Andragogy Characteristics of Undergraduate Students' Towards Web-Based Technology of Learning in Association to Teaching Strategies

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ABSTRACT

An increasing number of undergraduate students' enrolment and high capability of technology advancement contribute to an enormous change in the teaching and learning perspectives. It has led to an evolution in the educational field. Traditional teaching strategies are no longer favourable and have been traded with web-based technology teaching strategies. This new style of teaching strategy demands a high level of students' responsibilities' to be more independent and highly self-directed and motivated towards their own learning. In other words, they must be andragogy oriented. This study attempted to investigate the readiness level among undergraduate students towards web-based technology learning. The main purpose of this work is to identify whether undergraduate students who are categorized as young adults are andragogy oriented individuals. The questionnaire used in this study is based on Malcom Knowles adult learner assumptions. The instrument was validated and the alpha coefficient reliability index obtained using Cronbach method was 0.94. The results indicated that half of undergraduate students possess andragogy characteristics, whereas the remaining is still beyond andragogy characteristics. It is also demonstrated that almost 70% of the students exhibit adult characteristics in self-directed, readiness to learn and motivational level assumptions, whereas for the criteria of need to know and experience assumptions, around 50% of the students are still

beyond andragogy orientation. The outcomes demand the lecturers to be more responsive and receptive on students' readiness levels towards the web-based technology learning in association to their teaching strategies.

Keyword: Andragogy characteristics, Knowles theory, learning strategies, web-based technology, young adults

INTRODUCTION

The development of technology has brought a tremendous evolution in an educational field. Web-Based Technology learning's such as online learning, e-learning, m-learning, blended learning have started to swing out traditional teaching strategy which is based on lectures and textbooks. The web-based technology teaching strategies are admitted by most educators as an effective teaching style which brought a number of advantages such as effective learning, global resources' accessibility, flexible place, time and schedule and cost saving (Dzakaria et al., 2012). It involves the application of new types of teaching materials such as slides, audiotapes, motion pictures and video.

Much works related to web-based teaching technology has been studied (Khweileh & Aljarrah, 2010; Bollash, 2010; Dzakaria et al., 2012; Chiheve & Blankson, 2010). Most of the research is focusing on adult learners and virtual students who return to higher institutions to enhance and strengthen their knowledge. The results demonstrated that most of the learners tend to view web-based technology learning as positive learning strategies and they are ready to use it (Khweileh & Aljarrah, 2010; Dzakaria et al.; 2012, Bollash, 2010; Blankson, 2010). However, not much information on young adult learners has been reported. Chiheve (2013) suggested that fully web-based technologies of teaching strategies are not suitable for undergraduate students since they are still lacking self-directed learning. He recommended applying blended self-directed learning with some traditional methods as alternatives.

The other supporting study investigated the impact of problem-based learning (PBL) on pre-service teachers' beliefs about technology use and their intended teaching practices according to lesson plans. The research

question examined the teachers' beliefs in three sub-categories: 1) teachers' pedagogical beliefs, 2) teachers' self-efficacy beliefs for technology integration, and 3) teachers' beliefs about the perceived value of computers for instructional purposes. It is found that no statistical significance on any measure related to teachers' beliefs (Park and Ertmer, 2007). Thus, the use of problem-based learning in comparison to traditional teaching approaches (control) does not significantly have an impact on pre-service teachers' beliefs regarding technology use.

The instructional designers and educators have been advocating for the intelligent integration of learning technology. Another approach to web based learning is digital game-based learning (DGBL). Reviewers have consistently found that games promote learning and/or reduce instructional time across multiple disciplines and technologies. Games are effective because of what they embody and what learners are doing as they play a game. Games can influence learning and skills (hand-eye coordination, visual processing, the learning of facts and simple concepts).

