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Learning Emotions in E-learning: How Do Adult Learners Feel?

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ABSTRACT:

The rapid development of technology and the Internet accessibility have expanded the learning opportunities to everyone who has access to technology and the Internet. Higher education institutions have begun to integrate the use of technology into their education system, and this includes adult education. The experience of adult learners using technology to learn is an important knowledge to the field of adult learning. For decades, learning was mainly examined from the cognitive and motivational aspects and the affective processes have been ignored in the learning theories (Hascher, 2010; Kim, Park, & Cozart, 2014). The analysing of the functions of emotions among the middle-aged group for e-learning is necessary. Fourteen new students from first semester of a first-year programme in a private university, with ages ranging from 40–55 years, participated in the study. Face-to-face interviews were conducted and the participants have also submitted their journals about their emotions, learning process and experience, weekly. This study pointed out adult learners to be self and emotionally-conscious.

Keywords: Learning Emotions, E-learning, Adult Learners.

1. INTRODUCTION:

A variety of learning emotions that may emerge during the learning process will bring different learning experiences to the adults learning in an e-learning environment. Emotions are defined as "a complex state of feeling that results in physical and psychological changes that influence thought and behaviour" in psychology. It plays an important role in the daily life of an individual (Cherry, 2015). Thus, the emotion factor cannot be neglected when learning takes place. Nevertheless, emotions experienced during learning can be different from emotions experienced in daily social life. Zembylas (2008) noted that emotion is hardly absent from online learning contents. This statement has been supported by Rager (2009) who argued that emotions are one of the factors that affect the learning process of a learner. Consequently, as online learning continues to grow, it is important to investigate how emotions affect one's learning experience.

2. PROBLEM STATEMENT:

Emotions do occur when learning is taking place. In spite of an extensive literature base (Santhi & Rajesh Kumar, 2007; McDonald, 2012; Zakaria, 2013; Mohamad, Hussin, & Shaharuddin, 2015), it is rare to find the emotional component of adult learning discussed in detail. Many

researchers have looked at the social emotions of adults, yet little has been done to examine their learning emotions and how it affects their learning styles. One problem with Knowles' (1984) adult learning theory is that it generally lacks emotional features. In Knowles andragogy theory, his focuses are mainly on the adult learning principles and assumptions about the characteristics of adult learners. The general principles could not be specifically applied to every adult from a specific age group. Furthermore, adult learners have their uniqueness and they have their emotions when it comes to learning.

Affective emotions play an important role in successful learning among the middle-aged group. Pappas (2014) viewed that certain course materials did not encourage excitement or motivation for the learner. As such, learning emotions has yet to be considered as the main concern when designing courses.

This feature is either ignored or is yet to be uncovered. The term "learning emotions" refers to the feelings of the learner during the process of learning, when using the learning technology. However, emotions have always been excluded from designing the learning material all this while. Thus, the findings can be a source of information for the course designer to revise and amplify the programmes of work as necessary which may help to enhance the online learning experience for adults. Therefore, the aim of this study is to identify the learning emotions of digital immigrants in an e-learning environment.

3. LITERATURE REVIEW:

Emotions

Russell (1980) developed the circumplex model to represent the structure of affective experience, as assessed through self-report and as a representation of the cognitive structure.

