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Matching the Learning Orientations of Malaysian Online Learners to Their Web Learning Environments

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Abstract

Most Malaysian research on the individual differences of students focus on the learners' learning style which is a cognitive factor said to describe how differently they learn. Instead of concentrating on cognitive differences, this paper addresses the affective, conative and social factors in online learning. Through profiling the learning orientations of online learners using the Learning Orientation Questionnaire (LOQ), a better understanding of the factors that contribute to the making of a self-motivated, independent and self-directed learner can be achieved. The paper reports on the learning orientation preferences of fifty-nine Universiti Teknologi MARA (UiTM) online learners. It provides a profile of individual learning differences in which students are categorised either as transforming learners, performing learners, conforming learners or resistant learners. A high percentage of UiTM online learners are expected to be conforming learners due to their prior experience in an examination oriented educational system and deep-seated teacher reverence. As learning environments influence learning outcomes depending on how they match the learning orientation (Martinez & Bunderson, 2000), the existing online learning environment and web instruction will be evaluated using a checklist designed according to a set of strategies and guidelines proposed by Martinez (2001). Recommendations for further improvement to accommodate the learners will then be made.

Abstrak

Kebanyakan kajian di Malaysia ke atas perbezaan individu pelajar memfokus ke atas stail pembelajaran pelajar yang merupakan faktor kognitif yang menjelaskan bagaimana mereka belajar dengan cara yang berbeza. Sebaliknya dengan menumpukan

kepada perbezaan kognitif, kertas kerja ini mengetengahkan afektif, konatif dan faktor sosial dalam pembelajaran atas talian. Melalui gambaran orientasi pembelajaran pelajar atas talian menggunakan soal-selidik orientasi pembelajaran, kefahaman yang lebih baik tentang faktor yang menyumbang kepada pembentukan pelajar yang bermotivasi kendiri, berkebebasan dan ke arah kendiri dapat diperolehi. Kertas kerja ini melaporkan pemilihan orientasi pembelajaran di kalangan 59 orang pelajar atas talian Universiti Teknologi MARA (UiTM). Ianya memberikan gambaran perbezaan pembelajaran individu di mana pelajar dikategorikan sama ada sebagai pelajar transformasi, pelajar berprestasi, pelajar berkonformasi atau pelajar menentang. Peratusan yang tinggi pelajar atas talian UiTM dijangka merupakan pelajar berkonformasi disebabkan oleh pengalaman sebelum ini dalam sistem pendidikan yang berorientasikan peperiksaan dan berfokuskan guru. Oleh kerana persekitaran pembelajaran mempengaruhi hasil pembelajaran dan bergantung ke atas bagaimana mereka menyesuaikan orientasi pembelajaran, persekitaran pembelajaran atas talian kini dan pengajaran web akan dinilai mengikut senarai yang direka bentuk mengikut satu set strategi dan garis panduan yang diketengahkan oleh Martinez (2001). Dan perakuan untuk penambahbaikan seterusnya untuk memenuhi keperluan pelajar akan dibuat.

Introduction

The study stemmed from the researchers' interest in the affective, conative and social factors that affect online distance learners. Various studies have focused on cognitive factors such as the learning styles of distance learners (Tucker, 2003; Thang, 2003; Smith & Smith, 2000); most of these have given recommendations to improve instruction and the learning environment. For instance, Tucker (2003) suggested the use of independent reading and literature searches, the theory-guided analysis of case studies, term research papers, student-prepared lectures, individual debates defending key theories and independent readings to address the needs of diverse students' learning styles. Genetics, cultural backgrounds and personal experiences have also been considered to account for some of these differences (Pewewardy, 2002; Parks et al., 2003). Cognitive differences are of great consequence, as implicated by the above mentioned studies but equally important are effective strategies to enhance students' self-directed learning skills, self-motivation and reduce their

feelings of isolation. The affective, conative and social factors must be studied, hence the rationale of deploying the Learning Orientation Model to profile the online learners' preferences.