The game must be comparable in quality and functionality to commercial off-the-shelf (COTS) games, which are very effective in teaching the content, skills, and problem-solving needed to win the game. This DGBL approach is gaining acceptance because of its practicality, and research shows that it can be effective. It is certainly possible for modern game design to cross multiple disciplines such as Art, English, Mathematics and Psychology. On the other aspects, not all teachers have the skill sets needed for game design, not all teach in areas that allow for good content, not all can devote the time needed to implement this type of DGBL and this approach is unlikely to be used widely (Van Eck & Richard, 2006).

The success of web-based teaching strategies relies on several factors such as facilities, material, lecturers' readiness and most importantly the students' readiness. As claimed by Perrin (2010) and Chametzky (2014), the implementations of web-based technology in education require students to have their own control over their learning. Besides, it also demands them to attain a high motivation level and self-responsibility in their learning process.

The concept of andragogy has been introduced by Malcolm Knowles in his theory known as Knowles' Andragogy Model (Knowles, 1998). Andragogy describes teaching strategies which apply learner centeredness with the highly independent learning environment. Andragogy consists of learning strategies such as demonstration, experimental, role play, simulation and case study which focus on adult learning characteristics. It is often interpreted as the process of engaging adult learners with the structure of learning experiences. In this theory, Knowles highlighted six assumptions which describe adult learning characteristic. The six assumptions include need to know, self-directed, learning experience, readiness to learn, learning orientation and motivation.

Need to Know

Knowles et al. (1998) have identified three components of need to know which encompass how learning is conducted, followed by the need to know, and why learning is important.

Self-directed

Self-directed learning is conceived as self-learning in which learners have the primary responsibility for planning, carrying out and evaluating their own learning experiences (Elliger, 2004). When students take responsibility for their own learning, they become active (Chametzky, 2014). Masier (2010) found that incorporating self-directed learning in teaching and learning required students-involvement and collaborative learning scenario rather than traditional pedagogical teacher-led instruction. Gehring (2000) concluded that andragogical theory prescribes a process of self-evaluation, in which the teacher devotes their energy in helping the adults to get evidence for them about the progress they make toward their educational goals.

Learning Experience

Adult learners have a lot of experiences in their life and they become part of the richest resource for learning. By creating these cognitive connections to previous knowledge, adult learners make the acquisition process easier (Chametzky, 2014). Although it has been reported that their experiences can shape the learning outcomes, in some cases, they can act

as hindering factors (Wilson, 2005). Some of the barriers reported are comfortable with familiar teaching methods from their past educational experiences and resistance to learning, especially. new and unfamiliar subject contents.

Readiness to Learn

Readiness is seen as a learning behavior which allows students to continue learning on their own efforts. Learning is more effective if it corresponds with a need to know (Caruth, 2014). Understanding adults' readiness to learn is important because the concept of a development task for adults is connected to their own choice of time and learning content (Terehoff, 2002). Readiness to learn is influenced by the need to perform the roles and tasks (Wilson, 2005). It is noted that readiness is influenced by freedom of choice, volunteers and level of knowledge in a particular subject or skill. In addition, Ahmad and Abdul Majid, (2010) reported that a culture could be a strong influence in the development of self-directed learning readiness. In addition, Hondzel (2013) stated that readiness to learn and orientation to learn are both influenced by the adult learners' emotional states and stress levels. These emotional states and stress levels can be easily altered by creating a healthy educational environment such as caring and understanding relationship with the lecturers who provide a strong social atmosphere that reduces stress and promotes appropriate emotional connections for learning to occur.

Learning Orientation

For adults, education is a process of improving their abilities to survive with life problems, In other words, adults learn because they need to address issues in their lives. Thus, they enter the learning process from a performance-centered or problem-centered mind-set (Forrest & Peterson, 2006). Understanding adults' orientation to learning perspectives can help lecturers to create learning experiences that will address and resolve the problem area.