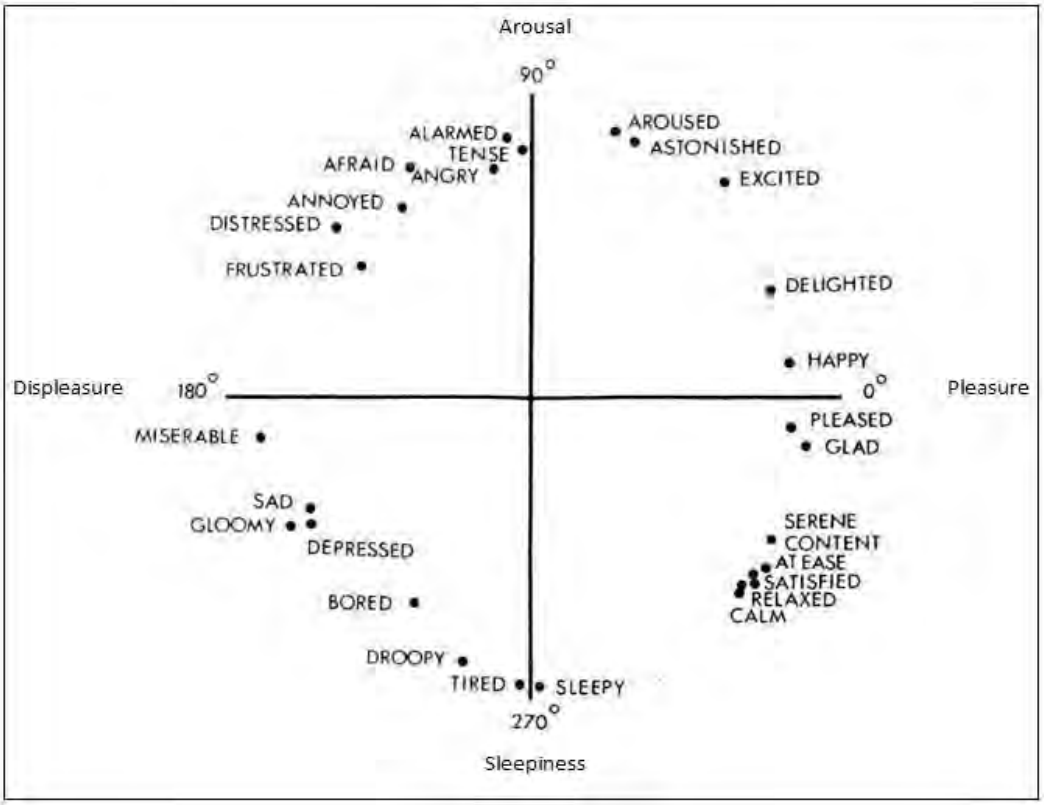


Figure 1. The circumplex model of affect (Source: Russell, 1980)

The main concept behind the model is the belief that emotion is best represented in

two dimensions: as a combination of the level of arousal (on the y-axis) and the level of pleasure (on the x-axis). Russell (1980) demonstrated this result empirically by looking at how people conceptualised and described emotional states. Initially, Russell (1980) began with the eight basic concepts in a circular order, in which emotions are mapped onto a circle with pleasure at 0 °, excitement at 45 °, arousal at 90 °, distress at 135 °, displeasure at 180 °, depression at 225 °, sleepiness at 270 °, and relaxation at 315 °, and later 28 emotional words were selected randomly and tested. The results were presented in a diagram reproduced in Figure 1.

The circular model can be used as a way to assess self-reports of emotional experience but is also said to represent a cognitive structure (a mental model) that people use when thinking about emotions. In the year 1983, Russell's study suggests that emotional words used in this model are organised in a similar pattern across cultures. This has put a strong emphasis that this model can be applied in different cultural contexts.

Learning Emotions

Emotion exists in an e-learning environment (Tian et al., 2014) but learners express themselves differently in the real and virtual environment. Therefore, the role of emotions should not be neglected in the virtual learning environment.

Learning emotion is the expression of feelings by the learner when the learning process takes place (Shuck, Albornoz, & Winberg, 2013). The emotional experience is linked with the learning activities (Hascher, 2010). It is also a natural instinctive state of mind from the learner when learning. In this study, the learning emotions are the feelings expressed by the learners based on their cognitive interpretation in different kinds of learning activities. The emotions were recorded in the emotion journals weekly by the learners.

Many researchers focused on the motivation of learners and how they affect their academic performance and satisfaction, but relatively few empirical studies have focused on types of emotions throughout the learning process. Learning happens in a wide range of context, incurs different kinds of learning experiences in the online environment. According to Wang (2014), technology advancement in the past decades has resulted in new opportunities to use technology to improve teaching and learning but the advancement of information communication technology tools and programmes can sometimes be frustrating for the user. As stated by Nielsen, Knutson and Carstensen (2008), older adults are better at predicting feelings of emotional arousal than younger adults. This is due to the fact that they are better at self-regulating their emotions. On the other hand, from the findings by Shuck, Albornoz and Winberg (2013), the middle-aged learners reported a feeling of accomplishment and satisfaction along with an increase of learning activity level. In addition, he suggested that hands-on practice and positive support from others could increase the confidence level of older adults.

