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Relationship between Resilience to Digital Distractions and the Motivation of Pre-Service Biology Teachers

Ogbonnaya, U. N.

Department of Biological Sciences, Tai Solarin University of Education, Ijagun, Ogun State
Corresponding Author: ogbonnayaun@tasued.edu.ng

Abstract

This study investigated the relationship between resilience to digital distractions and the motivation of pre-service biology teachers. This descriptive survey comprised a sample of five hundred and eighty-three (583) pre-service biology teachers who were selected at random from the Biological Sciences Department at Tai Solarin University of Education, Ogun State. A questionnaire developed by Hatlevik and Bjarnø (2021) was adapted as an instrument for data collection. Descriptive and correlational statistics were used to answer the research questions formulated for this study. Our findings revealed that pre-service biology teachers have a moderate level of resilience to digital distractions (M = 20.604, SD = 4.0904); pre-service biology teachers have a high level of motivation (M = 16.887, SD = 2.3259). Finally, resilience to digital distractions was positively correlated to the motivation of pre-service biology teachers (r = .126, p = 0.002). It is recommended that suitable programs and activities to sustain pre-service biology teachers' high level of motivation be organized periodically, and pre-service biology teachers should also develop strong resilience to digital distractions from the use of digital devices.

Keywords: Resilience, Digital distractions, Motivation, Pre-service, Biology teachers

INTRODUCTION

Since the introduction of numerous digital platforms, most people's attention has migrated from physical to virtual. This is evident among young digital media consumers, particularly university students. Technology can help college students communicate more easily and obtain information more easily, as acknowledged by Sorrels (2018). However, technology can also cause distractions and push students to do things that have nothing to do with their academics (Alt, 2017). Furthermore, Seemiller (2017) discovered through their survey of 193 undergraduates that using personal devices in the classroom is common, with college students primarily using them for non-class-related activities.

The ubiquitous integration of digital devices, such as computers and cell phones, has significantly transformed educational settings. These gadgets provide students with convenient access to information, enable mobile learning, and enhance cooperation (Anshari et al., 2017). However, they also pose major distracting dangers. Studies regularly reveal that digital distractions severely impair educational results. According to Francis and Flanigan (2012) and Kuznekoff and Titsworth (2013), college students claim that technology impairs their ability to pay attention in class, makes studying more difficult, and reduces their learning. One survey indicated that 80% of undergraduates feel internet distractions impede their performance (McCoy, 2020).

Students benefit from using electronic or digital gadgets in the classroom. For one, the use of digital gadgets provides wider access to information. Additionally, it gives students access to the world of original thought and investigation. However, the same can also result in distraction, which causes students to lose concentration and eventually divert them from their studies. Student digital distraction is an issue

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that schools are currently dealing with. Maladaptive behaviour in the classroom has become more commonplace due to the Internet, despite its undeniable necessity for numerous practical uses and applications. Rather than facilitating the anticipated Internet-enabled learning, practitioner reports indicate that the Internet has turned against learning, causing what is now called "loafing" or "slacking" at higher educational levels. This is the challenge currently affecting schools: digital distraction among their kids (Africa et al., 2017).

Kay and Lauricella (2016) stated that the previous decade has seen continuous development in student use of digital devices such as smartphones, laptops, tablets, etc. The devices provide consumers with wider access to information and people. According to research, students' increased use of digital devices is causing a rise in learning disruptions in classrooms around the world. Digital distraction has been acknowledged as a threat in both the working and school sectors (Hatlevik & Bjarnø, 2021). Numerous studies have examined the issue of digital distraction in higher education, with many revealing a markedly detrimental effect. More than 70% of college students who used laptops in class used them for non-academic purposes, according to Kay and Lauricella 's (2016) research. According to Leysens et al. (2016), there is a negative relationship between the frequency of media use and academic achievement. They claim that students' ability to learn is hampered by the frequent distractions of digital media.

