.1 Practice of Heutagogical Activities for Domain of Exploration.

The domain of exploration encourage students to develop and test the hypotheses and ask question freely. This will induce the self-directed learning and help them to seek out new opportunity and resources in their learning [2]. On the exploration domain, the most practiced activities done by technical university students is asking question throughout the learning process (M= 3.40; SD=0.831) and planning learning strategies to understand a topic (M=3.40; SD =0.861). This indicates that Malaysia technical university students is actively participate in the teaching and learning process by having two-way communication during lesson. This student-centered approach meets the need of the 21st Century Education [5], [6], [7], [8], [9], [10], [11], [12] where students are expected to be more involved in their teaching and learning. Meanwhile, the least exploration activities practiced is seeking more information on the topic learnt in class with mean score 3.14 (SD=0.861). This is interesting considering the easy access of the internet among the students should have allow them to seek information easier frequently. It shows that the students are not interested in having extra effort to explore on the topic learnt and only depending on the given notes during lesson. Whiterby and Tauber [13] also stated that students prefer to have access to the full copy of the lecture slides as this will be beneficial to their learning. The practice of heutagogical activities for domain of exploration can be referred in Table 2.

TABLE 2
HEUTAGOGICAL ACTIVITIES PRACTICED AMONG MALAYSIA TECHNICAL UNIVERSITY STUDENTS FOR THE DOMAIN OF EXPLORATION

Item	Statement	Mean score	SD
EX04	I ask question throughout the learning process	3.40	0.831
EX06	I plan my learning strategies to understand a topic	3.40	0.861
EX05	I know how to find solution to solve problem given in assignments	3.36	0.805
EX03	I use various medium for discussions to help improve my learning	3.30	0.932
EX02	I search for additional learning materials	3.18	0.854
EX01	I seek more information on the topic learnt in class	3.14	0.891

3.2 Practice of Heutagogical activities for domain of create.

Domain of create allows the student to become creative with variety of learning approach that they can create. This approach could be the hands on or through the online presence with the collaboration of others [2]. On the domain of create, the most practiced activities is making learning notes to increase the understanding with mean score 3.54 (SD=0.925). Whiterby and Tauber [13] in their study had stated that students are having high confident level in their note taking as this will help them to prepare for the examination. As for the least practiced activities, the analysis had indicated writing in social media to share acquired learning outcome (M=3.03; SD=0.955) is the least create activities practiced by Malaysia technical university students. Despite of the reported benefits of the social media in teaching and learning by previous studies [14], [15], it is still not be used to share the information from the lessons. Interestingly, this open up for further research on the variety uses of social media for educational purposes among the students. Table 3 shows the heutagogical activities practices among students for the domain of create.

TABLE 3
HEUTAGOGICAL ACTIVITIES PRACTICED AMONG MALAYSIA TECHNICAL UNIVERSITY STUDENTS FOR THE DOMAIN OF CREATE

Item	Statement	Mean score	SD
CR11	I make learning notes to increase my understanding	3.54	0.925
CR12	I plan the learning activities to enhance my learning	3.47	0.828
CR10	I develop plan for my learning progress	3.43	0.853
CR09	I develop solutions to solve problems	3.39	0.837
CR08	I set up learning platform such as Whatsapps group	3.34	0.912

	for discussion on the learning topic		
CR07	I write in social media to share my acquired learning outcome	3.03	0.955

3.3 Practice of heutagogical activities for domain of collaborate.

In the domain of collaborate, students are allowed to learn from each other by working together or reinforce their knowledge. Online tools such as Web 2.0 can be used for online collaboration. In all, students are given complete autonomy for them to collaborate and manage their learning activities and process [2]. As for the domain of collaborate, the students had indicated the activities of engaging in discussion with member of other groups to accomplish given task as the most practiced heutagogical activities (M= 3.44, SD=0.850). It shows that the collaboration among the students does not only limits to their particular group. It is reported that collaboration during lesson is one of the significant factors of student achievement [16]. Meanwhile, the least collaboration activity practiced is giving feedback on other groups performance when conducting a group assignment (M=3.13; SD=0.940). Accordingly, this indicates the students are not practicing peer assessment among them. Peer assessment among students has been recorded to give positive effects to student's speaking ability, learning motivation, critical thinking skills and reduce their anxiety [17]. Table 4 shows the heutagogical activities practices among students for the domain of collaborate.