Wu, Wang and Chu (2009) found that learners pay less attention in their emotional state while learning; however, they posited that the emotional state has a great relation to the learning efficiency of e-learners. Emotions cannot be absent from the online learning context (Zembylas, 2008; Sandanayake, Madurapperuma, & Dias, 2011; Cleveland-Innes & Campbell, 2012). Besides, emotions may have different emotional and behavioural consequences in the educational context (Sorić, Penezić, & Burić, 2013). Recent studies show that online learners experienced positive and negative emotions (Zembylas, 2008; Matuliauskaitė & Žemeckytė, 2011; Cleveland-Innes & Campbell, 2012; Glancy & Isenberg, 2013) such as excitement, enthusiasm, confidence, frustration, enjoyment, hope, anger, anxiety, fear, sadness, surprise and alienation. Positive emotions served as a motivator for learning; while negative

emotions impeded learning (Hascher, 2010; Perry, 2011; Wang & Chen, 2012; Shuck et al., 2013). The factors of incurring the existence of negative emotions especially frustration (Capdeferro & Romero, 2012) were mainly due to the malfunction of technological devices and non-anticipation by the teammates (Kenner & Weinerman, 2011). It was also found that the male and older learners demonstrated higher levels of negative emotions of unhappiness, anger and humiliation (Sorić, Penezić, & Burić, 2013; Kim, Park, & Cozart, 2014). But these findings are contradicted by Carstensen, Pasupathi and Nesselroade (2000) where they claimed that older learners reported fewer negative emotions as the adult learners show higher controllability on their emotions.

Based on the discussion above, the majority of previous researches mainly focused on anxiety in educational settings. Nevertheless, other emotions as discussed also play an important role in learning. However, there are very few comprehensive theories about the structure, function and role of emotion in online learning settings (Artino, 2012). A majority of those studies discussed discrete emotions (Chen & Wang, 2011; Goetz, Frenzel, & Pekrun, 2012; You & Kang, 2014, Sharma, 2018). Many other types of emotions might be existing throughout the learning process. Thus, this study is to observe the emotional changes of the learner according to the affective factors throughout a specific time. Hence, this study used weekly emotion journal to track and observe the emotional changes of the learner according to the affective factors throughout a specific time. The study provides useful knowledge in terms of designing adaptive online learning environments which support personalised learning.

4. RESEARCH METHOD:

Adult learners who enrolled in the online learning programme in a higher education institution were chosen. The middle-aged learners, whose age is 40 years old and above were selected as the participants of the study because they are the group that received their formal education during their early age in the classroom and they returned to higher education institution with technology-based learning. This study gave a higher exploration on their learning emotions and experience of using technology in the e-learning process.

Research Tools

The research tools that were used in this study are interview questions and a participant weekly emotion journal. The interview questions provide a wider scope of the study, it goes in-depth on the learning emotions and experiences. The weekly emotion journal is to track the emotional or affective state's changes of the adult learner throughout a certain period of time.

The participants are required to write a journal about their learning process, thoughts and feelings on a weekly basis over one academic semester. This journal-writing task is to track the changes in the emotions of these participants throughout the learning period. Each participant recorded and rated their emotions every week.

The emotion journals were kept electronically and sent to the researcher once a month and this deadline was fixed on the last day of each month. The participant's journals and the rating of their emotions on a weekly scale were valuable in documenting the changes in their emotion throughout the semester.

5. ETHICAL CONSIDERATIONS:

Participants were provided with an information sheet that clearly describes the purpose of the study and states that they can withdraw from the study at any time without subjecting themselves to any disadvantage, penalty or adverse consequence. The time and place of participants' interviews are properly recorded and stored in the database. The data collection had followed the research procedures stipulated in the protocol. The

research protocol and the research instrument have been approved by JEPeM-USM (Jawatankuasa Etika Penyelidikan Manusia Universiti Sains Malaysia). The data was then accessed, cross-checked and reviewed by three experts during the process analysis. Pseudonyms were assigned to every participant to maintain their confidentiality during the data analysis.

6. DATA COLLECTION AND ANALYSIS:

There are two main ways of collecting data in the study. The first way is that the data was collected through face-to-face, semi-structured interviews. The participants expressed and described their learning emotion and experience in the e-learning environment. The second source of data was collected from the participants' weekly emotion journals.