In contrast to conventional perspectives, the learning orientation model assigns cognitive factors to a secondary but still very important role (Martinez, 2001). Learning orientations are different from learning styles because orientations emphasise the dominant power of emotions and intentions in learning. Learning orientations characterise how individuals differ in the ways they choose to plan, set, perform and attain goals, intend to commit and expend effort and subsequently, experience learning and achievement (Martinez, 2001).

The Malaysian Online Distance Learners

The Malaysian online distance learning population typically consists of working adults who hope to upgrade their knowledge and skills. While some opt to continue their education a few years into their working life, some have waited for years before embarking on a distance learning programme. It is important to note that whether offered online, by correspondence studies or by videoconferences, distance education is not for everyone. Students often focus more on the convenience of distance education without understanding the requirements.

Thus, it is not right to assume students are adept in learning online. They may not have developed effective study habits for web-based learning (Jones & Martinez, 2001). Prior learning experience in school contributes to the learning expectations of Malaysian learners who have been very much immersed in an examination oriented educational system. Although online distance education is in the position to serve diverse learners, it is important to examine the learning orientations of these learners and develop a learning platform that will support them rather than induce them into what would seem to them to be unfamiliar ground. After all, as expounded by Saba (1998), the success of distance education, to a greater degree, will depend on the ability of educational institutions to personalise the teaching and learning process.

The Learning Orientation Model

Learning orientations, developed by Margaret Martinez in 1999, represent how strategically individuals (aggregated by varying beliefs, emotions, intentions and ability) plan and set goals, commit and expend effort and then experience learning to attain goals. The four orientations are described in Table 1 (Martinez, 2001).

The Learning Orientation Questionnaire (LOQ), developed by The Training Place (http://www.trainingplace.com/), is a survey that identifies a learner's orientation to learn by looking at three psychological factors that influence learning and performance. These factors, as illustrated in Table 1, consider the following:

- The learner's emotional investment in learning and performance.
- Strategic self-directedness.
- Independence or autonomy.

These three factors are successful learning attributes and describe how learners generally want or intend to approach learning situationally (The Training Place, 2001). The questionnaire (LOQ) used in this research is a 45-question 7-point scale anchored in expressions of very characteristic and very uncharacteristic of me that identify the psychological influences that govern different behaviours towards learning.

Table 1 The four learning orientations

Four Orientations	Emotional/Conative Aspects	Strategic Planning & Committed Learning Effort	Learning Autonomy
Transforming Learner (Innovation)	• Focuses on strong passions and intent on learning. • An assertive, expert, highly self-motivated learner. • Uses exploratory learning to transform achievements to reach high, personal standards.	• Sets and achieves personal short- and long-term challenging goals that may or may not be aligned to goals set by others; maximises effort to reach important personal goals. • Commits great effort to discover, elaborate and build new knowledge and meaning.	• Assumes learning responsibility and self-manages goals, learning, progress and outcomes. • Experiences frustration if restricted or given little learning autonomy.

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Table 1 (*continued*)

Four Orientations	Emotional/Conative Aspects	Strategic Planning & Committed Learning Effort	Learning Autonomy
Performing Learner (Implementor)	• Focuses emotions/ intentions on learning selectively or situationally. • Self-motivated when the content appeals. • Meets above-average group standards only when the goal/benefit appeals.	• Sets and achieves short-term, task-oriented goals that meet average-to-high standards; situationally, minimises efforts and standards to save time. • Will reach assigned or negotiated standards. • Selectively commits measured effort to assimilate and use relevant knowledge and meaning.	• Will situationally assume learning responsibility in areas of interest but willingly gives up control in areas of lesser interest. • Prefers coaching and interaction for achieving goals.
Conforming Learner (Sustainer)	• Focuses intentions and emotions cautiously and routinely as directed. • A low-risk, modestly effective, extrinsically motivated learner. • Uses learning to conform to easily achieved group standards.	• Follows and tries to achieve simple task-oriented goals assigned and guided by others, then tries to please and conform; maximises efforts in supportive relationships with safe standards. • Commits careful, measured effort to accept and reproduce knowledge to meet external requirements.	• Assumes little responsibility, manages learning as little as possible, is compliant, wants continual guidance, and expects reinforcement for achieving short-term goals.
Resistant Learner	• Focuses on not cooperating. • An actively or passively resistant learner. • Avoids using learning to achieve academic goals assigned by others.	• Considers lower standards, fewer academic goals, conflicting personal goals or no goals; maximises or minimises efforts to resist assigned or expected goals either assertively or passively. • Chronically avoids learning (apathetic, frustrated, unable, discouraged or disobedient).	• Assumes responsibility for not meeting goals set by others; sets personal goals that avoid meeting formal learning requirements.