Motivation

Adults are ultimately motivated to learn internally and it is well-known that effective learning occurs when personal goals, interests, attitudes, and beliefs come from learners rather than the instructors. Past research has consistently reported positive and robust correlations between the learner's motivational level and his or her academic achievement (Kyong, 2005). Esposito (2004) stated that learners, who credit themselves for success, tend to have higher motivation and persist longer at performing task as they believe they are controlling their success or failure. Similarly, Hopstock (2008) indicated that motivated participants learn more and perform better than unmotivated participants. However, some previous work reports that adult learners' motivation is very complex and subject to change (Wilson, 2005). The level of motivation among students may fluctuate along the learning period and lecturers have to play a big role to keep their motivational level at maximum. In work conducted by Jayakumar (2010), overall survey results indicated that most of the students enrolled in tertiary education, especially in the engineering courses are expecting their teachers or lecturers to be essentially effective in executing functions such as providing motivation, planning and allocating scarce resources. Similarly, Mezei (2008) concluded that students need to be encouraged throughout the learning process so that they can become more self-regulated and autonomous.

LITERATURE REVIEW

Previous research reported that adult learners, who are being taught andragogically become engaged in the learning process and they are ready for learning, learn more, experience more meaningful learning and enjoy learning (Caruth, 2014). In this perceptive andragogy is defined as the science of understanding of theory and supporting practice of lifelong and life-wide education of adults. Md Noor et al. (2012) have conducted a study on andragogy and pedagogy, learning model preferences among undergraduate students. The results show that the majority of undergraduate students preferred a combination of pedagogical and andragogical orientation in their learning process. Similar findings are reported by Choy and Delahaye (2002) who concluded that higher institutional students within age 18 to 24

preferred a learning approach that utilized both pedagogy and andragogy characteristics. In work reported by Chiheve (2013), it is observed that Accounting students at Zimbabwe Polytechnic were partially self-directed and required guidance from their lecturers in their learning process.

O'Shea (2003) in her review of research in nurse education suggested that many nurses and nursing students prefer direct teacher-structured experiences, although they have a positive attitude towards andragogy teaching methods. This suggests that preference for teaching and learning methods must take account of students' preferred learning styles as well. Similar findings were reported by Al-Modhefer (2009), who observed the first-year nursing students at Queen's University Belfast. In a survey conducted by Levett-Jones (2005) on undergraduate nursing education shows that teacher-centered model is still preferred especially at an earlier stage of educational period. The author suggests that the successful introduction of self-directed learning requires adequate teacher and student preparation. There must be a balance between teacher-directed and student directed approaches of learning, the learner's preferences and styles of learning. The success of self-directed learning approaches depends on students' preference and readiness for self-directed learning. In this aspect, the nurse educators implement the concept.

Another work reported on pedagogy or andragogy preferences among higher institution students is a survey conducted by Tasir et al. (2008). The authors conducted a survey on online teaching preferences among pre-service teachers in Malaysia. The findings show that some students preferred learning based on the pedagogical principle orientation while the others prefer andragogy orientation. It is also noted that the final year of pre-services teachers can work independently since their self-concept has progressed to the self-directed learning practice. However, the authors reported that they still needed guidance from their lecturers as they were not prepared to accept the full responsibility of planning their own learning process.

Mohamed (2012) conducted a survey among undergraduates of psychology programme at the Open University Malaysia (OUM). OUM is one of the most popular colleges for distance education programme among adult learners to pursue their studies in Malaysia. The results showed that

the students are still beyond andragogy characters in terms of motivation. Although the students return to college on their own, they still require lecturer's motivation to keep them engaged in their studies.

In other work, Canoway (2009), conducted a survey to identify adult characteristics among three adult age groups; emerging adults (18-25), young adults (26-39), and mature adults (40-59). The result shows that regardless of the ages, all the participants' exhibit adults' characteristics as listed by Knowles. Although she predicts the matured adults should carry a higher level of adult characteristics, the analysis shows no significant difference in the areas of self-directedness, need to know, experience or readiness to learn. However, matured adults possess as higher motivational level as compared to other group of ages.