After that, the participants were asked to read the transcript of the interviews after the interview phase is completed and transcribed. The transcripts and journals were given to the participants for checking and comment. This is to ensure that the data is transcribed and interpreted correctly. They were asked to read the transcripts, make comments and provide further clarification to ensure the data provided were truthful. Finally, three experts in e-learning were also asked to examine and evaluate the data analysis procedures, offer advice and generate new ideas. All the interviews were transcribed and the data was analysed using NVivo.

7. FINDINGS:

Participants rated their emotions in various learning activities weekly. These activities included studying, doing assignments, preparing for examination, engagement in tutorials and learning management system, interaction with peers, tutor and learning materials.

'Excited', 'delighted', 'pleased, 'glad', 'content', 'at ease', 'relaxed', 'calm' and 'tired' were experienced by all participants. 'Satisfied' and 'tense' were experienced by 13 participants. 'Happy' was experienced by 12 participants when meeting and interacting with their peers in a face-to-face tutorial class and 11 participants felt afraid during the learning process. However, the frequency of experiencing these emotions varied among participants. The emotions that were experienced by participants are presented in Figure 2.

The main learning activity that participants performed was studying alone with their learning materials (course modules). The emotion that participants claimed to experience the most was 'tense', except for S8. He felt calm most of the time. S8 claimed that he only experienced a little tension during learning which he used to 'push' him further to learn (S8/Interview 1). Figure 2 shows the number of participants that have the highest frequency of experiencing particular emotions as reported in their weekly emotion journals.

In general, it can be observed that all participants experienced positive emotions more than negative ones during the learning process. During the activities that included engagement with the LMS and interaction with peers, all participants found that they experienced positive learning emotions such as feeling excited, pleased and satisfied, when interacting with their peers, as shown in Figure 3. Most of the participants felt calm and at ease when they used the LMS to search for information.

It could be seen that the pattern of emotions for studying and interaction with learning materials look similar. Participants felt calm when studying with their learning materials. However, 'satisfaction' was noted to be lesser during studying than when interacting with learning materials.

Completing assignments and preparing for examinations were the two main sources of negative emotions. Six participants felt tensed when working on their assignments while eight participants experienced it when preparing for examinations.

