

# INVESTIGATING THE CORRELATION BETWEEN LEARNERS' ANXIETY CONDITIONS AND INTRINSIC MOTIVATIONAL ORIENTATION IN THE DIGITAL LEARNING ENVIRONMENT

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**ABSTRACT:** *The purpose of this study is to investigate the correlation between Learners' Anxiety Conditions and Intrinsic Motivational orientation in the digital learning environment for students studying in American Degree Transfer Program during COVID-19 Pandemic. The American Degree Transfer Program (ADTP) at Taylor's University has been practicing face-to-face learning mode for all its modules since it was established in 1996. The announcement of lockdown in Malaysia to fight against the COVID-19 pandemic has created an opportunity for the program to switch from a traditional face-to-face learning environment to a digital learning environment for all modules without other alternatives. Due to this abrupt change in their learning environment, many students are faced with anxiety conditions in the digital learning environment. Thus, this warrants a study to investigate the correlation between learners' anxiety conditions and intrinsic motivational orientation for all students studying in ADTP in the digital learning environment. A convenient sample of all students in Taylor's ADTP was used for this study. An online survey questionnaire was used to capture learners' anxiety conditions and their intrinsic motivational orientation in the digital learning environment after switching from physical learning mode to digital learning mode. 296 ADTP students participated in this study. Even though all ADTP students are categorized as digital natives, the abrupt change of learning mode due to this highly infectious virus has created some anxiety among students which influences their motivation in the digital learning environment. On the other hand, there is no correlation between anxiety conditions faced by students due to COVID-19 infection and intrinsic motivational orientation in the digital learning environment.*

**Keywords:** Learners' Anxiety Conditions, Intrinsic Motivational Orientation, Digital Learning Environment.

## INTRODUCTION

Many universities and colleges all over the world have begun to venture into online learning since the advent of internet technology in the early 90s. Online learning has become mainstream as many universities practice online learning to increase the outreach of education, branding, profitability, student learning performance, teaching-learning innovation as well as a research output in teaching and learning[1]. For the American Degree Transfer Program, the reason for switching to digital learning, which covers a wider scope than online learning, is of course due to the COVID-19 pandemic which serves to turn a crisis into an opportunity. In the context of this research, digital learning refers to any type of learning that includes using digital technology, which includes online learning in synchronous and asynchronous mode, and lecturers conducting lectures with some digital tools like smart boards, iPad, and tablets.

Since Online learning and digital learning are viewed as the mainstream, academics at Taylor's University have been encouraged to include a combination of face-to-face and e-learning modes in the delivery of its contents in teaching and learning in the past decades. However, the ADTP program is a transfer program and due to its unique nature in the program, all modules were conducted in traditional lecture mode prior to the COVID-19 pandemic. The ADTP students have been very comfortable with traditional face-to-face learning in all their modules. With the uncertain situation arising from the COVID-19 Pandemic and the decision of university closure in compliance with the Government order to lock down the country, all the lecturers in ADTP were instructed to switch to digital learning mode with immediate effect on the announcement of Movement Control Order (MCO) by the Prime Minister of Malaysia on 18<sup>th</sup> of March.

This abrupt change has raised our concerns about learners' anxiety conditions and their intrinsic motivational orientation in the digital learning mode. Thus, it warrants research into investigating the correlation between learners' anxiety conditions and intrinsic motivational orientation in a digital learning environment during the COVID-19 Pandemic.

Motivation is an important topic that attracts the interests of researchers from various fields including psychology, education, business, and marketing. From the psychological aspect, Keller [2] explained that motivation "refers to the choices people make as to what experiences or goals they will approach or avoid, and the degree of the effect they will exert in that respect".

The driving force of online learning has long been associated with intrinsic motivation which means students undertaking actions are merely due to interest or satisfaction, thus the intrinsic motivational orientation in digital learning is considered an important factor for students to achieve learning outcomes in knowledge construction as well as satisfaction in participation in the digital learning activities and process.