According to Zautra et al. (2010), resilience is the ability of a person to bounce back quickly and readily from setbacks that affect their personal and professional goals. According to Manzano-García and Ayala (2013), resilience is a dynamic and ever-evolving process that gives students the information, skills, and positive outlook they need to face an uncertain future with resourcefulness, optimism, and a positive outlook. In their study, Allan et al. (2014) discovered a direct correlation between the level of resilience exhibited by students upon university admission and their subsequent academic achievements at the conclusion of their first year. Beauvais et al. (2014) discovered a strong and statistically significant relationship between academic achievement and resilience. Li et al. (2015) verified that resilience can assist first-year university students in confronting adversity. Johnson et al. (2015) examined the correlation between the academic grades of college students and their level of resilience. Their findings demonstrated a clear correlation between academic grades and the perception of resilience among students. The results, in connection with the findings of Allan et al. (2014), demonstrate the possibility of a reciprocal connection between resilience and performance among university students.

Motivation is a multifaceted concept that has given rise to numerous theories and models (Chaudhary, 2014; Rizwan et al., 2014). An in-depth examination of the factors influencing human behaviour and its subsequent transformations is crucial to comprehend the underlying motivations (Nuttin, 2014). Many academic disciplines use the idea of motivation to examine the "what and why" of human behaviour (Deci & Ryan, 2000, quoted in Wilkesmann et al., 2012). There is a plethora of research on the connection between professional work and motivation in organizational contexts (Osterloh et al., 2011; quoted in Wilkesmann et al., 2012). Motivation is commonly accepted to boost the performance, productivity, and efficiency of workers (Ryan & Deci, 2000, cited in Wilkesmann et al., 2012). Motivation is a significant factor that could affect students' academic performance outside of the workplace. Extrinsic motivation refers to an activity that is not done for its own sake but for external reasons. People act in certain ways to achieve desired outcomes, such as material prizes, or to avoid punishment that may be threatened. These external motivations might take the form of incentives or penalties. (Deci & Ryan, 2000, cited in Wilkesmann et al., 2012). The more external regulation is internalized, the more acts are seen as autonomous, i.e., self-determined.

Motivation heavily influences student academic performance, which is mostly affected by their self-perceptions of their talents and the results of their academic endeavours (Abdelrahman, 2020). The beliefs that incorporate both result expectations and evaluations of personal competence play a crucial role in shaping the value that students assign to their educational tasks and their expectations for success (Wigfield & Eccles, 2020). Increased motivation generally leads to increased effort and higher levels of achievement. Students who have confidence in their ability to execute tasks successfully and see their importance are more likely to excel academically (Wolters & Brady, 2021). A clear relationship between academic achievement and motivation levels has been demonstrated by numerous educational research

studies (Andini & Rusmini, 2022; Diaconu-Gherasim et al., 2022).

One needs the drive to push through with their academics despite the circumstances the children find themselves in. To achieve one's objectives, a greater degree of motivation must be established (Mazumder, 2014). Motivation is characterized as a physiological and psychological desire that propels people and provides them with a sense of fulfilment when their objectives are reached (Mahadi & Jafari, 2012). Motivation ignites the desire of a person to continuously attempt to accomplish a job (Gbollie & Keamu, 2017).

It has been a great concern to teachers, parents, and stakeholders that the performance of students has greatly declined in biology, and this can be attributed to many factors, which range from the poor use of digital devices to the amount of time they waste on the devices. It is therefore very important that the students are given maximum monitoring as to the rightful use of these devices in such a way that boosts academic performance. Much research appears to focus on why students use personal devices for unrelated course purposes, or the impact of using these devices. Therefore, this study examined the relationship between resilience to digital distractions and the motivation of pre-service biology teachers. To achieve this, the following research questions were formulated: (i). What is the pre-service biology teacher's level of resilience to digital distractions? (ii). What is the level of motivation of pre-service biology teachers? (iii). What is the relationship between resilience to digital distractions and the motivation of pre-service biology teachers?

METHODOLOGY

Research Design

A descriptive survey research design was adopted for this study.