William (2004) measured self-directed learning readiness scale among nursing students which involved problem based learning program. The result shows that the readiness among the students is at an average level and no significant differences are observed between the first and final year students. This finding indicated that the nursing students are still beyond andragogy characters' and lecturers need to enhance their teaching styles not only on knowledge upgrading, but also including the development of adults' characters.

Based on previous research, it is evidently seen that undergraduates who are mostly young adults are partially adult learners. Thus, the implementation of web-based technology learning may not sound practical. However, an increasing demand from society to enhance learning and enrich knowledge and soft skills among professionals and individuals in work place forces higher institutions to practise web-based technology of learning in their educational process. Besides, global educational goals require graduates to become autonomous and lifelong learners. Thus, it has created a big challenge to the higher institutions in their implementation of a web-based technology teaching strategies. In order to understand their readiness level toward web-based technology teaching strategies, an understanding of the andragogy characteristics may be a good start. The outcomes will give some clues on their readiness level towards web-based technology teaching strategies and consequently help lecturers to plan, prepare and implement various web-based technology teaching strategies that balance with students' characteristics and preferences.

OBJECTIVES

Most Mechanical Engineering and Business Management undergraduates are 19 to 22 years old, which can be classified as young adults. Different groups of individuals learn differently. The main purpose of this work is to determine the andragogy characteristics of undergraduates in web-based technology teaching strategies. The survey is designed to determine the andragogy characteristics among the undergraduate students at UiTM Pulau Pinang based on the Knowles Andaragogy Theory. The findings will give information about adult characteristics of undergraduates. It will also help the lecturers in selecting and designing suitable teaching strategies, teaching modes and teaching materials which suit the students' characteristics. Finally, it will reveal the readiness level of the undergraduates in web-based technology teaching strategies.

METHODOLOGY

This study applied quantitative method where a 5-point scale (1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree) was used to collect data. The instrument consists of 25 measurable items to investigate adults learning characteristics among the undergraduate students. The questionnaire is based on Malcom Knowles adult learner assumption which was adapted and modified from Wilson's (2005) questionnaire. On the 25 items tested, 5 items each measured assumption no. 1 (need to know), assumption no. 2 (learner's self-concept), assumption no. 3 (learner's experience), assumption no. 4 (readiness to learn) and assumption no. 6 (motivation). Assumption no. 5 on orientation to learn is not measured in order to avoid confusion and misunderstanding among students.

The survey instrument is adapted based on Knowles measurement. The Cronbach's alpha coefficient is calculated using SPSS software. The internal consistency of alpha coefficient in the questionnaire was 0.94. The result shows that the alpha coefficient is very high which indicates that the question in the survey is reliable to measure the adult characteristics. The alpha coefficients for each assumption are listed in Table 1.

Table 1: Validity Coefficient of Assumption

Assumption	Item	Alpha coefficient
Need to know	1 - 5	0.70
Self-concept	6 - 10	0.82
Readiness to learn	11 – 15	0.84
Experience	16 – 20	0.84
Motivation	21 - 25	0.88

Descriptive statistics is used to accomplish the research purpose. The survey instrument is a 5-point scale. The responses are scaled from 1 to 5 points. Any assumption with a mean score of 4 and above is concluded to be andragogy characteristics and any assumption with a mean less than 4 is considered beyond andragogy characteristics. In other words, they carry pedagogy characteristics. The summary of the categorization is listed in Table 2.

Table 2: Categorisation of Pedagogy and Andragogy Characteristics According to Mean Score

Mean Score	Categorisation
1.00 - 3.99	Pedagogy characteristics
4.00 - 5.00	Andragogy characteristics

Sample

A simple random and cluster sampling is used in this study. A total of 270 undergraduate students participated in this survey. The distribution of the sample according to programme, gender, age, ethnic and homeland is summarised in Table 3. It is noted that more than 80% of the Mechanical Engineering students are male whereas the remaining is female. However, diverse distribution is reported for Business Management students where more than 80% are female, whereas the male is below 20%. More than 50% of the respondents come from rural areas and the majorities are Malays. In terms of age, most of the students are in the age range of 19 to 22.