Researchers have defined anxiety in various ways. In terms of digital learning, anxiety can be regarded as an emotional state which affects a student's performance. In the digital learning environment, anxiety conditions are defined as an affective dimension of fear and worry in terms of misuse of information technology. This may lead to miscommunication in their learning process to achieve the required learning outcome and excel in academic performance [3, 4, 5, 6, 7].

There are many studies done with regards to intrinsic motivational orientation and anxiety conditions in education, particularly focusing on students' learning. The relatedness of these two variables has been studied mainly due to their

similar conceptual characteristics of being a source of arousal that stimulates individuals to action. In the context of digital learning, intrinsic motivational orientation and anxiety conditions may occur simultaneously in the digital learning environment, hence it is a timely action to investigate the correlation between learners' anxiety conditions and intrinsic motivational orientation in the digital learning environment during the COVID-19 Pandemic.

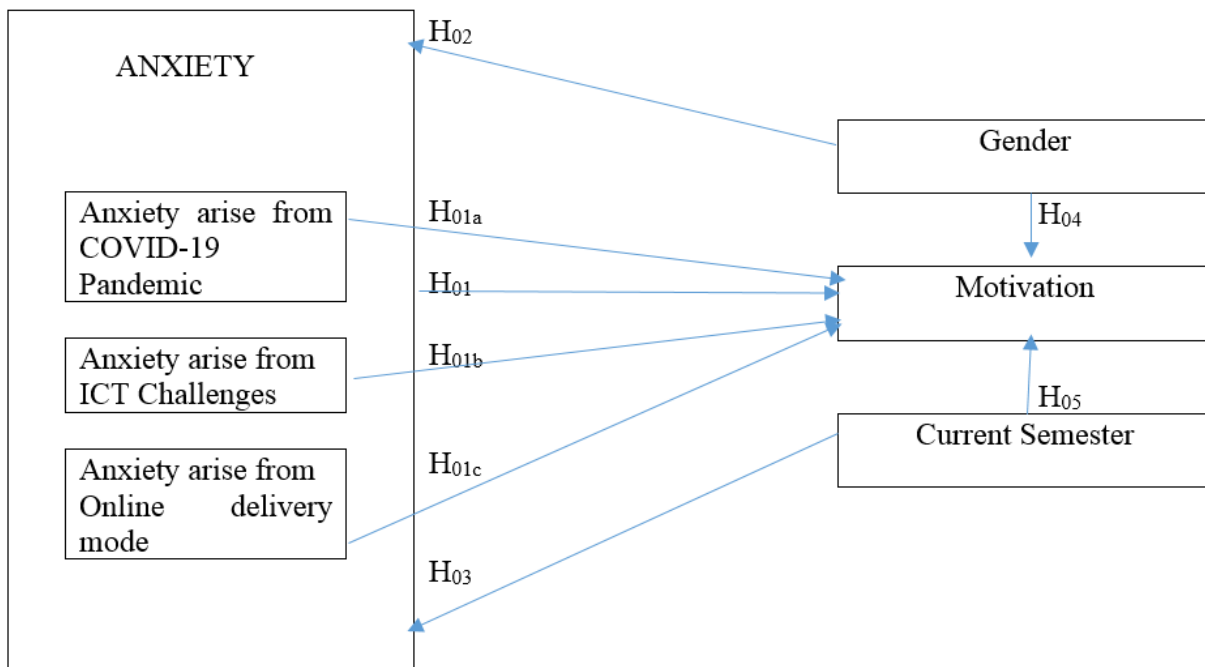
**Problem statement**

Students studying in the American Degree Transfer Program at Taylor's University have become familiar and comfortable with the more engaging face-to-face approach to teaching and learning conducted by their dedicated lecturers over the past semesters. Students and lecturers enjoyed good bonding while participating in physical activities and lectures in the classrooms and in the laboratory. However, with the University's decision to close Taylor's University Campus in compliance with the Lock Down-Regulation of the country announced by the Government on March 18<sup>th</sup> to battle the COVID-19 Pandemic, the ADTP program has been instructed to switch from physical learning to digital learning almost overnight. Lecturers and students were faced with a high level of anxiety during this transition period. Despite this abrupt change of delivery mode, lecturers have adapted to the

best practices and believe that this is the time to turn the crisis (COVID-19) into an opportunity (Online learning mode). However, the learners' anxiety faced by students and their motivation to adapt to the digital learning environment due to the abrupt change of learning mode has impacted their normal way of learning. This new normal of learning has become the central concern of the ADTP program particularly, and the School of Liberal Arts and Sciences in general, despite these students being categorized as a digital natives. Hence, a survey is deemed necessary to investigate the correlation between anxiety conditions and intrinsic motivational orientation with the abrupt change of delivery mode during this extraordinary period.