Population and Sample

The study population comprised all pre-service biology teachers of the Department of Biological Sciences, College of Science and Information Technology, Tai Solarin University of Education, Ogun State, Nigeria. A simple random sampling technique was used to select five hundred and eighty-three (583) pre-service biology teachers who studied in the 2021–2022 academic year.

Instrument and Method of Data Collection

A questionnaire developed by Hatlevik and Bjarnø (2021) was adapted as an instrument for data collection and used to elicit information from respondents. The questionnaire is divided into three (3) sections: Section A contains information for eliciting responses based on respondents' demographic data. Section B contains information on the kinds of digital devices used for studying and Section C has information to elicit responses to the research questions raised to guide the study. The questionnaire was subjected to face and content validity. Experts in the Department of Biological Sciences, Tai Solarin University of Education, Ijagun, Ogun State, did the validity. Before the application stage, item analysis was conducted using 50 pre-service teachers from the target population who were not part of the main study. This item analysis was performed to standardize the questionnaire items. Cronbach's alpha was used to test the reliability of the items on the questionnaire, and it had a good internal consistency reliability coefficient of 0.840.

During the administration stage, six hundred (600) copies of the questionnaire were distributed to randomly selected pre-service biology teachers, who filled them out on the same day they were given them. At the point of retrieval, only five hundred and eighty-three (583) copies were recovered, indicating a 97% return rate.

Statistical Analysis

The collected data was analyzed using mean, frequency counts, percentages, and standard deviation. Pearson Product Moment Correlation (PPMC) was used to answer the research questions.

RESULTS

The analysis of the demographics of the respondents based on gender showed that 102 out of 583 (17.5%) respondents were males, and 481 out of 583 (82.5%) were females. This is because females are more prevalent in the Biological Sciences Department. Also, the analysis of demographics of the respondents based on age showed that 105 out of 583 (18%) respondents fell below 20 years and 478 out of 583 (82%) respondents fell within 20-34 years. The respondents level showed that 54 (9.3%) pre-service biology teachers were in 100L, 148 (25.4%) were in 200L, 147 (25.2%) were in 300L, and 234 (40.1%) were in 400L.

Table 1 shows the kinds of devices used by pre-service biology teachers for studying. The kinds of devices commonly used by pre-service

biology teachers are laptops; 162 (27.8%), mobile phones; 545 (93.5%), tablets; 30 (5.1%), accessory tool (head phones); 53 (9.1%), digital cameras; 17 (2.9%) and media player; 41 (7.0%). The most prevalent devices used by pre-service biology teachers are Mobile Phones; 545 (93.5%).

Table 1. Kinds of Devices Used by Pre-service Biology Teachers

Devices	**Yes (%)**	**No (%)**	**Total**
Laptop	162 (27.8)	421 (72.2)	583
Mobile Phones	545 (93.5)	38 (6.5)	583
Tablet	30 (5.1)	553 (94.9)	583
Accessory tool (Headphones)	53 (9.1)	530 (90.9)	583
Digital Camera	17 (2.9)	566 (97.1)	583
Media Player	41 (7.0)	542 (93.0)	583

Table 2 shows the pre-service biology teacher's level of resilience to digital distractions. The results showed that the mean scale ranges from 8 to 32, with the midpoint value calculated to be 20; therefore, any mean value obtained below the midpoint value indicates a low level of resilience to digital distraction, while any value above the midpoint value indicates a high level of resilience to digital distraction. However, this study reveals that pre-service biology teachers have a moderate level of resilience to digital distraction (M = 20.604, SD = 4.0904).

Table 2. Pre-service Biology Teachers' Level of Resilience to Digital Distractions

	N	**Minimum**	**Maximum**	**Midpoint Value**	**Mean**	**Std. Deviation**
RTDD	583	8.0	32.0	20	20.604	4.0904

RTDD means Resilience to Digital Distraction.

Table 3 shows the level of motivation of pre-service biology teachers. The result showed that the mean scale ranges from 7 to 20, with the midpoint value calculated to be 13.5; therefore, any mean value obtained below the midpoint value indicates a low level of motivation, while any mean value above the midpoint value indicates a high level of motivation. However, this study reveals that the pre-service biology teachers have a high level of motivation (M = 16.887, SD = 2.3259).