Measures have been taken to establish the validity of the LOQ. Bentley (2001) studied both the LOQ and the HBDI (the Herrmann Brain Dominance Instrument) and concluded that the LOQ may indeed be what researchers are looking for to account more coherently for, and adapt to, individual differences in learning. As the HBDI is more cognitively oriented and the LOQ more conative and affective, Bentley (2001) claimed that deployment of the LOQ could be one step forward in providing a new way to assess individual differences in learning and hence, to tailor learning treatments to one which an individual can most easily adapt to.

Learning Orientation Research

Most studies dealing with students' learning orientations stress the relationship between the student's learning orientation and other variables such as stress (Molinari, 2004) and academic factors (study time, learning strategies). Fuller (2003) for instance, studied the effect of students' learning orientations on the time they invest on an extra curricular study at a cooperative learning centre. Fuller (2003) found that students with high level learning orientations were motivated by the "hope for success" factor while those with a low level of learning orientations were motivated by the "fear of failure" factor. Although Fuller (2003) studied on-campus college students rather than online distance learners, the results bear significance to understanding the learners as a whole.

Other studies by Jones and Martinez (2001) and Butler et al. (2003) investigated the significance of learning orientations by comparing different groups of learners. Jones and Martinez (2001) examined the learning orientation distribution of web-based learners and those who studied in traditional face-to-face classrooms. They found a higher percentage of performing and transforming among web-based learners as compared to those of the traditional class. On one hand, the study on Western Governors University students by Butler et al. (2003) indicated no differences in the LOQ ratings on self-motivation, self-direction or learning autonomy between students who completed a technology education programme and those who dropped out.

A survey of the literature indicates the absence of any significant research in profiling the Malaysian online learners using the Learning Orientation

Model. As previously mentioned, Malaysian researchers are more interested in the cognitive and meta cognitive aspects of learning (Haziah et al., 2004). There are, however, separate studies that have been conducted to address the issues of self-direction, motivation and autonomy. For instance, researchers have attempted to measure the learners' self-directed learning readiness and self-directed learning disposition (Shireen Haron, 2004; Daing Zaidah, 2003). These studies have shown Malaysian distance learners to be less self-directed than their western counterparts but they do exhibit characteristics such as persistence, being positive, being organised and having the ability to prioritise. Daing Zaidah et al. (2001) attributed the learners' reluctance to take control of their own learning to be a reflection of the inherent expectations in the Malaysian culture that students are passive players while instructors are the active players.

Methodology

The purpose of this study is to examine the learning orientations of online learners studying at Universiti Teknologi MARA, Malaysia using the Learning Orientation Questionnaire (LOQ). As a tool that is developed to encompass the aspects of emotions, intentions and social interactions that influence learning, the LOQ provides profiles which describe fundamental individual learning differences. Learners are categorised as transforming learners, performing learners, conforming learners or resistant learners.

The research is a descriptive study that seeks to describe not only the learning orientations of learners but also to illustrate the match (or mismatch) between their orientations and their existing web-learning environments. Learning environments influence learning outcomes depending on how they match. Basically, learning outcomes are better when the instructor's presentation is adapted to the student's aptitude and personality. In contrast to the study by Martinez and Bunderson (2000) that developed an interactive web-learning environment (SILPA) from the learning orientation model, this study looked into the web-learning environment that had previously been developed. Data collected using the LOQ and a systematic evaluation of the respective web environments provided a picture of the learners' orientations and what had been offered to them.