**Research Framework and Research Hypotheses**

Figure 1 shows the framework of this research. The anxiety conditions construct consists of anxiety arising from the COVID-19 Pandemic, anxiety arising from ICT challenges, and anxiety arising from online delivery mode. This study addresses the correlation between learners' anxiety conditions and intrinsic motivational orientation in digital learning environments as well as determines whether gender and current semester status affect the two constructs: Learners' anxiety conditions and intrinsic motivational orientation in the digital learning environment.



**Figure 1: Research Framework of Learners' Anxiety Conditions and Intrinsic Motivational Orientation in Digital Learning Environment**

Five null hypotheses and their subsidiary null hypotheses are formulated based on this research framework:

H<sub>01</sub>: There is no significant correlation between learners' anxiety Conditions and Intrinsic motivational Orientation in a digital learning environment

H<sub>01a</sub>: There is no significant correlation between learners' anxiety arising from COVID 19 Pandemic and Intrinsic motivational Orientation in a digital learning environment

H<sub>01b</sub>: There is no significant correlation between learners' anxiety arising from ICT challenges and Intrinsic motivational Orientation in a digital learning environment

H<sub>01c</sub>: There is no significant correlation between learners' anxiety arising from online delivery mode and Intrinsic motivational Orientation in a digital learning environment

H<sub>02</sub>: There is no significant difference in learners' anxiety conditions between male and female students.

H<sub>03</sub>: There is no significant difference in the learners' anxiety conditions among students studying in different semesters.

H<sub>04</sub>: There is no significant difference in the Intrinsic motivational Orientation between male and female students in the digital learning environment.

H<sub>05</sub>: There is no significant difference in the Intrinsic motivational Orientation among students studying in different semesters in the digital learning environment.

## METHODOLOGY

This study explores the correlation between the learners' anxiety conditions and intrinsic motivational orientation in the digital learning environment as well as the influence of demographic differences in terms of gender and current semester status of students studying in ADTP on these two variables.

The research was carried out in view of the abrupt switch from the traditional mode of physical teaching and learning to the digital learning environment in the middle of the Winter Semester in 2020, that is the ADTP March 2020 semester at Taylor's University. There were altogether 322 active students in ADTP during Winter 2020 semester, and 92.2% (296) of Taylor's ADTP students whose current semester status varies from semester 1 to semester 5 participated in this survey. ADTP offered 39 modules in the Winter 2020 Semester and all of these modules were switched from traditional physical lectures to a digital learning environment with immediate effect following the closure of Taylor's University in compliance with the Malaysian Government's announcement of lockdown in the country on March 18<sup>th</sup>, 2020. There were 169 (57.2 %) male students and 127 (42.8) female students who responded to this survey. The distribution of students was 55 semesters with 1 student, 123 semesters with 2 students, 30 semesters with 3 students, 45 semesters with 4 students, and 43 semesters with 5 students. The average age of students ranges from 17 years old to 18 years old.

### Data Collection

An online questionnaire that includes demographic information, anxiety conditions, and intrinsic motivational orientation in a digital learning environment was developed to gather information on learners' anxiety conditions and intrinsic motivational orientation in the digital learning environment of ADTP students before the end of the Winter 2020 semester. Cronbach's alphas for these two variables, learners' anxiety conditions and intrinsic motivational orientation in a digital learning environment were reported as 0.942 and 0.894, respectively.

In this survey questionnaire, the anxiety conditions variable has 38 items measuring domains such as anxiety arising from the COVID-19 pandemic, anxiety arising from ICT challenges, as well as anxiety due to learning on an online mode of delivery on a 4-point Likert scale. These domains include anxiety conditions characterized by feelings of unsecured, anxious, nervous, uncomfortable, ignored, apprehend, fear, intimidated, worried, and confusion.