Table 3. Level of Motivation of Pre-service Biology Teachers

	N	**Minimum**	**Maximum**	**Midpoint Value**	**Mean**	**Std. Deviation**
MOT	583	7.0	20.0	13.5	16.887	2.3259

MOT means Motivation

Table 4 shows the relationship between resilience to digital distractions and the motivation of pre-service biology teachers using Pearson correlation analysis. The result revealed that resilience to digital distraction was positively correlated with the motivation of pre-service biology teachers. (r= .126, p= 0.002).

Table 4. Correlations of Resilience to Digital Distractions with Motivation of Pre-service Biology Teachers

	RTDD
MOT	.126**

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

The result of research question one showed that pre-service biology teachers have a moderate level of resilience to digital distractions. This implies that they are moderately distracted while using digital devices. The finding agrees with the study of Chen et al. (2014), who reported that digital distraction is prevalent among university students. The result is also in line with the findings of Lucob et al. (2024), who reported that students' overall level of digital distraction was moderate. Moreso, the study of Awofala et al. (2020), who conducted a study on digital distraction among pre-service science, technology, and mathematics teachers in Nigeria and discovered that a large proportion of pre-service Science, Technology and Mathematics (STM) teachers exhibited high digital distraction is at variance with the findings of this study. They attributed their findings to the possibility that most pre-service STM teachers are digital natives born in the digital renaissance's 21st century. The findings from this study are also not in agreement by Seemiller (2017), who found that students found it difficult to switch off their digital devices during lectures in the classroom. Moreover, the moderate level of resilience to digital distraction can be attributed to the fact that pre-service biology teachers depend on the use of digital devices for their day-to-day activities, ranging from academic to non-academic activities.

The results from research question two revealed that the pre-service biology teachers demonstrated a high level of motivation. This finding is consistent with Lucob's et al. (2024) study, which reported that the overall level of learning motivation of students in higher education institutions was relatively high. The study by Tus (2020) on academic stress, academic motivation, and its relationship with the academic performance of senior high school students reported that students' motivation is above average, which agrees with the findings of this research. This is also consistent with the study by El-Sayed et al. (2021) among undergraduate nursing students at Alexandria University, Egypt, which found that the majority of the studied nursing students had a moderate level of academic motivation.

The results of research question three revealed that resilience to digital distraction was positively correlated with the motivation of pre-service biology teachers. This finding is supported by the findings of Lucob et al. (2024), who reported a significant positive correlation between students' digital distraction and their learning motivation. The reports of Techanamurthy (2018), where an association was found between digital distractions and learning motivation, are in agreement with the findings of this study. Seckman (2019) also found that students display a motivation to learn in certain challenging circumstances, and this threat to the person allows them to be driven to do something. Thus, the overload of distractions resulting from digital browsing that college students experience motivates them to learn. Furthermore, the findings from this study are consistent with those of Ralph et al. (2021), who reported that unrelated digital multitasking increases the level of motivation of the participants in their study to complete a task, supporting the assertion that as the level of digital distraction increases, the level of their learning motivation also increases.

CONCLUSION

It can be concluded that pre-service biology teachers have a moderate level of resilience to digital distraction. This implies that pre-service biology teachers' use of digital devices makes them to be moderately distracted while using them. The result also revealed that pre-service biology teachers are highly motivated. This implies that pre-service biology teachers are highly motivated in their studies and as well in their use of digital devices.

The study's findings showed that pre-service biology teachers' motivation was positively correlated with resilience to digital

distractions. This implies that pre-service biology teachers' motivation has a significant relationship with their resilience to digital distraction.

RECOMMENDATIONS

It is recommended that suitable programs and activities to sustain pre-service biology teachers' high level of motivation be organized periodically, and pre-service biology teachers should also develop strong resilience to digital distractions from the use of digital devices. This would enable them to overcome digital distractions.

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