International Journal of Business and Administrative Studies
volume 9 issue 2 pp. 20-28 doi: https://dx.doi.org/10.20469/ijbas.9.10002-2

Digital Learning During the Covid-19 Pandemic: The Challenges Faced by Parents of Junior High Students in Chiayi, Taiwan

Li-Chuan Chu*
Department of Business Administration,
Nanhua University,
Chiayi County, Taiwan

Yi-Te Lee
Department of Business Administration,
Nanhua University,
Chiayi County, Taiwan.

Abstract: Parents of students who switched to remote learning during the COVID-19 pandemic have had to face numerous challenges. This study examined the challenges associated with new learning environments and investigated the effects of distraction behavior, learning attitude, and self-directed learning on academic achievement. This study collected information from junior high school students by using a questionnaire and conducted statistical analysis on the data collected by using partial least squares. The data came from a random sample of 131 parents of junior high school students in the Chaiyi Taiwan. Analysis revealed that learning difficulties have a positive effect on academic achievement, indicating that in a digital learning environment, the presence of learning difficulties may motivate learners to more actively tackle challenges. Necessitating a balance in the level of supervision. Technical learning was found to have a positive effect on academic achievement, highlighting the promotive role of technology application on academic achievement. The switch to remote learning during the COVID-19 pandemic posed multiple challenges to parents. Balanced strategies for coping with these challenges must be developed to address problems associated with students' distraction behavior, learning attitude, academic achievement, and self-directed learning. Addressing these challenges will enable parents to guide their children's learning more effectively, enhancing students' digital learning skills and academic achievement.

Keywords: *Distraction behavior, self-directed learning, learning attitude, academic achievement, E-Learning*

Received: 15 May 2023; ***Accepted:*** 30 June 2023; ***Published:*** 24 July 2023

INTRODUCTION

The amount of time children spend with their parents has increased since the COVID-19 pandemic, and this has increased the emotional burden on parents. Furthermore, with more time being spent together, parents and their children are increasingly engaging in conflict and their relationships are being increasingly strained.

Parents who have to keep a job and care for their children at the same time face numerous challenges. They need to support their children's educational activities, cope with changes to information channels and daily routines, and resolve disagreements. These challenges significantly affect both parents and children, requiring considerable adjustments and adaptations.

In an increasingly digitalized world, where information rapidly changes and disseminates, parents play a crucial role in guiding and assisting their children in the use of electronic devices and digital media. Digital learning is becoming integral to daily life. Restrictions must be established to help children develop self-control in the digital learning

*Correspondence concerning this article should be addressed to Li-Chuan Chu, Department of Business Administration, Nanhua University, Chiayi County, Taiwan. E-mail: city332015@yahoo.com.tw

environment.

In the context of digital resource usage, parents are particularly concerned about whether their children can focus on their studies, whether excessive use of digital technologies might affect their health, and whether the parents themselves could be a primary factor affecting children's learning. This study investigated the factors that affect children's learning in a digital learning context.

LITERATURE REVIEW

Distraction Behavior

In the field of educational studies, distraction behavior has become a prominent topic. Distraction behavior includes attention deficit, inability to concentrate on studies, lack of motivation for learning, abuse of electronic devices, and emotional responses provoked by the use of electronic devices.

(Posner & Rothbart, 1994) defined distraction behavior as the inability to maintain attention on a specific task or piece of information, which is influenced by external or internal factors. According to (Smallwood & Schooler, 2013), emotional states affect thought patterns.

(Turkle, 2011) emphasized the importance of communication, stating that technology impedes face-to-face conversations and in-depth exchanges. Technology can reduce one's reliance on genuine dialogue. This, in turn, may affect concentration and deep understanding.

In summary, external and internal factors, including emotions and technology usage, must be taken into account when formulating educational strategies. These include providing appropriate learning support, emotional counseling, and guidance on technology use. to enhance focus and deep understanding, thereby improving the overall learning experience and outcomes.

