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Learners' Cognitive Affective and Behavior in Using Personal Digital Devices: A Basis For An Intervention Plan

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Abstract

This study assessed the cognitive, affective, and behavioral aspects of using personal digital devices (PDDs) among Senior High School learners at Tuao Vocational and Technical School as a basis for an intervention plan. Employing a quantitative descriptive-correlational design, data were collected from 100 Grade 12 students through a survey questionnaire. Findings indicated that the respondents, predominantly male and from the HUMSS strand, generally owned a single PDD. They perceived a positive effect of PDD use on their cognitive and affective domains, agreeing that it aided learning and emotional engagement. However, they disagreed that PDD use negatively influenced their behavior. Academic performance remained at a satisfactory level. Significant relationships were found between the perceived effects of PDD use and the profile variables of sex and academic strand. Conversely, no significant relationship was found between PDD use and academic performance. The primary issue identified was that "cellphone distracts my attention in class." In response, an intervention plan titled "Project PRUDE" (Promote Responsible Use of DEvices) was developed to mitigate classroom distractions and foster mindful device usage.

Keywords: *Personal Digital Devices, Cognitive, Affective, Behavior, Academic Performance, Intervention Plan, Senior High School*

INTRODUCTION

The pervasive integration of personal digital devices (PDDs)—such as smartphones, laptops, and tablets—into daily life has fundamentally transformed the educational landscape. In contemporary classrooms, these tools offer unprecedented access to information, facilitate communication, and enable innovative learning methodologies. However, this digital revolution presents a dual-edged sword; while PDDs hold immense potential to enhance educational experiences, their unregulated use also raises significant concerns regarding student distraction, cognitive overload, and social behavior. Understanding the multifaceted impact of these devices on learners is therefore critical for educators and policymakers aiming to harness their benefits while mitigating potential drawbacks.

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In the context of Philippine Senior High School education, particularly within vocational and technical tracks, the dynamic is especially complex. Students across diverse strands, from Humanities and Social Sciences (HUMSS) to Shielded Metal Arc Welding (SMAW), utilize PDDs for both academic and personal purposes. The cognitive effects may relate to how these devices influence information processing and critical thinking; the affective domain involves the emotional and motivational responses associated with device use; and the behavioral aspect encompasses the practical, often observable, actions and habits formed around PDDs. A critical question remains whether these dimensions ultimately support or hinder the primary goal of education: academic achievement.

This study was therefore conducted to systematically assess the cognitive, affective, and behavioral patterns of Senior High School learners at Tuao Vocational and Technical School in relation to their use of personal digital devices. It seeks to determine not only the perceived effects on the learners themselves but also how these effects correlate with their demographic profiles and, ultimately, their academic performance as reflected in their General Weighted Average. By identifying the specific issues and concerns encountered by students, such as classroom distraction and delayed assignment completion, this research provides an empirical basis for strategic intervention. The findings of this study serve as the foundation for "Project PRUDE," a targeted intervention plan designed to promote the responsible and effective use of digital devices, thereby fostering a more focused and productive learning environment for the School Year 2024-2025.

Statement of the Problem

This study aimed to assess the learners' cognitive, affective, and behavior in using personal digital devices in Tuao Vocational and Technical School, Tuao, Cagayan, as a basis for an intervention plan for the School Year 2023-2024.

Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of:
   1.1 Sex
   1.2 Strand
   1.3 Number of available personal digital devices
2. What is the perceived effect of using personal digital devices of the respondents along:
   2.1 Cognitive
   2.2 Affective
   2.3 Behavior
3. What is the academic performance of the learners as reflected in the general weighted average for the School Year 2023-2024?
4. Is there a significant relationship between the perceived effect of using personal digital devices when grouped according to their profile variables?
5. Is there a significant relationship between the perceived effect of using personal digital devices of the respondents and their academic performance?

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6. What are the issues and concerns encountered by the respondents in the perceived effect of using personal digital devices?
7. What intervention plan can be proposed to address the issues and concerns encountered by the respondents in the perceived effect of using personal digital devices?

Hypotheses

This study was guided by the following hypotheses that:

- there is no significant relationship between the perceived effect of using personal digital devices when grouped according to their profile variables; and
- there is no significant relationship between the perceived effect of using personal digital devices of the respondents and their academic performance.

Scope and Delimitation of the Study

This study was confined to the assessment of the learners' cognitive, affective, and behavioral aspects in using personal digital devices at Tuao Vocational and Technical School, Tuao, Cagayan, for the School Year 2023– 2024. It was also limited to the assessment of the learners' academic performance as reflected in their general weighted average (GWA). Furthermore, the study was restricted to determining the relationship between the perceived effects of using personal digital devices, profile variables, and academic performance.