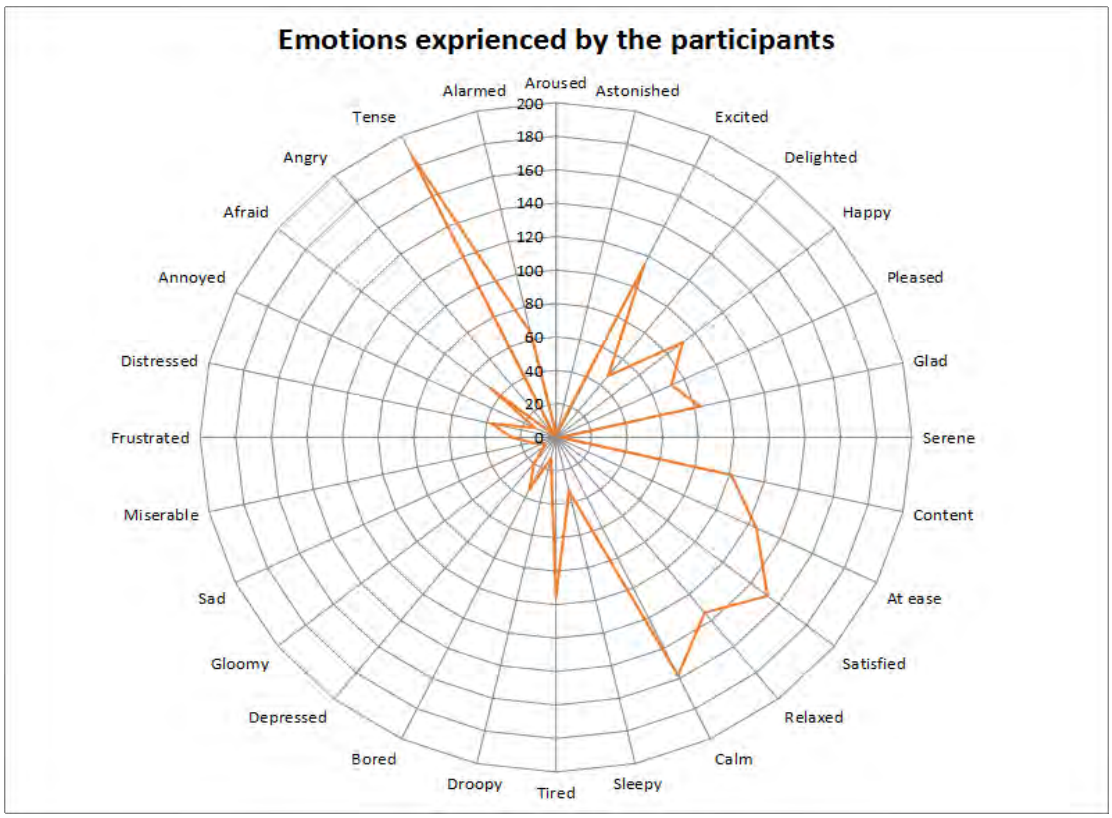
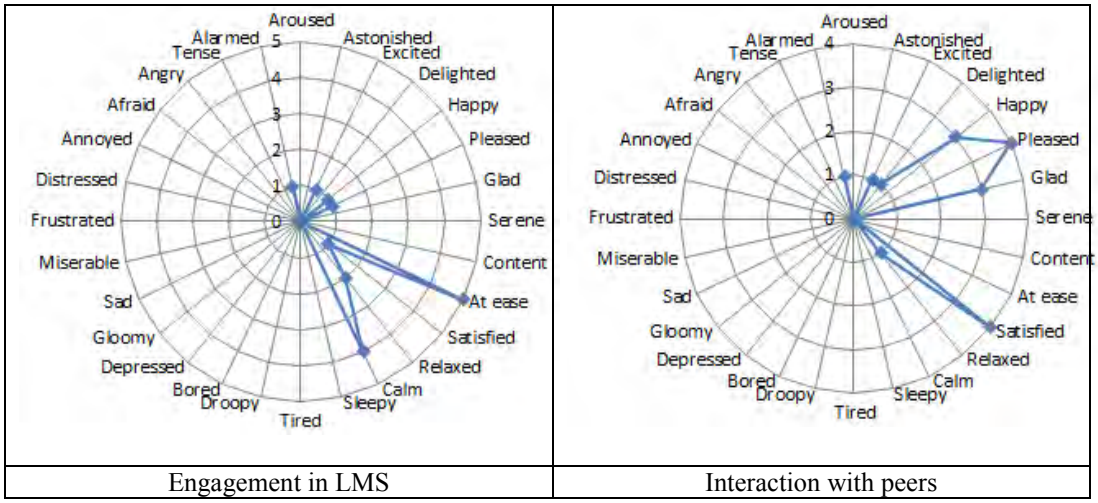


Figure 2. Emotions experienced by participants during their learning



Engagement in LMS	Interaction with peers

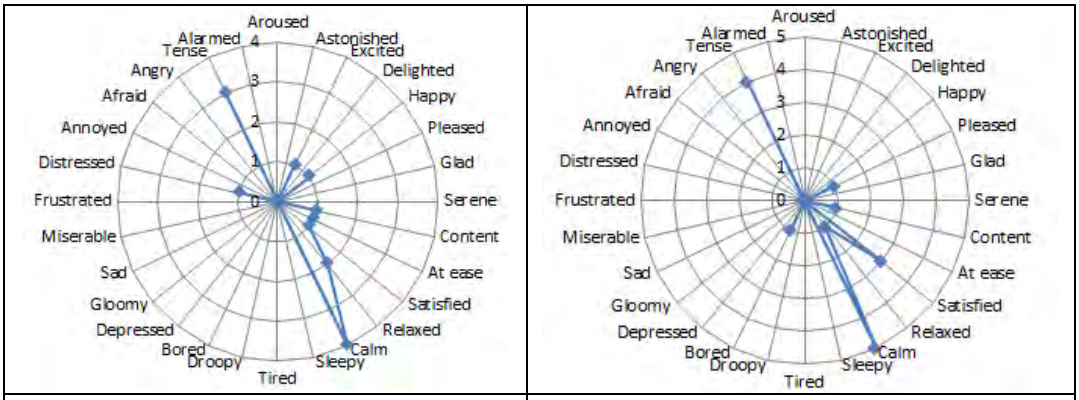
Figure 3. Participants' emotions when engaging in the LMS and interacting with peers