Self-directed Learning

In today's rapidly changing learning environment, self-directed learning is seen as key to fostering individuals' continuous progress and adaptation to future challenges. (Schwartz-Shea & Yanow, 2009) emphasized that self-directed learning is based on an individual's interests, motivation, and goals, involving spontaneous participation in learning activities and active control and management of the learning process. In addition, multimedia learning provides an avenue for using visual, auditory, and textual multimedia to promote students' active participation and proactive learning (Mayer & Alexander, 2011).

According to (Levin, 1998), self-directed learning encompasses not only the learner's initiative in the learning process but also includes setting up objectives and planning, monitoring, and evaluating the learning process. To realize the potential of self-directed and multimedia learning, the education system must establish a culture and environment that supports learning. This includes providing a wealth of learning resources, encouraging children to set clear learning objectives, and offering targeted learning guidance and feedback. Through these measures, organizations can stimulate children's motivation to learn and foster their personal and professional growth, thereby achieving the collective development goals of both the organization and the individual.

Learning Attitude

In educational psychology, learning attitude is regarded as an individual's psychological response to learning activities, encompassing feelings, emotions, and values. (Levin, 1998) emphasized that the positive and negative characteristics of this attitude reflect, respectively, an individual's positive and negative stance toward learning. An individual's learning attitude is closely associated with their interests, motivation, and past learning experiences.

The theory of intrinsic motivation and autonomy proposed by (Deci & Ryan, 2013) provides profound insights, highlighting the effect of an individual's intrinsic motivation on their learning attitude. When an individual's learning activities originate from their internal interest and pleasure, rather than external rewards or punishments, maintaining a positive learning attitude becomes easier for them. This autonomous learning attitude encourages the individual to feel actively involved in their learning rather than merely being a passive responder to external factors.

By establishing a supportive learning environment that allows children to discover and pursue their interests and goals, parents can foster a positive learning attitude in their children, thereby influencing their future academic achievements and growth. Therefore, parental involvement and guidance are crucial in shaping children's attitude toward learning.

Academic Achievement

In the learning environment, academic achievement is a key concept that encompasses students' comprehensive achievements in knowledge acquisition, skill development, and strategy application and their performance in specific domains.

Anderson and Pearson (1984) emphasized the comprehensive nature of academic achievement, highlighting its multifaceted characteristics in academic development. The role of administrators within educational institutions is crucial, particularly in promoting students' academic achievement. The concepts of deep learning and surface learning (Biggs, 1987) may serve to remind administrators that educational institutions should encourage and facilitate deep learning among students, focusing on the development of understanding and application skills rather than merely on memorization and mechanical learning. This requires administrators to develop appropriate teaching strategies and assessment standards to encourage students to engage in deep thought and exploration. The present study adopts this perspective for analysis.

The taxonomy of cognitive domains (Bloom, 1956) provides a framework that allows administrators to clearly understand the manifestation of academic achievement at different cognitive levels. This aids educators in designing more effective teaching activities and assessment methods, thereby facilitating comprehensive development of students at all levels.

In summary, educational institutions should strive to enhance students' academic achievement and realize this goal through effective teaching and management measures. This involves not only improving teaching methods and assessment techniques but also creating a learning environment that encourages active learning and exploration by students.

METHODS

This study employed partial least squares (PLS), a multivariate statistical analysis technique primarily used for addressing multiple regression problems and predictive modeling. PLS is particularly effective with small samples and high-dimensional features (Pirouz, 2006).

We recruited parents of junior high school students in Chiayi, Taiwan through convenience sampling. The participants were asked to complete a questionnaire, which was developed referencing the Programme for International Student Assessment academic achievement scale developed by the Organisation for Economic Cooperation and Development, the self-directed learning readiness scale (Guglielmino, 1977), and the academic motivation scale (Vallerand et al., 1992). In total, 101 completed responses were analyzed.

Questionnaire items were rated on a five-point Likert-type scale, with endpoints ranging from 1 (strongly disagree) to 5 (strongly agree). We used descriptive statistics and performed factor, reliability, validity, and PLS analyses, focusing on observing factor loadings, Cronbach's , composite reliability (CR), and average variance extracted (AVE).