The intrinsic motivational orientation in a digital learning

environment has an 8-item of 4-point Likert scale of intrinsic motivational orientation scale which characterized the driving force to attend lectures in a digital environment. The intrinsic motivational orientation scale was adapted from Johnson, R, *et. al* [8].

The link to this online survey questionnaire was sent to students via their email addresses by the mathematics lecturers. To avoid duplication in filling out the questionnaire and to reach out to as many ADTP students as possible, the questionnaire was sent to students who were enrolled in mathematics courses during the semester as almost every student was enrolled in at least one mathematics module during the Winter 2020 semester. Students were requested to respond to the survey questionnaire at the end of the semester after completing their final examination in the digital environment.

## FINDINGS

### Testing of Null Hypothesis 1 and Subsidiary Null Hypotheses

H<sub>01</sub>: There is no significant correlation between learners' anxiety Conditions and Intrinsic motivational Orientation in a digital learning environment

H<sub>01a</sub>: There is no significant correlation between learners' anxiety arising from COVID 19 Pandemic and Intrinsic motivational Orientation in a digital learning environment

H<sub>01b</sub>: There is no significant correlation between learners' anxiety arising from ICT challenges and Intrinsic motivational Orientation in a digital learning environment

H<sub>01c</sub>: There is no significant correlation between learners' anxiety arising from online delivery mode and Intrinsic motivational Orientation in a digital learning environment

Pearson Product Moment Correlation Coefficient using SPSS was performed to determine the correlation between the learners' anxiety conditions and intrinsic motivational orientation in a digital learning environment. The coefficient of correlation in the computation of each pair of bivariate correlation of null hypothesis and its subsidiary hypotheses are shown below:

1) Among the students of Taylor's American Degree Transfer Program, the learners' anxiety conditions and intrinsic motivational orientation in the digital learning environment were not correlated,  $R(296) = -0.104$ ,  $p > 0.05$ ;

1a) Among the students of Taylor's American Degree Transfer Program, the learners' anxiety arising from COVID 19 Pandemic and intrinsic motivational orientation in the digital learning environment were not correlated,  $R(296) = -0.107$ ,  $p > 0.05$ .

1b) Among the students of Taylor's American Degree Transfer Program, the learners' anxiety arising from ICT challenges and intrinsic motivational orientation in a digital learning environment were negatively correlated  $R(296) = -0.121$ ,  $p < 0.05$ .

1c) Among the students of Taylor's American Degree Transfer Program, the learners' anxiety arising from online delivery mode and intrinsic motivational orientation in the digital learning

environment was negatively correlated  $R(296) = -0.229, p < 0.05$ .

**Testing of Null Hypothesis 2**

H<sub>02</sub>: There is no significant difference in learners' anxiety conditions between male and female students.

An independent sample t-test was conducted to compare the learner's anxiety conditions of male and female students. Results showed that H<sub>02</sub> failed to be rejected.

Thus, there was no significant difference in the learners' anxiety conditions for male students (M=2.59, SD=0.57) and female students (M=2.56, SD=0.48);  $t(294)=0.438, p = 0.661$ .

**Testing of Null Hypothesis 3**

H<sub>03</sub>: There is no significant difference in the learners' anxiety conditions among students studying in different semesters.

A one-way between subjects ANOVA was conducted to compare the effect of the semester of study on learner's anxiety conditions of students at Taylor's ADTP in their semester 1, semester 2, semester 3, semester 4, and semester 5 respectively. There was no significant effect of the semester of study on learner's anxiety conditions for all 5 groups of ADTP students [ $F(4, 291) = 0.659, p = 0.621$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean learners' anxiety conditions for semester 1 students (M=2.49, SD=0.55), semester 2 students (M=2.60, SD=0.57), semester 3 students (M=2.60, SD=0.50), semester 4 students (M=2.52, SD=0.42), semester 5 students (M=2.63, SD=0.55) did not significantly differ from each other, as shown in Table 1.