8. DEALING WITH TECHNOLOGY IN AN E-LEARNING ENVIRONMENT:

Participants experienced different feelings when dealing with technology during their learning such as when using laptops to access the LMS and the Internet. On the other hand, other participants used laptops or smartphones to view the course materials. There was some negative feedback from participants about using these devices. S13 got frustrated when the computer malfunctioned. Similarly, S1, S2 and S4 admitted that they lost their temper when the Internet did not work. As S2 thought that going online was *"supposed to be easy"*. However, if the Internet connection was slow, things became difficult (S2/Interview 1). S4 claimed that she was expecting results but when the website

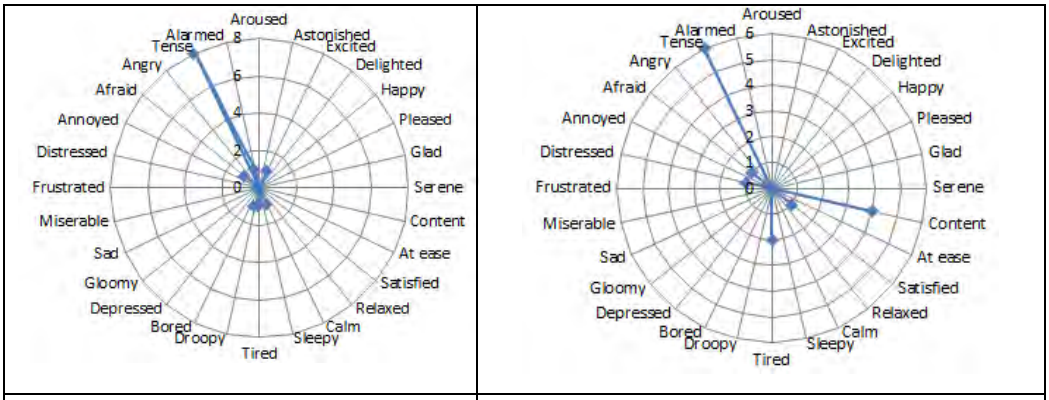
crashed, it was quite depressing and frustrating (S4/Interview 1).

S3 called herself a *"worrier"* who always worried about everything. For example, when it came to the submission of her assignment in the LMS, she worried if she had submitted the right file and was anxious to know if it had gone through and reached the tutor for grading (S3/WEJ/Week 7). On the other hand, S4 felt nervous when she submitted her assignment online and wondered if she had to click on the button or not. She shared her doubts in the WhatsApp group chat (S4/Interview 1). Similarly, S10 was worried that she could not complete her assignments on time (S10/Interview 2) and did not know how to submit the assignment online for the first time (S10/Interview 1).



Studying | Interaction with learning materials

Figure 4. Participants' emotions when studying and interacting with learning materials



Preparing for examinations | Completing assignments

Figure 5. Participants' emotions when preparing for examinations and completing assignments

S6 felt depressed and lost when she forgot to *"save"* her assignment and had to redo the whole assignment (S6/Interview 2). She also felt nervous when she could not find the answers from the course materials and there was not enough time for her to search online (S6/WEJ/Week 5).

S11 also described that the same incident made her feel stressed out and she reported, *"Sometimes, I cannot* [find the answers from the course materials], *flip there flip here, flip there, flip here, flip there at the end go back to Internet and then you start to feel very stress"* (S11/Interview 2). A similar thing happened to S10 who claimed that she was worried as she did not know how to go online to search for information (S10/Interview 1).

On the contrary, technology brought positive emotions to others. S5 felt

relieved and less stressed when he was asked to look for answers to his assignment from the Internet instead of referring to his tutor or peers (S5/Interview 2). S6 felt astonished when she used technology to look for more information. She said it was like swimming in a pool of knowledge and it just depended on how much information you can absorb (S6/Interview 2).

All participants claimed that they did not feel lonely in the e-learning environment, even though they were self-learning most of the time, except for S8. S8 felt tired and lonely because there was no interaction with other students and he lamented that he had to go through all the learning materials by himself (S8/Interview 1). He felt like giving up on studying and was distressed when he studied all the materials but could not understand it. These negative emotions occurred when he was alone (S8/Interview 1).

Dealing with Emotions

All participants claimed that they were able to control their emotions well. However, some participants admitted that emotions affected their learning progress in some way. For example, S2 claimed that emotions affected her learning. When she felt stressed, she did not want to do anything at all. On the other hand, she felt more motivated to do something when she was more relaxed. Similarly, S8 and S10 stated that if their mood was good, they were able to perform and learn better (S8/Interview 2; S10/Interview 1). S11 claimed that personal problems she encountered affected her learning progress badly (S11/Interview 1).