Referencing (Cronbach, 1951), (Pavlou & Fygenson, 2006), we followed a series of standards when assessing the reliability and validity of the questionnaire. Specifically, factor loading values must be greater than 0.6 to ensure the questionnaire content has sufficient explanatory power. The recommended standard for Cronbach's value is greater than 0.7, which helps ensure the questionnaire has high reliability and trustworthiness. Additionally, for the assessment of internal consistency, a CR value greater than or equal to 0.7 is considered high CR, indicating favorable consistency within each construct.

In terms of validity, using an AVE value greater than 0.5 as the standard helps ensure that the questionnaire has excellent convergent validity. This indicates that the differences between various constructs are sufficiently large, ensuring the effectiveness of the measurement tool. By adhering to these assessment standards, researchers can develop a robust and trustworthy questionnaire, contributing to the accuracy and reliability of research findings. Therefore, considering these standards during the development and evaluation of a questionnaire is crucial for the scientific integrity and credibility of the research.

EMPIRICAL ANALYSIS

This section aims to organize and analyze the collected questionnaire responses and validate the hypotheses proposed in this study through PLS analysis. The section comprises three parts: 4.1 involves the basic descriptive statistical analysis of the collected samples, 4.2 examines the model, and 4.3 tests the research hypotheses.

Descriptive Statistics

In this study, copies of questionnaires were distributed electronically, and a total of 101 responses were collected from the parents. Demographic information, including gender, age, marital status, level of education, and occupation, was analyzed. In total, 41 respondents were men and 60 were women, accounting for 40.6% and 59.4% of the total sample, respectively. Regarding age, 65 respondents (64.4%) were aged 40–49 years, and 27 respondents (26.7%) were aged 51 years. Nine respondents (8.9%) were aged 30–39 years. In terms of marital status, the majority of respondents (n = 98; 97.0%) were married. Two respondents were divorced and one was unmarried. Most respondents were university educated—37 respondents had undergraduate degrees and 37 respondents had postgraduate degrees. A total of 15 respondents (14.9%) and 12 respondents (11.9%) had educational levels of junior college and senior high school (vocational), respectively. Professionally, the education sector had the highest number of respondents, with 31 individuals (30.7%), followed by the finance sector, with 13 individuals (12.9%).

PLS Results

(Shehu & Mahmood, 2014) advised that factor loadings should exceed 0.6; (Cronbach, 1951) suggested that Cronbach's values must be greater than 0.7 for the questionnaire to be considered as having high reliability; (Fornell & Larcker, 1981) advised that CR values should be above 0.6, which indicates favorable internal consistency among constructs; (Fornell & Larcker, 1981) also recommended that AVE values should be higher than 0.5.

This study constructed a PLS structural model with four research variables, namely distraction behavior (external influences, personal behavior), learning method (home learning, learning difficulties, learning method), learning attitude (supervised learning, technical learning), and academic achievement (academic achievement), spanning eight dimensions to investigate the factors affecting learning outcomes in remote education. In the factor analysis, the factor loadings of several items did not reach 0.6, leading to the decision to remove these items. Detailed results of the factor loadings can be found in Table 1 and Fig. (1).