TABLE 4
HEUTAGOGICAL ACTIVITIES PRACTICED AMONG MALAYSIA TECHNICAL UNIVERSITY STUDENTS FOR THE DOMAIN OF COLLABORATE

Item	Statement	Mean score	SD
CL15	I engage in discussion with member of other groups to accomplish given task	3.44	0.850
CL14	I consider different ideas when doing work with others	3.41	0.847
CL16	I take part in negotiations to achieve a consensus with members of other groups	3.38	0.832
CL17	I discuss with different groups to solve a given problem	3.35	0.854
CL13	I exchange ideas with other institutions	3.26	0.894
CL18	*I give feedback on other groups'* performance when conducting a group assignment	3.13	0.940

3.4 Practice of heutagogical activities for domain of connect

The domain of connect encourage students to connect with others within their discipline using any media available. This could be media social or any other online medium that allows them to build networking with people across the world [2]. On the domain of connect, the most practiced heutagogical activities by the students is seeking feedback from others to enhance learning with mean score 3.30 (SD=0.908). Even though the previous analysis indicates that students are least favor in giving feedback to others, in this domain, the analysis indicates that the students prefer to seek the feedback rather than giving one. Meanwhile, the least practiced activities is joining the online forum for discussion on learning topics (M=2.93; SD=1.039). Albeit the high technology literacy among this generation of students, it does not indicates more online participation [18]. Interestingly, this could indicates the current situation on the implementation of the digital classroom where students should have high level of practice. Table 5 shows the heutagogical activities practices among students for the domain of connect.

TABLE 5
HEUTAGOGICAL ACTIVITIES PRACTICED AMONG MALAYSIA TECHNICAL UNIVERSITY STUDENTS FOR THE DOMAIN OF CONNECT

Item	Statement	Mean score	SD
CN19	I seek feedback from others to enhance my learning	3.30	0.908
CN23	I use suitable method to overcome misunderstanding in learning interactions	3.27	0.841
CN24	I engage with industries to gain experiences as part of my learning	3.19	0.851
CN22	I select suitable agencies/organizations/ individuals to connect with to enhance my learning experience	3.00	0.892
CN21	I make contact with suitable agencies/organizations/ individuals that can support my learning	2.98	0.920
CN20	I join online forum for discussion on learning topics	2.93	1.039

3.5 Practice of heutagogical activities for domain of share.

The domain of share begin once the students has started connecting. Through sharing, students are able to learn from each other and discovers their similarities that can lead for further collaboration [2]. On the domain of share, the most practiced activities is talking about my learning experiences (M=3.26; SD= 0.884). However, the analysis does not indicates the condition of this particular sharing activity. Its either the talk among the students or with the teachers, this activity has been reported to contribute in improving student's achievement [19]. Thus, it is important for the students to be encouraged to share their experience through this sharing activity. On the other hand, the least practiced activities by the students is using apps such as Slide Share, Research Gate, Twitter and Facebook to share ideas as least activities practice (M=3.09;SD=0.976). This is in line with the output from the domain of create where students are least practiced in using their social media to disseminate their ideas or new knowledge gain in the learning process. Study by [20] had indicated that the student engagement decline with the use of social media such as Facebook due to the distraction cause by the social media. Therefore, it is very important for the students to be able to control themselves from being distracted while using social media for learning purposes. Table 6 shows the heutagogical activities practices among students for the domain of share.

TABLE 6
HEUTAGOGICAL ACTIVITIES PRACTICED AMONG MALAYSIA TECHNICAL UNIVERSITY STUDENTS FOR THE

DOMAIN OF SHARE

Item	Statement	Mean score	SD
SH27	I talk about my learning experiences	3.26	0.884
SH29	I present my work in front of my friends	3.24	0.872
SH28	I disseminate my writings to others	3.17	0.907
SH26	I exchange ideas within and outside from my institution	3.13	0.856
SH30	I give feedback to other *groups'* performance	3.12	0.949
SH25	I use apps such as Slide Share, Research Gate, Twitter and Facebook to share ideas	3.09	0.976

3.6 Practice of heutagogical activities for domain of reflect.

The domain of reflect provides opportunity for students to have higher levels of cognitive activities including analysis and synthesis. The reflective activities should includes on new knowledge as well as knowledge learnt [2]. On the domain of reflect, the most practiced heutagogical activities among the students is planning future learning activities based on lesson learnt with the mean score of 3.52 (SD=1.013). This shows that Malaysia technical university students are using their planning skills for their teaching and learning process. This planning skills should be strengthen among the students as it can contribute towards improving their learning strategies [21].