Table 3: Demographic Characteristics of the Sample

	Diploma level	Degree level
Total student	103	167
Gender		
Male	84 (82%)	23 (14%)
Female	19 (18%)	144 (86%)
Age (yrs)		
19	37 (36%)	0 (0%)
20	2 (2%)	47 (28%)
21	25 (24%)	49 (29%)
22	32 (31%)	51 (30%)
23	6 (6%)	11 (7%)
24	1 (1%)	6 (4%)
25	0 (0%)	3 (2%)
Ethnic		
Malay	101 (98%)	159 (95%)
Other Bumiputera	2 (2%)	8 (5%)
Homeland		
Rural	60 (58%)	97 (58%)
Urban	41 (40%)	68 (41%)
Non response	2 (2%)	2 (1%)

RESULTS AND DISCUSSION

The values of mean and standard deviation for five assumptions measured in the survey are summarized in Table 4. The overall mean is 4.0194 which is above accepted limit (>4). This indicates that the undergraduate students demonstrated andragogy characteristics which are student-centered, independent, ready to explore the knowledge, motivated and responsible for their own learning. However, the means for need to know and experience assumptions are reported below than the acceptable limits. The findings reveal that most of our students are partially adults. Although the overall means represent andragogy characteristics, individual assumptions prove that the students are only matured in certain characters. In other words, they carry dual orientation, pedagogy and andragogy. This sounds reasonable

since our undergraduates are young adult. At this stage, young adults usually undergo the transition stage where they are moving from pedagogical orientation to andragogical orientation.

Table 4: Mean and Standard Deviation of Undergraduate Adult Characteristics

Assumption	Description	Mean	Std
1	Need to know	3.8452	0.5106
2	Self-directed	4.1430	0.5471
3	Readiness to learn	4.0748	0.5624
4	Learners' experience	3.9185	0.5763
5	Motivation	4.1156	0.5753
	Overall	4.0194	0.5543

From a total of 270 respondents, 56% (150/270) obtain a mean score >=4, which expresses adult learner characteristics, while the remaining of 44% are still pedagogy learners. Among five Knowles adult learners' assumptions, self-directed, readiness to learn and motivation show the highest percentage, i.e. around 70% as shown in Figure 1 which demonstrated that the majority of the undergraduate students are independent, ready to learn and intrinsically motivated in their studies. Whereas for need to know, less than 50% of the students are having score below 4, which indicated the majority of them are still unclear of what and why they are supposed to know in terms of the particular knowledge and skill. Similarly, experiential assumption is also seen to have lower scores. This finding sounds reasonable since most of our students are not exposed to working experience and real life environment.

Correlation analysis was performed to see any relationship between andragogy characteristics toward age and gender factors. It is observed that there is a significant relationship on gender and age and the andragogy characteristics. However, the strength of the relationship is very weak which is below than 20%. The correlation analysis data are shown in Table 5.

Based on the results, it is clearly revealed that the undergraduate students are partially adult learners. The majority of the undergraduate students are found to have a combination assumption of pedagogical and andragogical tendencies in their learning process. This demonstrated that they are not fully ready for web-based technology teaching strategies.

Table 5: Correlation Analysis between Mean Score, Age and Gender

		Mean Score	Age	Sex
Mean Score	Pearson Correlation	1	.133*	.183**
	Sig. (2-tailed)		.028	.003
	N	270	270	270
Age	Pearson Correlation	.133*	1	.136*
	Sig. (2-tailed)	.028		.025
	N	270	270	270
Sex	Pearson Correlation	.183**	.136*	1
	Sig. (2-tailed)	.003	.025	
	N	270	270	270

*. Correlation is significant at the 0.05 level (2-tailed)

From the viewpoint of the first assumption which is need to know, we can see that the majority of undergraduate the students are still unclear of what they are supposed to learn, how they are supposed to learn and why they need to learn. We may suggest that this is due to the force factors. It is noted that, some of the students joined the programme because they 'have to' not because they 'want to'. Some of them joined this programme because of the influences from parents, while others may join this programme because they do not get better job opportunities that suit their interests.