S3 stated that she felt *"brain dead"* and mentally tired when she was overloaded with work (S3/Interview 1). In addition, S4 claimed, "*When we're angry, not much will get into the brain. When I'm happy, I could remember things*, *I read through even if I didn't mean to remember*" (S4/Interview 1). S13 claimed that she got more inspiration and motivation to do something when she was relaxed; on the contrary, she did not feel like doing anything when she was stressed out (S13/Interview 1).

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However, S7 claimed that without using technology to learn, the learning process would be very boring. However, malfunctions in technology would also cause her to have *"no mood"* to continue studying (S7/Interview 1). S2 felt demotivated when there was too much information when studying (S2/Interview 1). Similar to S2, S5 claimed that he felt *"*dizziness*"* and had no mood to continue to read when the materials were too lengthy (S5/Interview 2). On the other hand, the eagerness to study would decrease when one was not interested in the subject and did not want to pursue it further. S13 felt bored if she had to study something not related to her subject of interest (S13/Interview 1).

However, S7 claimed that without using technology to learn, the learning process would be very boring. However, malfunctions in technology would also cause her to have "no mood" to continue studying (S7/Interview 1). S2 felt demotivated when there was too much information when studying (S2/Interview 1). Similar to S2, S5 claimed that he felt "dizziness" and had no mood to continue to read when the materials were too lengthy (S5/Interview 2). On the other hand, the eagerness to study would decrease when one was not interested in the subject and did not want to pursue it further. S13 felt bored if she had to study something not related to her subject of interest (S13/Interview 1).

It was observed that when encountering challenges, some

participants will rationalise the issues through self-talk to motivate themselves. For example, when feeling stressed and frustrated, S1 wrote down the reason she chose to continue her studies on a piece of paper. It helped to motivate and remind herself about her goals (S1/Interview 1). Likewise, to gain success, S9 believes that hard work will pay off (S9/Interview 2).

For the assignment results that were below expectations, participants would go through a reflection to justify the results. For example, S5 would say "Never mind," and strive harder next time (S5/Interview 1); S8 claimed, "You couldn't finish learning a thing" (S8/Interview 1). Moreover, a commitment comes with great responsibilities (S8/Interview 1) and S14 claimed that she would not be unhappy with the bad results as she did not do it perfectly (S14/Interview 1). S6 reminded herself that without trying, she will never know if it was a failure or success. She just wanted to have a life with no regrets as long as she tried, regardless of the outcome (S6/Interview 2).

S6 and S7 claimed that they always kept a positive mind and attitude towards learning. Similarly, S5, S11, S12 and S14 also stated that they did not give up easily, even when confronted with obstacles. S12 believed that if one had negative thoughts, then one would be surrounded by all the negative things (S12/Interview 1). S1 did not allow herself to be swamped with negative thoughts and feelings (S1/Interview 2). Likewise, S4 and S7 claimed that they stayed away from the obstacles that they encountered. They will always remind themselves to keep calm and face the challenges. Otherwise, things may get worse at the end (S7/Interview 1; S4/Interview 2).

9. DISCUSSION:

Emotions can affect learners' learning progress. When the learners had negative emotions, they found it difficult to carry on with their studies; whereas, if they had positive emotions, they found that it was easier to absorb what they have studied. Thus, relaxation and maintaining positive emotions during the learning process could be learned in order for the learners to ease their learning. Efforts should be made by the institution to keep the learning process interesting. Attention and passion levels should also be maintained so that the learning is fun and meaningful to the digital immigrants so that they do not lose their interest in learning over time.

Emotions during Learning Activities

From the study, 'satisfied' and 'tense' were the two emotions that were claimed to be most experienced by majority of the digital immigrants in an e-learning environment.

Interestingly, it was found that the learning activities in an e-learning environment focused on completing assignments and preparing for the examinations. They are both known as 'task accomplishment'. When given tasks were accomplished, such as a completed assignment, finished reading a section or solved an issue, the emotion 'satisfaction' may arise.