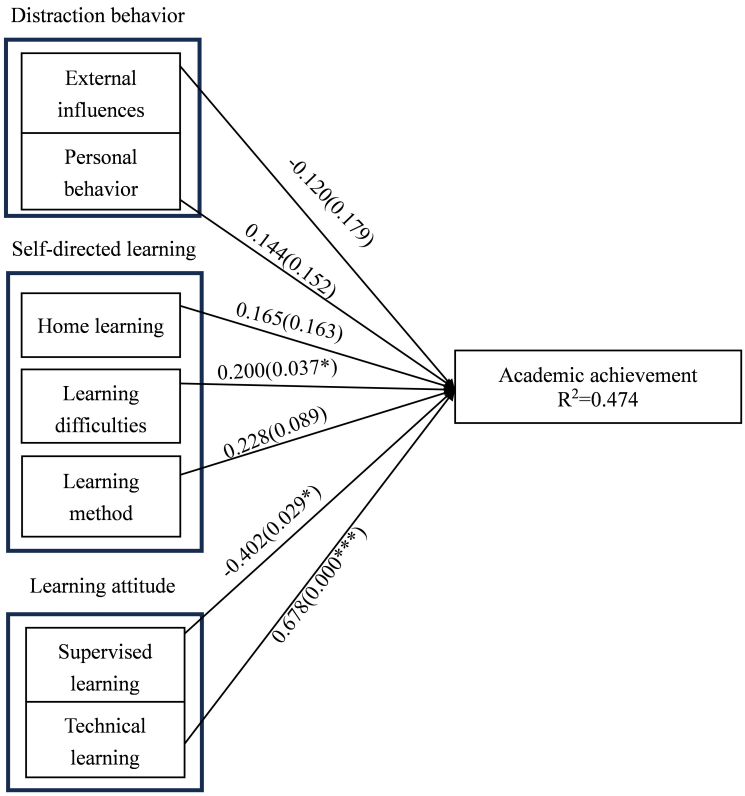

Figure 1 *Factor loadings results*

Table 1 *RESULTS OF FACTOR LOADING ANALYSIS*

Construct	Factor	Item	Factor loading raw	Factor loading modified
Distraction behavior	External influences	EI1	0.917	0.938
		EI2	0.86	0.862
		EI3	0.769	0.744
		EI4	0.575	-
	Personal behavior	PB1	0.75	0.76
		PB2	0.878	0.872
		PB3	0.462	-
		PB4	0.862	0.865
		PB5	0.689	0.728
Learning method	Home learning	HS1	0.711	0.774
		HS2	0.772	0.85
		HS3	0.814	0.85
		HS4	0.676	0.795
		HS5	0.36	-
	Learning difficulties	LD1	0.505	-
		LD2	0.687	0.685
		LD3	0.966	0.993
	Learning method	SM1	0.694	0.693
		SM2	0.752	0.751
		SM3	0.675	0.675
		SM4	0.821	0.821
		SM5	0.75	0.75

CONT.....

Learning attitude	Supervised learning	SL1	0.719	0.72
		SL2	0.807	0.807
		SL3	0.738	0.738
		SL4	0.875	0.875
		SL5	0.786	0.786
	Technical learning	TL1	0.816	0.816
		TL2	0.78	0.78
		TL3	0.804	0.803
		TL4	0.682	0.682
		TL5	0.709	0.709
Construct	Factor	Item	Factor loading raw	Factor loading modified
Academic achievement	Academic achievement	ACA1	0.667	0.671
		ACA2	0.842	0.84
		ACA3	0.829	0.826
		ACA4	0.852	0.85
		ACA5	0.742	0.74
		ACA6	0.856	0.856
		ACA7	0.812	0.813
		ACA8	0.714	0.719
		ACA9	0.755	0.757

The t test can be used to assess the statistical significance of path coefficients, with positive and negative *t* values indicating the direction of the relationship, and the magnitude of the t value determining the statistical significance. We

used the *t* test to confirm whether the variable relationships within the model were important[Fig. (2)].