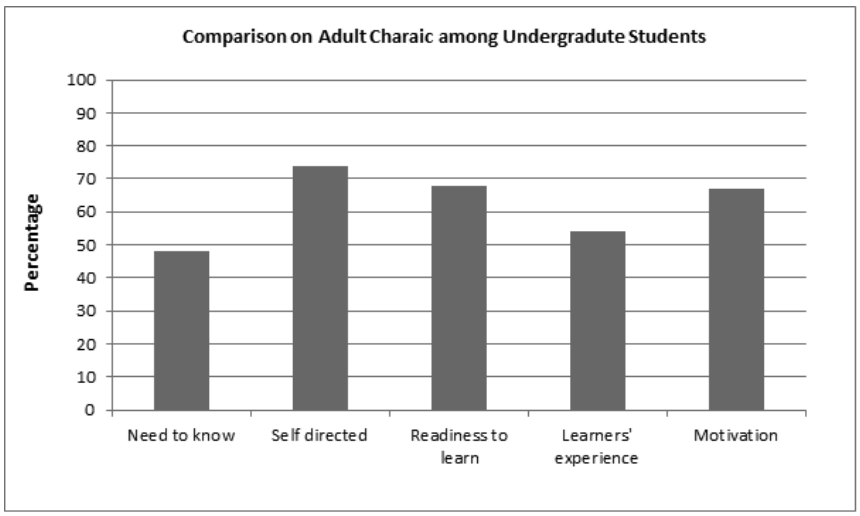

Figure 1: Percentage of Students with Adult Characteristics: Breakdown by Assumptions

For a self-directed learning, positive results are seen. The overall mean score gained for this assumption is 4.1430 (Table 4), which is more than 70% mean score above acceptable limits. Although it is a positive finding, the lecturers still need to be aware of a minority group which is still beyond andragogy characteristics. In other words, lecturers are still required to balance their teaching strategies according to pedagogy and andragogy principles.

Similar observation is seen on the third assumption. The overall mean score is also above acceptable limits. The findings demonstrated that the undergraduate students are ready and carry adequate readiness level in their learning. However, the readiness characteristic among the students needs to be further developed especially for the minority group with a mean score below acceptable limits.

In terms of learners' experience, the mean score is slightly below than the accepted limit. Almost half of the respondents achieved a mean score above the acceptable limit. These findings are reasonable since most of the undergraduate students have no working experienced and rarely have an exposure to the real working life environment (Chametzky, 2014). They start

their earlier education at primary and secondary schools before continuing their studies in the higher institutions without any working experience. The findings discovered that the undergraduate students do not gain benefit from any working experience in their learning process.

Finally, for motivation assumption, the mean score is above accepted limits. As shown in Figure 1, almost 70% of the degree students achieved a mean score above 4. This indicated that the undergraduate students are accomplished with an adequate motivational level that will help them to stimulate their learning process. Although it sounds positive, the lecturers are still required to play a big role in continuously enhancing the students' motivation. As claimed by Esposito (2005) and Hoptstock (2008), motivation is the most important aspect in learning. Students with high motivational level will show high interest and engagement in their learning process which will consequently create an effective learning.

Comparison between Mechanical Engineering and Business Management Students

Table 6 and Figure 2 show comparison between the Mechanical Engineering and Business Management students in terms of mean score, standard deviation and percentage of students score which are above acceptable limit for each assumption. The data shows slight differences in mean score for all assumptions. However the trend is still similar where assumption 1 and assumption 4 are still reported below acceptable limit while assumptions 2, 3 and 5 indicated values more than the acceptable limit for degree level. It is also found that the percentage of students with the scores above accepted limits for each assumption for business management students is marginally higher compared to the Mechanical Engineering students. Correlation analysis using SPSS software (as shown in Table 7) proved that there is a significant relationship between the two clusters. However, the relationship is very weak, which is approximately around 15%.