The research questions were:

1. What was the learning orientation distribution of a sample proportion for a population comprising UiTM first year online learners?
2. How did the learning orientation scores differ between the two groups of UiTM online learners (diploma and degree pursuing students)?
3. How did the learning orientation scores differ according to gender?
4. How did the participants score on each of the three following factors:
   a. emotional/affective and conative learning factor.
   b. committed strategic planning and learning effort.
   c. learning autonomy.
5. What category did the web instruction and the online learning environment of each group of learners fall into?

Participants

The participants were diploma and degree pursuing students. They made up the three different groups of students facilitated by three different instructors which were identified for this study. Two of the groups comprised those who were pursuing diploma level courses while the third group consisted of Bachelor of Business students. The groups were randomly chosen from a pool of first year UiTM online distance learners. The questionnaires were administered during their last face-to-face meeting of the semester. Fifty-nine students submitted complete questionnaires, two submitted incomplete ones while another four failed to return the questionnaires.

Instruments

The LOQ

As stated, the LOQ was administered to the learners after permission for use was granted by The Training Place. Scores of 1 to 7 were tabulated for each question and the score sheet was then emailed to The Training Place for further scoring to determine each student's orientation. The LOQ rated each learner as resistant, conforming, performing and transforming based on the scores. Table 2 shows the ranges associated with each orientation.

Table 2 LOQ score ratings

Range	Orientation
5.52 - 7.0	Transforming
4.52 - 5.5	Performing
3.52 - 4.5	Conforming
0 - 3.5	Resistant

The web evaluation checklist

Martinez (2001) developed a set of strategies and guidelines for three of the learning orientations (conforming, performing and transforming learners). She further suggested that the same set of descriptions could be useful for creating a set of evaluation criteria against which web instruction may be evaluated. Thus, the evaluation of the current learning environment was carried out using a checklist designed according to the guidelines proposed by Martinez (2001). Examples of items from the checklist are presented in Table 3. The web environment, the learning module and the learner-instructor interaction on the web were scrutinised and the instructors interviewed to fill in the information gaps.

Analysis of Data

Demographic data and LOQ scores were analysed quantitatively to describe the learning orientations of the learners. Descriptive statistics were deployed to provide the profiles while t tests were carried out to measure any significant differences between the groups of learners and the significant differences between the LOQ ratings of self- motivation, self-direction or learning autonomy.

The characteristics of the web instruction and the online learning environment were evaluated to determine if they actually matched the profiles of the learners associated with the environment. The learning environment was also identified as mentoring, coaching or guiding.

Table 3 Examples of items on the web evaluation checklist

INSTRUCTIONAL ISSUES	
Feedback given	* Inferential feedback. * Concise feedback. * Explicit feedback.
Learning module size	* Short, concise, big picture, with links to more detail if necessary. * Medium, brief overview with focus on practical applications. * Longer, detailed guidance, in steps. * Very brief overview and limited guidance.
Information needed	* Holistic, specific information needed to solve a problem * General interests, practice, short-term focus. * Guidance to fulfill a requirement.
Content structuring	* Learners given freedom to construct own content structure. * Learners given a general instruction with limited ability to re-organise. * Learners allow instructor to decide content structure.
Sequencing methods	* Hypertext, adaptive, multiple access. * Step-by-step instruction. * Semi-linear, logical branching, access by subtopic. * Limited exploration. * Linear, page-turner representations, general access. * No learner control and exploration.
Inquiry	* Probing, in-depth questions about content asked. * Questions to complete assignments asked. * Mechanistic questions about assignments asked.

Results

Demographics

The participants comprised an almost equal distribution of male and female learners. Most were between 26 to 30 years old. Twenty-seven participants studied at the diploma level while the rest were first degree seekers.

Table 4 Participants by gender

	Frequency	Percent
Males	31	54.4
Females	26	45.6
Total	57	100

Table 5 Participants by level of programmes

	Frequency	Percent
Diploma	27	47.4
BBA	30	52.6
Total	57	100

Learning Orientation Scores (LOQ scores)

In this sample (n=57), the LOQ demonstrated an acceptable internal-consistency alpha reliability coefficient of .80. In general, the participants made up a large group of conforming and performing learners. There were no resistant learners. The sample included transforming (n=7,12.3%, mean=5.79), performing (n=27, 47.4%, mean=5.00), and conforming (n=23, 40.4%, mean=4.19) students. Table 6 and 7 provide the LOQ score parameters and general distribution.