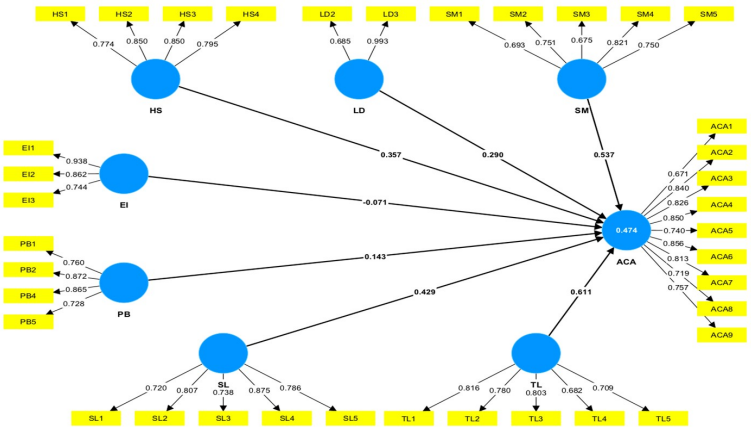

Figure 2 *Statistical significance of path coefficients*

The analysis results indicate that the Cronbach's αvalues for each construct were greater than 0.7, the CR values all exceeded 0.8, and the AVE values were all greater than 0.5. This demonstrates that the constructs and items of this study possessed favorable reliability and validity. The results related to the model's confirmatory analysis can be found in Tables 2 and 3.

Table 2 *RESULTS OF RELIABILITY AND VALIDIY ANALYSES*

Construct	Item	Factor loading	Cronbach's α	CR	AVE
External influences	EI1	0.938	0.832	0.887	0.725
	EI2	0.862			
	EI3	0.744			
Personal behavior	PB1	0.76	0.826	0.883	0.654
	PB2	0.872			
	PB4	0.865			
	PB5	0.728			
Home learning	HS1	0.774	0.835	0.89	0.669
	HS2	0.85			
	HS3	0.85			
	HS4	0.795			
Learning difficulties	LD2	0.685	0.743	0.838	0.727
	LD3	0.993			
Learning method	SM1	0.693	0.794	0.858	0.548
	SM2	0.751			
	SM3	0.675			
	SM4	0.821			
	SM5	0.75			

Table 3 *CONT...*

Construct	Item	Factor loading	Cronbach's α	CR	AVE
Supervised learning	SL1	0.72	0.85	0.89	0.619
	SL2	0.807			
	SL3	0.738			
	SL4	0.875			
	SL5	0.786			
Technical learning	TL1	0.816	0.817	0.872	0.578
	TL2	0.78			
	TL3	0.803			
	TL4	0.682			
	TL5	0.709			
Academic achievement	ACA1	0.671	0.923	0.936	0.621
	ACA2	0.84			
	ACA3	0.826			
	ACA4	0.85			
	ACA5	0.74			
	ACA6	0.856			
	ACA7	0.813			
	ACA8	0.719			
	ACA9	0.757			

Table 4 *CORRELATION COEFFICIENTS AND SQUARE ROOTS OF AVE*

Factor	EI	PB	HS	LD	SM	SL	TL	ACA
EI	0.851							
PB	0.403	0.809						
HS	0.078	0.007	0.818					
LD	0.131	0.045	0.040	0.853				
SM	0.015	0.109	0.532	0.116	0.74			
SL	0.002	0.004	0.657	0.088	0.768	0.787		
TL	0.037	0.024	0.492	0.065	0.727	0.833	0.76	
ACA	0.071	0.143	0.357	0.29	0.537	0.429	0.611	0.788

Hypothesis Validation

Following the recommendations of (Cohen, Cohen, West, & Aiken, 2013) and (Shehu & Mahmood, 2014), an explanatory power (R^2) greater than 10% should be achieved. The R^2 of parents toward academic achievement was 47.4%. The academic achievement model had favorable explanatory power because the R^2 values were all greater than 10%.

According to (Fornell & Larcker, 1981), *p* values should be less than 0.05 to be considered statistically significant. The results of our analysis are as follows: learning difficulties, supervised learning, and technical learning have a significantly positive effect on academic achievement, thereby validating hypotheses Hp4, Hp6, and Hp7. The effects of external influences, personal behavior, home learning, and learning methods on academic achievement were not significant; therefore, hypotheses Hp1, Hp2, Hp3, and Hp5 were rejected.

Path analysis is a method of structural equation modeling used to investigate complex relationships between variables [Fig. (3)].