**Table 1: One-way ANOVA and Post Hoc Comparison test for learners' anxiety conditions among ADTP students in various semesters of study**  
Descriptive

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
VAR00003TOTALANXIETY 1	55	2.4940	.54929	.0740	2.3455	2.6425	1.43	3.98
2	123	2.6047	.56797	.05121	2.5034	2.7061	1.03	3.88
3	30	2.6048	.50436	.09208	2.4165	2.7932	1.81	4.00
4	45	2.5200	.42057	.06289	2.3936	2.6463	1.56	3.36
5	43	2.6287	.55036	.08393	2.4594	2.7981	1.25	3.56
Total	296	2.5748	.53452	.03107	2.5136	2.6359	1.03	4.00

		Sum of squares	d	Mean	F	Sig.
VAR00003TOTALANXIETY	Between Groups	.736	4	.189	.659	.621
	Within Groups	83.530	291	.287		
	Total	84.286	295			

**Post Hoc Tests**

**Testing of Null Hypothesis 4**

H<sub>04</sub>: There is no significant difference in the intrinsic motivational orientation between male and female students in the digital learning environment.

An independent sample t-test was conducted to compare the intrinsic motivational orientation of male and female students in the digital learning environment. Results showed that H<sub>04</sub> failed to be rejected.

Thus, there was no significant difference in the intrinsic motivational orientation for male students (M=2.45, SD=0.57) and female students (M=2.44, SD=0.48);  $t(294)=0.224, p = 0.823$ .

**Testing of Null Hypothesis 5**

H<sub>05</sub>: There is no significant difference in intrinsic motivational orientation among students studying in different semesters in digital learning environment.

A one-way between-subjects ANOVA was conducted to compare the effect of the semester of study on intrinsic motivational orientation in the digital learning environment of students at Taylor's ADTP in their semester 1, semester 2, semester 3, semester 4, and semester 5 respectively. There was no significant effect of the semester of study on intrinsic motivational orientation in the digital learning environment for the 5 groups of ADTP students [ $F(4, 291) = 1.529, p = 0.194$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean intrinsic motivational orientation in the digital learning environment for semester 1 students (M=2.33, SD=0.50), semester 2 students (M=2.50, SD=0.58), semester 3 students (M=2.31, SD=0.51), semester 4 students (M=2.51, SD=0.53), semester 5 students (M=2.50, SD=0.55), did not significantly differ from each other, as shown in Table 2.

**Table 2: One-way ANOVA and Post Hoc Comparison test for intrinsic motivational orientation in digital learning environment among ADTP students in various semesters of study.**

Descriptive

	N	Mean	Std Dev	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
VAR00005ONLINELEARNINGMOTIVATION	55	2.3322	.50137	.06760	2.1967	2.4678	1.27	3.73
1	123	2.4982	.57864	.05217	2.3949	2.6014	1.09	4.00
2	30	2.3091	.50846	.09283	2.1192	2.4990	1.45	4.00
3	45	2.4869	.56313	.08395	2.3177	2.6561	1.27	4.00
4	43	2.5074	.53203	.08113	2.3437	2.6711	1.27	3.36
5	Total	2.4478	.55114	.03203	2.3847	2.5108	1.09	4.00

		Sum of squares	d	Mean	F	Sig.
VAR00005ONLINELEARNINGMOTIVATION	Between Groups	1.845	4	.461	1.529	.194
	Within Groups	87.761	291	.302		
	Total	89.606	295			

**Post Hoc Tests**

**DISCUSSION**

The learners’ anxiety conditions and intrinsic motivational orientation in digital learning among Taylor’s ADTP students is the average of the 38 items of learners’ anxiety conditions and 8 items of intrinsic motivational orientation in the digital learning environment during the lockdown period of the COVID-19 Pandemic. Each item of learners’ anxiety conditions and intrinsic motivational orientation is expressed in a 4-point Likert Scale

The result from the Descriptive statistics of Learners’ anxiety conditions and intrinsic motivational orientation in the digital learning environment during the locked down period of the COVID-19 pandemic indicates that 296 ADTP students had a mean anxiety condition of 2.58 (SD = 0.53) and mean intrinsic motivational orientation of 2.45 (SD = 0.55). This result suggests that the ADTP students faced moderate learners’ anxiety conditions and moderate intrinsic motivational orientation in the digital learning environment