Table 6 LOQ score parameters

Number	57
Minimum	3.72
Maximum	6.16
Mean	4.74
Std. Deviation	0.577
Variance	0.333

Table 7 The LOQ score distribution

LOQ Class	Frequency	Percent	Mean
3.52-4.5	23	40.4	4.19
4.52-5.5	27	47.4	5.00
5.52-7	7	12.3	5.79
Total	57	100	

The distribution of the LOQ scores, however, differed according to the level of the programme pursued by the participants (Figures 1, 2 and 3). First degree seekers comprised a higher number of performing learners. 56% of diploma level participants were conforming learners while only 27% of BBA participants were of the same category.

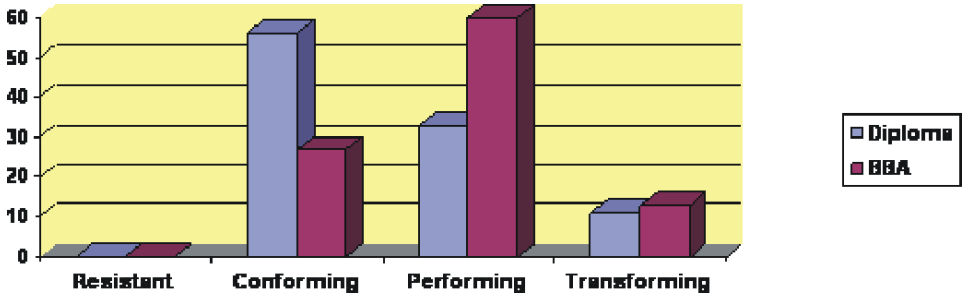

Figure 1 LOQ scores of diploma and BBA learners

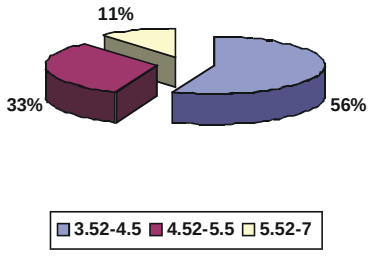

Figure 2 LOQ scores at diploma level

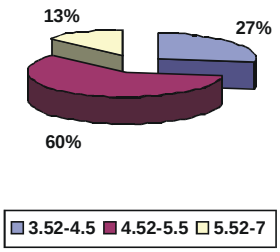

Figure 3 LOQ scores at degree level/BBA

Although the distribution of the LOQ scores was apparently different for the two groups, a two sample *t* test revealed that there was no significant difference between the means of the LOQ scores of the two groups of participants. See Table 8 for the synthesis table for the t test.

Table 8 The synthesis table for the t test

Variances	Observed t	Method	DF	Critical t	Pr > | t |
Unequal	-1.825	Satterthwaite	54.661	2.004	0.073
	-1.825	Cochran-Cox	26.900	2.051	0.079
Equal	-1.822		55	2.004	0.074

On the other hand, a test of proportions concluded that at the level of significance α=0.050, the decision was to reject the null hypothesis of equality of the proportions. In other words, the difference between the proportions of diploma level and BBA learners who were conforming learners was significant. So was the difference between the proportions of diploma level and BBA learners who were performing learners.

The participants' LOQ scores were also distributed differently in relation to their gender (Table 9). A higher percentage of females were transforming and performing learners. However, a two sample *t* test concluded that there was no significant difference between the means of their LOQ scores. A test of proportions also concluded that there was no significant difference between the proportions of males and females who were conforming learners.

Table 9 LOQ scores by gender

	Male		Female		Total	
LOQ scores	Number	Percent	Number	Percent	Number	Percent
3.52-4.5	15	48.40	8	30.80	23	40.40
4.52-5.5	15	48.40	12	46.20	27	47.40
5.52-7	1	3.20	6	23.10	7	12.30
	31	100.00	26	100.00	57	100.00

A number of participants did not state their age group but participants who did provided an interesting insight into the characteristics of adult learners.