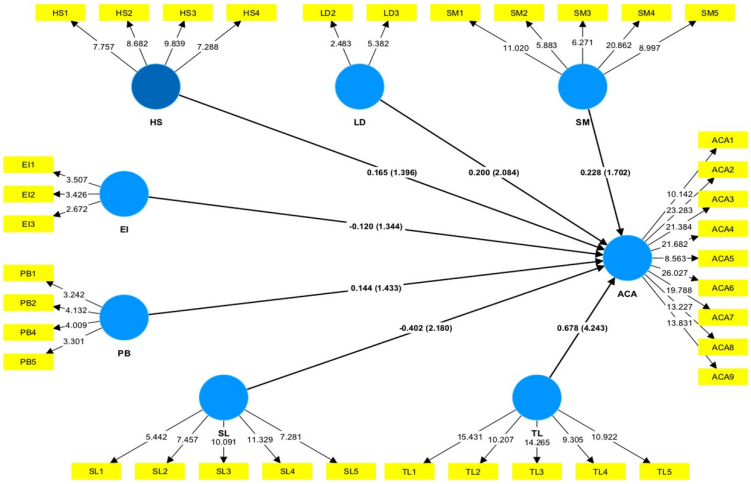

Figure 3 *Path analysis*

CONCLUSION AND SUGGESTIONS

Parents of students who were required to switch to remote learning during the COVID-19 pandemic have faced numerous challenges. The findings of this study demonstrate that learning difficulties have a positive effect on academic achievement, implying that in a digital learning environment, the presence of learning difficulties might inspire learners to more actively tackle challenges, thereby positively affecting their academic achievement. Conversely, supervised learning has a negative effect on academic achievement, indicating that excessive parental supervision could hinder children's academic achievement, highlighting the need for a balanced level of parental supervision. The positive influence of technical learning indicates that the application of technology can enhance academic achievement. Educational institutions should promote the integration of more technology into teaching and provide corresponding training to assist parents in better supporting their children's technological learning.

Schools and educational institutions are advised to offer more individualized learning support for students facing learning difficulties to ensure these students can address the challenges posed by digital learning environments. Furthermore, enhancing technical education in schools and educational institutions and providing parental education courses that emphasize a balanced approach to supervised learning can enable parents to more wisely participate in and guide their children's learning. This will better equip students and parents with the technological skills needed for digital learning, thereby enhancing students' academic achievement.

REFERENCES

Anderson, R. C., & Pearson, P. D. (1984). A schema-theoretic view of basic processes in reading comprehension. *Handbook of reading research*, *1*, 255-291.

Biggs, J. B. (1987). *Student approaches to learning and studying. research monograph.* ERIC.

Bloom, B. S. (1956). *Taxonomy of education objectives book 1-cognitive domain.* David McKay Company.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, *16*(3), 297-334.

Deci, E. L., & Ryan, R. M. (2013). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.

Guglielmino, L. M. (1977). *Development of the self-directed learning readiness scale.* University of Georgia.

Levin, J. S. (1998). Religious research in gerontology, 1980–1994: A systematic review. *Journal of Religious Gerontology*, *10*(3), 3-31.

Mayer, R. E., & Alexander, P. A. (2011). *Handbook of research on learning and instruction*. Routledge New York.

Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS quarterly*, 115-143.

Pirouz, D. M. (2006). An overview of partial least squares. *Available at SSRN 1631359*.

Posner, M. I., & Rothbart, M. K. (1994). Constructing neuronal theories of mind. *Large-scale neuronal theories of the brain*, 183-199.

Schwartz-Shea, P., & Yanow, D. (2009). Reading and writing as method: In search of trustworthy texts. *Organizational ethnography: Studying the complexities of everyday life*, 56-82.

Shehu, A. M., & Mahmood, R. (2014). Market orientation, knowledge management and entrepreneurial orientation as predictors of sme performance: Data screening and preliminary analysis. In *Information and knowledge management* (Vol. 4, p. 12-23).

Smallwood, J., & Schooler, J. W. (2013). The restless mind.

Turkle, S. (2011). *Alone together: Why we expect more from technology and less from each other.* Basic Books.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and psychological measurement*, *52*(4), 1003-1017.