This result is consistent with the first null hypothesis which states that there is no significant correlation between the learners’ anxiety conditions and intrinsic motivational orientation in the digital learning environment. However, by excluding the learners’ anxiety arising from the COVID-19 pandemic, it can be observed that there is a negative correlation between learners’ anxiety arising from ICT challenges and intrinsic motivational orientation in digital learning and a negative correlation between learners’ anxiety arising from online delivery mode and intrinsic motivational orientation in the digital learning environment.

The findings from the null hypotheses testing reveal that all ADTP students have faced moderate learners’ anxiety condition and intrinsic motivational orientation in a digital learning environment when the teaching and learning mode was switched abruptly from a face-to-face environment to a digital learning environment regardless of their gender and semester of study in Taylor’s ADTP.

**CONCLUSION**

This research aimed to Investigate the correlation between anxiety conditions and intrinsic motivational orientation in a digital learning environment during the COVID-19 Pandemic. The respondents constituted 296 Taylor’s ADTP students studying in the Winter 2020 semester. Research results indicated that the ADTP students faced moderate learners’ anxiety conditions and moderate intrinsic motivational orientation in the digital learning environment due to the COVID-19 pandemic. It indicated that there was no significant correlation between the learners’ anxiety conditions and intrinsic motivational orientation in the digital learning environment. However, if learners’ anxiety arising from COVID-19 is not considered, it can be observed that there is a negative correlation between learners’ anxiety arising from ICT challenges and intrinsic motivational orientation in the digital learning environment and a negative correlation between learners’ anxiety arising from online delivery mode and intrinsic motivational orientation in the digital learning environment. It can be concluded that the fears of the COVID-19 virus had contributed to the high level of anxiety.

This study has revealed that there was no significant difference in learners’ anxiety conditions as well as intrinsic motivational orientation in the digital learning environment between male and female students and among students studying in the different semesters in Taylor’s ADTP, from semester 1 students to semester 5 students. This is mainly due to the sudden change from a physical or face-to-face learning environment to a digital learning environment. As digital learning will be continued until the end of the year, the researcher plans to carry out another round of survey to verify this result.

**REFERENCE:**

I.Hollands, F. M., & Tirthali, D. (2014). Why do Institutions Offer MOOCs? *Online Learning, 18*(3). doi:10.24059/olj.v18i3.464

2. Keller, J. M. (1983). Motivational design of instruction. In C. M. Reigeluth (Ed.), *Instructional design theories and models: An overview of their current status* (pp. 386-434). Hillsdale, NJ: Lawrence Erlbaum Associates.
3. Norazah Nordin, Helmi Norman and Mohamad Amin Embi. (2015). Technology acceptance of massive open online courses in Malaysia. *Malaysian Journal of Distance Education* 17(2): 1-16. DOI: 10.21315/mjde2015.17.2.1
4. Beckers, J. J., & Schmidt, H. G. (2001). The structure of computer anxiety: A six-factor model. *Computers in Human Behavior*, 17, 35-49. Doi: 10.1016/S0747-5632(00)00036-4
5. Heinszen, R. K., Glass, C. R., & Knight, L. A. (1987). Assessing computer anxiety: Development and validation of the computer anxiety rating scale. *Computers in Human Behavior*, 3, 49-59. Doi: 10.1016/0747-5632(87)90010-0
6. Kay, R. H. (2008). Exploring the relationship between emotions and the acquisition of knowledge. *Computers & Education*, 50, 1269-1283.
7. Saadé, R. G., & Kira, D. (2007). Mediating the impact of technology usage on perceived ease of use by anxiety. *Computers & Education*, 49, 1189-1204. Doi: 10.1016/j.compedu.2006.01.009.
8. Johnson, R., Stewart, C., & Bachman, C. (2013). What drives students to complete online courses? What drives faculty to teach online? Validating a measure of motivation orientation in university students and faculty. *Interactive Learning Environments*, 21(1), 1-16. Doi: 10.1080/10494820.2013.788037