As seen in Table 10, there were no performing or transforming learners below 20 years of age while those above 36 years old were non-conforming learners. The lack of complete data, however, inhibited further generalisation of the observation.

Table 10 LOQ scores and age

	Age Class											
LOQ Class	< 20		21-25		26-30		31-35		> 36		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
3.52-4.5	2	100	6	50.00	6	31.60	2	33.30			16	37.20
4.52-5.5			4	33.30	11	57.90	3	50.00	4	100	22	51.201
5.52-7			2	16.70	2	10.50	1	16.70			5	11.60
	2	100	12	100.00	19	100.00	6	100.00	4	100	43	100.00

As mentioned in the earlier section, the LOQ isolates and measures three complex factors that influence successful learning: (1) the conative and affective learning focus, (2) learning independence or autonomy, and (3) committed strategic planning and learning effort. Examples of questions that measure the factors as described in the LOQ interpretation manual (2005) are illustrated in Table 11.

Table 11 LOQ subscales/ factors

	Factor 1 Affective and conative component	Factor 2 Committed strategic planning and learning effort	Factor 3 Learning autonomy
Questions/ items	1,2,4,6,10, 11, 12, 13, 15, 16, 17, 19, 21, 24	7, 14, 18, 25,	3, 5, 8, 20, 22, 23

An analysis by The Training Place revealed that the sample scored lowest on items 3, 5, 22, and 23.

3 The instructor is the best person to monitor, evaluate and determine how well I learn.

5 The instructor helps me stay on the task and meet course objectives.

22 *I know that the instructor can show me the best way to evaluate achievement of my learning goals.*
23 *The instructor can plan my best learning approach for accomplishing learning objectives.*

These items make up factor 3 (autonomy). *Learning independence or autonomy* refers to the individual's desire and ability to take responsibility, make choices and control, self-assess, self-motivate, and manage or improve their own learning (i.e., make choices independent of the instructor) in the attainment of learning and personal goals. In this case, participants highly rated the importance of the instructor, thus lowering their score on autonomy.

Although scoring was entirely performed by The Training Place, the researchers further scrutinised other relevant items to determine how the sample scored in the other two factors (Table 12). Items 7, 14, and 18, for instance, gave the degree that learners strategically committed to deliberate and persistent effort to accomplish learning (factor 2). A higher mean shows preference to extend lesser effort.

Table 12 Examples of item means for factor 2 (Strategic planning and learning effort)

Question		Mean
Q7	I avoid learning situations if I can.	3.14
Q14	I avoid courses if the objectives are challenging or difficult.	3.83
Q18	I do not try to set risky or challenging learning goals	3.60

Items 1, 2, 4, 6 and 10, for instance, were greatly influenced by how much the learner believed that setting and accomplishing personal learning goals would improve personal growth, needs and learning performance. Participants were found to exhibit means that indicated positive general feelings, attitudes and willingness to learn (factor 1). This is shown in Table 13.

Table 13 Example of item means for factor 1 (Affective and conative components)

Question		Mean
Q1	I push myself to accomplish personal learning goals beyond those expected by the instructor.	5.29
Q2	I enjoy learning.	5.88
Q4	I look for additional information sources that help me learn new topics	5.39
Q6	I use learning as a vital resource in accomplishing my professional or personal goal.	6.10
Q10	I like to learn and feel comfortable learning for any reason.	5.55

The Web Instruction

The UiTM online learning environment

The SEEDS Learning Management System is deployed as the delivery and communication mechanism for UiTM online learners. The learning interface is basically a consistent and simple interface that depends greatly on each instructor's input to make it motivating and interesting. It is a simple, menu-driven (linear) environment with explicit instruction. Most instructors adhere to the basic text-based information and Q&As that provide minimal stimulation and processing. Students have access to online announcements, examination results, forums, email and chat room facilities, online study materials and technical support. In terms of non-online support, students are given print-based self instructional materials, study guides, textbooks and audio tapes according to the subjects registered.