On the other hand, the least reflect activities practiced by the Malaysia technical university student is talking about feeling on the learning experience during class (M=3.18; SD=0.929). This shows that the openness of the students in terms of emotion during lesson are still at low level. It is important for the students to have the confidence and be comfortable in conveying their feelings during lesson so that they can contribute towards the improvement of the lesson itself. Table 7 shows the heutagogical activities practiced by the students for the domain of reflect.

TABLE 7
HEUTAGOGICAL ACTIVITIES PRACTICED AMONG MALAYSIA TECHNICAL UNIVERSITY STUDENTS FOR THE DOMAIN OF REFLECT

Item	Statement	Mean score	SD
RF36	I plan future learning activities based on lesson learnt	3.52	1.013
RF31	I look back at my learning experiences to increase my self-awareness	3.40	0.892
RF35	I evaluate changes in knowledge after a learning process	3.40	0.854
RF32	I explain what I have learnt from previous lesson	3.32	0.880
RF34	I do self-assessment on my learning progress	3.29	0.890
RF33	I talk about my feeling on the learning experience during class	3.18	0.929

3.7 Practice of heutagogical activities for all domains.

Overall, the analysis had indicated the most practiced heutagogical activities among the six domains is the domain of create with the mean score of 3.36 (SD=0.598). By the nature of heutagogy, students are encourage to create their own learning map. They are given autonomy on the lesson. Therefore, the maximum practiced of this domain will reflect on the readiness of Malaysia technical university student to have heutagogical approach as teaching and learning approach. One of the design elements for heutagogical approach proposed by [4] requires students to be able to create their own learning map with guidance from the lecturers. This create also involves the capability of the students to create collaborations and connections that can help them creating a comprehensive learning map. The uses of technologies also influenced the level of practice for create activity Meanwhile, the analysis indicated that the least practiced activity for heutagogical domain is the domain of connect (M=3.11, SD=0.66). Since the respondents are from the undergraduates level, the communication skills that is important for connection is still under developed. Thus, it shall discourage them to do more connection. However, with the development of technologies, students should be able to have better connection at local and international level. Connection will allow students to involve with other people with resources, rather than depending on the educators alone [22]. This will contribute towards the self-directed learning among the students. Moreover, though there is difference in the mean score, all domains shown a high mean score indicating all the domains were practiced among the technical university students. It shows that the students are ready to have heutagogy approach in their learning approach. This output can provides an insight for the lecturer to plan their heutagogical approach on the domain that need to be strengthen and focus more. All domains are important in creating this self-determined learning that can help producing students that is independent and self-centered. Table 8 shows the heutagogical domains practiced by the students.

TABLE 8
THE HEUTAGOGICAL DOMAINS PRACTICED BY THE STUDENTS

Domain	Mean Score	SD
Create	3.3642	0.59817
Reflect	3.3523	0.69932
Collaborate	3.3279	0.61497
Explore	3.2971	0.67062
Share	3.1672	0.66836
Connect	3.1120	0.66134

4 CONCLUSION

The study has shown that the most practiced heutagogical activities among technical university students is from the domain of create. As mention by previous researches, one of the future skills in 21st Century is creative thinking [9], [23], [24], [25], [26], [27]. This indicates that the technical students are moving towards the need of future skills. Heutagogy approach needs to be used in future classroom, as this approach was design with the involvement of the future technologies. The criteria of future learners that synonym with digital era needs learning approach that can fully utilized the technologies in the learning. The readiness of the students towards the uses of heutagogy approach had indicates that students are ready enough with several rooms for improvement. Thus, it is in a hope that this study will provides insightful data for the stakeholders in implementing the heutagogical approach in the 21st Century Education.

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