Table 6: Comparison of Mean and Standard Deviation between Mechanical Engineering and Social Science Students

	Mechanical Engineering			Business Management			
Assumption	Description	Mean	Std	Score >= 4(%)	Mean	Std	Score >= 4(%)
1	Need to know	3.7107	0.4929	34	3.9281	0.505	56
2	Self-directed	4.0893	0.5385	68	4.176	0.5514	77
3	Readiness to learn	4.033	0.5322	69	4.1006	0.5804	68
4	Learners' experience	3.7922	0.5394	46	3.9964	0.586	59
5	Motivation	4.0311	0.5392	68	4.1677	0.592	66
	Overall	3.9313	0.5284		4.0738	0.5630	

Table 7: Correlation Analysis between S&T and SS Cluster

		C	Mean Score
C	Pearson Correlation	1	.147*
	Sig. (2-tailed)		.015
	N	270	270
Mean Score	Pearson Correlation	.147*	1
	Sig. (2-tailed)	.015	
	N	270	270
*. Correlation is significant at the 0.05 level (2-tailed)			

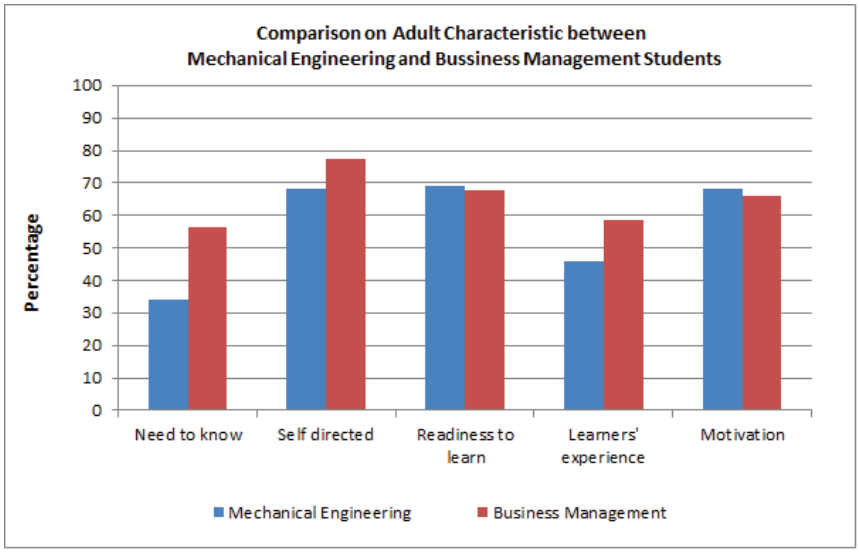

Figure 2: Percentage of Students with Adult Characteristic: Comparison between Mechanical Engineering and Social Science Students

Based on the findings, it can be concluded that the undergraduate students at UiTM Pulau Pinang are partially adult. This indicates that they are not ready to be fully exposed to web-based technology learning strategies. Almost half of the participants are dependant, lack of self-directed and not fully responsible for their own learning. The implementation entirely based on web-based technology learning strategies may not be completely successful. Thus, it is necessary for the higher institution to firstly prepare or develop the students with high andragogy characteristics before moving to a new technology based of learning strategies.

Recommendation in Enhancing Students' Andragogy Characteristics and Acceptance Level in Web-based Technology Teaching Strategies

Lecturers play a big responsibility to continuously develop andragogy characteristics in the undergraduate students in addressing the transformation towards web-based technology teaching strategies and in ensuring a successful implementation of the learning process. Subsequently, it will increase their acceptance level to web-based technology teaching styles.

Based on the findings, we would recommend some engagements activities that can be practiced to enhance the students' andragogy characteristics and increase their acceptance level in the web-based technology learning styles.