Analysis of three web instructor's instruction

The web evaluation checklist adapted and constructed from Martinez (2001) was deployed to evaluate the general web-based learning environment and the web instruction for each of the three groups. The checklists were completed through observation and interviews with instructors. The instructors were found to differ slightly in their approaches. The learning environment of the diploma level students was more of a guiding type with instructors providing structured instruction, support for simple problem solving and guidance for achieving short-term goals. Although instructors claimed to foster personal value (intrinsic benefits), holistic thinking and offer hands-on practical support to

encourage planning and effort towards continual improvements, content structure was decided by these instructors themselves. Learners tried to achieve task-oriented goals assigned by them. Questions asked were mechanistic with limited exploration on the learners' part.

Although the BBA learners needed holistic specific information to solve a problem, they were provided with limited resources in their web learning environment in which the interface was similar to the first group. Instructors claimed to provide probing in-depth questions about the content. Nonetheless, the instruction was basically step-by-step instruction with detailed guidance given in steps in the learning module. Concise feedback was given in the case of these learners.

The students were regarded to be motivated by the instructors to assume learning responsibility in areas of interest. The instructors claimed to provide continual coaching and interaction. On the other hand, they were still immersed in guiding relationships that helped learners avoid mistakes and achieve easy learning goals in a simple fashion.

Conclusions and Recommendations

The four learning orientations that the LOQ describes are transforming, performing, conforming and resistant learners. There was no resistant learner in the sample surveyed. This explains the motivation of the online learners who pursue continuing education on their own accord. There was also no significant difference in the LOQ scores between the male and female learners in the sample. Since a high percentage of learners surveyed were conforming and performing learners and that the proportions differed significantly by programme levels, UiTM will find an easier task to support these learners. Offering instructor-facilitated diploma courses as currently being carried out will support these conforming learners. On the other hand, these learners must also be trained to develop attitudes, learning strategies and autonomy that befit interested online learners.

As performing learners typically respond better to short-term goals and semi-structured learning environments, providing a mix of independent learning resources and instructor facilitation will assist these learners. However, the instructor must coach and not limit his or her facilitation to

guiding them step by step as currently endured by learners. The instructors, especially those facilitating BBA learners, must move away from the typical face-to-face didactic teaching and let the learners assume more learning responsibilities. The low score on the learning autonomy factor represents the learners' dependence on the instructor. Such dependence must be eradicated in order to develop successful online learners.

The web learning environments were found to match the conforming learners' needs rather than those of performing or transforming learners. Learners in the last two categories have goals and priorities that require different instructional strategies and assessments. Although the instructors recognised the learner motivation to assume learning responsibility in their areas of interest, the learning contents were basically decided upon by the respective schools. Assessments were based on instructor assigned tasks, tests and final examinations.

Various strategies can be utilised to personalise the online learning experience of these learners. In terms of instruction, several elements can be considered.

	Transforming learners	Performing learners	Conforming learners
Content structuring	Freedom to construct own content structure	Provision of a general instruction, limited ability to reorganise	Content structure decided
Sequencing methods	Hypertext, adaptive, multiple access	Semi-linear, logical branching, access by subtopic	Linear, page turner representations, general access

The key is to personalise instruction to accommodate the different learning preferences. In the case of the UiTM performing and transforming learners, personal experience can be brought into their virtual classrooms through projects and case studies. Competitive, team or project-oriented involvement in their areas of interest with some external rewards would work with performing learners. Tasks for transforming learners should include those with a challenging degree of difficulty, and holistic, complex problem solving.

On the other hand, conforming learners rely on simple forward steps and social rewards. These learners work best under group involvement with learners who learn at a similar, stepwise pace and under guiding relationship. Then again, these learners must be geared to become more self-motivated and independent learners. A conforming learner for instance, must be trained to become a performing learner and ultimately, a transforming learner. The relatively high score on the affective and conative factor indicates a good starting point to develop these learners. What is required is that they reduce their independence on the instructor and expend more effort into their own learning. They too need to acquire the strategies to plan.

The study is limited to a small fraction of the total population of UiTM online learners. However, it is safe to generalise the results to the group of first year online learners from which the sample was randomly selected. Further research should include a larger sample and illustration of specific designs of the web learning environment that meet the needs of the different groups of learners.

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