On the other hand, studying and interacting with learning materials have similar emotional patterns. Reading the learning materials was denoted by the digital immigrants as just reading the course materials given by the lecturer. The course materials were the main sources of their readings. The 'satisfaction' emotion was higher when they were interacting with learning materials than when studying. This was probably due to studying being a self-initiated process and without any borders and limitations. 'Satisfaction' was hard to obtain when there was no one to indicate when to stop and tell them which levels of achievement they have obtained. Interaction with learning materials has a stop signal, such as the page numbers or the numbers of topics that have been read. After finishing a chapter in their course materials, a sense of achievement is easily experienced rather than when studying in borderless circumstances; for instance, borderless information in the e-learning environment.

From the study, the engagement in the LMS for the participants was mainly on checking for post updates. The digital immigrants had little interactive conversations with peers or tutors. Little interaction could also be observed during the studying activity because the digital immigrants did their studies alone. The 'calm' emotion existed when they were alone. Whereas if the activities involved interactions with humans, such as meeting peers during tutorials, more exciting emotions such as 'happy', 'pleased' and 'glad' existed. In addition, 'satisfaction' could be produced not only from task accomplishments but also from pleasant interactions with humans.

In short, the main activities for the digital immigrants were self-studying their learning materials calmly and interacting with peers excitedly and pleasantly when meeting them. 'Satisfaction' was the emotion recorded for the task accomplishment in the e-learning environment.

Dealing with Technology in an E-learning Environment

The most common emotions observed when dealing with technology is 'frustration' and 'worry'. The technological dysfunctions, especially with the computer and Internet, caused the digital immigrants to lose their tempers. This was due to disappointments when their expected outcomes were not met. The negative emotions would not be shown easily in front of peers or tutors. However, when they were behind the scenes, especially when dealing with technology, these emotions can be expressed without hesitation. Besides these, not knowing well enough how technology functions caused worry. For example, some digital immigrants were unsure where their submitted assignments actually went after they clicked the 'submit' button.

On the other hand, the availability of resources from the Internet also brought negative emotions to the two groups of digital immigrants. One group of digital immigrants had difficulty in judging and making decisions on which information to select. They felt lost and stressed out. Another group did not know how to search for information online. Information in the e-learning environment is boundless, some may find them useful as they could access unlimited resources but some may feel lost and stressed out from selecting the one that they need. As the saying goes, there is no rose without a thorn. The beauty of e-learning is the unlimited access to resources and the convenience that it brings to learners.

However, the limitless information can be a burden to the digital immigrants.

In terms of isolation that technology may possibly bring, all digital immigrants felt that they were attached and connected with the help of technology except for the ones who did not make use of technology to interact with peers. The e-learning environment is not a 'one-man battle'. The learning tasks seemed difficult to perform without the help of others. The positive emotions emerge more easily when one knows that they were not alone in the learning journey. When the slogan, "You can study at your own pace, anytime and anywhere," was voiced, there were some hidden challenges behind the scenes. The term 'anytime and anywhere' was no longer a mythical statement to the e-learning environment because digital immigrants may still have constraints when they want to approach their peers and tutors, as well as when and where they want to study. Digital immigrants need to spend time to interact with peers or form study groups. This could be a challenge as their time is limited. Furthermore, one could not do it without certain principles or motivation to support the learning. To succeed, they need to set a goal and must be much disciplined in their learning.

10. RECOMMENDATIONS:

Social support, such as empathic attachment, useful guidance and reliable alliance, allowed the digital immigrants to overcome their fear of embarrassment and general anxiety about using computers (Lin, Tang, & Kuo, 2012). Thus, it is

recommended that the university could form a care team to assist and provide advice and support to digital immigrants who have a problem in managing their time, stress and studies.

The team could provide assistance to the digital immigrants who are stressed out and tensed during the events of completing assignments and preparing for examination, by offering counselling sessions.

11. CONCLUSION:

The group of digital immigrants from this study were in their forties. They were not trained in computer skills when they were younger. Nevertheless, the digital immigrants were emotionally prepared before they had decided to return to learning. They may not be well-versed in all the technological tools, but they have used basic functions of some tools (i.e. typing using Microsoft Word) which they think is enough for them to learn in such an e-learning environment.

By having the knowledge of what kinds of learning activities would lead to positive and negative emotions from the findings of this study, educational providers should enrich the learning experiences of digital immigrants based on those emotions. Educational providers should also be aware of their learning emotions and know how to stimulate their positive emotions which will lead to a positive learning experience.

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