1. The basic principle to increase students' andragogy characteristics is by creating an active engagement environment in classes. Lecturers are free to utilize multiple teaching strategies that are able to create active engagement between students and lecturers and among the students. Varied teaching strategies have been recommended such as a discussion session, question and answer, students' presentation, role play, debate, brainstorming, etc. Through these activities, students are forced to actively engage in their learning process, thus, developing self-directedness and readiness to learn characteristics.

2. Probe students on what they need and explain why they need to learn certain concepts, theories, skills, etc. These would help the students to value their learning and realize the gap between where they are and where they should be. In addition, lecturers must be creative to interconnect the knowledge delivered with real-life problems and practical solutions. Establishing something with more realistic examples will enhance the students' interest and grow their need to know characteristic.

3. Encourage students to choose the learning activities, course materials and assignment topics based on their field of interest. When the learning activities suit their interests, these will empower students to explore the learning process with successful outcomes. At the same time, lecturers should continuously guide them to monitor and evaluate their learning objectives to ensure the learning process is moving in a positive direction.

4. Students with a higher motivational level tend to be successful in their learning. However, as human nature, motivation is usually fluctuated and strongly influenced by many factors, especially feeling and emotion which are known to be very sensitive and unstable in young adults. To keep students motivation constantly at optimum level, lecturers must play an important role to continuously motivate the students.

Challenges and Barriers

The main challenge and barrier toward implementation of web-based technology education is the students' readiness and willingness to learn. These new learning methodologies require students to have strong andragogy characteristics which are rarely accomplished by undergraduate students. In such situation, it challenges lecturers' competency to continuously developing those characteristics which force lecturers to implement andragogy approaches during teaching.

It is concluded that the web based learning in UiTM Pulau Pinang is in its infancy. Based on analysis, there is no evidence to prove that students learn more from web based learning as compared to the traditional methods. In addition, there is minimal information about the acceptance level of web based learning programme.

Another factor that has been claimed which further hindered andragogy approaches in higher education institution is the course syllabus. The course syllabus acts as an operation road map and it has traditionally been considered a standard step in crafting courses and teaching college students. As acknowledged, most of the current course syllabuses were developed based on pedagogical approaches. Currently, UiTM is in the process of revising its curricular and syllabuses which can be a good start to consider andragogy approaches to match with teaching methods.

By looking at pedagogical qualities and site resources, the vast majority of educational web sites prove to be the unripe fruits of the promising but still immature web technology. In relations to the efforts initiated by UiTM towards blended learning, a lot of efforts are needed to ensure comprehensive and systematic pedagogical qualities and resources are there to support the learning and teaching processes.

The technological infrastructure has great potential for the development of unique learning transactions and modes, but most of the web sites used only have limited communication resources and pedagogical aspects. Today, this support is not yet a function in most educational web sites. Thus, it is concluded that most of the educational web sites are still predominantly text-based and do not yet exhibit evidence of current pedagogical approaches.

CONCLUSION

The overall survey results demonstrated that only 56% of undergraduate students reveal andragogy characteristics. These findings confirmed that undergraduate students, who are young adults, cannot be classified as adult learners. The results also indicated that about 70% of the students are andragogy oriented in term of self-directed, motivation and readiness to learn assumptions. The findings remark that Mechanical Engineering and Business Management undergraduate students at UiTM Pulau Pinang are dependents, lack self-direction and are not fully responsible for their own learning. Without strong andragogy characteristics, the success of web-based technology of learning styles will not be achieved. Consequently, the students' academic performances will be affected.

It has revealed that most of the undergraduate students are partially adult learners and they are still in the transition towards web-based technology of learning. It is practical for higher learning institutions to consider students' learning styles and preferences, their self-efficacy level and readiness to learn, motivational level as well as their backgrounds and exposures to the real working life environment before embarking on the system.

RECOMMENDATION FOR FUTURE WORK

In order to achieve educational goals in preparing graduates with highly andragogy characteristics and attaining a high readiness level in web-based technology learning styles, higher institutions are recommended to continuously explore variable factors such as educational policies, curriculum development, lecturers competencies and web-based technology facilities including soft and hard tools instead of focusing only on students factors.

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