The respondents of the study included thirty-nine (39) Senior High School learners from Humanities and Social Sciences; thirty-two (32) from Science, Technology, Engineering, and Mathematics; eight (8) from Bread and Pastry Production (NC II), Cookery (NC II), and Food and Beverage Services (NC II); and twenty-one (21) from Shielded Metal Arc Welding (NC I) and Shielded Metal Arc Welding (NC II). A total of one hundred (100) Grade 12 Senior High School learners served as respondents.

The respondents were selected using the total enumeration technique. A survey questionnaire was used to gather the data needed for the study.

Research Design

Since the study aimed to determine the relationship between the perceived effect of using personal digital devices, profile variables, and academic performance of SHS learners in Tuao Vocational and Technical School for the School Year 2023-2024, the quantitative descriptive correlational research design was used.

Creswell claimed that the use of a quantitative descriptive-correlational research design was a valuable approach for addressing questions related to "What is X?" and "How are things related?" He emphasized that in these design types, the primary area of interest under investigation was not manipulated by the researcher, and data were commonly gathered through surveys or observational methods.

Surveys were efficient for gathering large amounts of information about individuals' experiences, beliefs, and attitudes, while observation, including the experience sampling method, allowed researchers to

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collect real-time data on respondents' experiences. Creswell's book, Research Design: Qualitative, Quantitative, and Mixed Methods

Approaches, provides comprehensive guidance on these research designs and their practical application in social and academic management.

Respondents of the Study

The respondents of this study were the one hundred (100) Grade 12-SHS learners of Tuao Vocational and Technical School-Main. They were asked to give their honest perception on the use of personal digital devices. The table below shows the distribution of the respondents.

Table 1. Distribution of Respondents by Strand

Strand	Number of Respondents
Humanities and Social Sciences (HUMSS)	39
Science, Technology, Engineering, and Mathematics (STEM)	32
Bread and Pastry Production (NC II), Cookery (NC II), Food and Beverage Services (NC II)	8
Shielded Metal Arc Welding (NC I), Shielded Metal Arc Welding (NC II) (SMAW)	21
TOTAL	100

Data Gathering Tool

This study adopted the survey questionnaire of Mariam et al. (2018) from their study titled "The Effect on Cognitive, Affective, and Behavioral Aspects of Using Electronic Gadgetsamong University Students."

The questionnaire contained the following parts: Part I focused on the demographic profile of the respondents in terms of sex, strand, and the number of available personal digital devices such as smartphones, laptops/desktops, tablets, smart TVs, gaming consoles, and others.

Part II addressed the respondents' purposes for using electronic gadgets and consisted of 12 items. Part III contained items on the effects of using personal digital devices across cognitive, affective, and behavioral dimensions, with 10, 11, and 8 items respectively.

The respondents were asked to indicate their answers based on their own perceptions of the items in the questionnaire.

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Data Gathering Procedure

The researcher personally undertook the gathering of the data. A letter requesting permission to conduct the study was prepared by the researcher and addressed to the Public Schools District Supervisor and the principal of the school involved in the study. Upon approval, the researcher personally administered the distribution of the questionnaire. The researcher distributed and retrieved the questionnaires personally. The content of the questionnaires was clearly explained to the respondents, and their responses were treated with confidentiality.

The objectives of the study were clearly communicated to the respondents, and any private information they voluntarily disclosed was handled with the utmost care in accordance with the Data Privacy Act.

Furthermore, the researcher sought clearance from the Institutional Review Board (IRB) of the University of Cagayan Valley to ensure that the research study followed ethical guidelines and protected the rights and welfare of the respondents involved.

Statistical Tools

The data gathered were tabulated, analyzed, and interpreted using the following tools:

Frequency and percentage were used to describe the demographic profile of the respondents, providing a clear overview of their characteristics. To analyze the perceived effects of personal digital devices, the weighted mean was employed, focusing on the cognitive, affective, and behavioral dimensions experienced by the respondents.

In addition, documentary analysis was conducted to examine the academic performance of the learners through their General Weighted Average (GWA) for the school year 2023- 2024. To explore relationships within the data, the Chi- square test was applied to determine whether significant associations existed between the perceived effects of using personal digital devices and the respondents' profile variables.

Furthermore, Pearson r correlation coefficient was used to assess the significant relationship between the perceived effects of personal digital devices and the academic performance of the respondents.

Lastly, frequency rank analysis was utilized to identify and prioritize the issues and concerns encountered by the respondents regarding their experiences with personal digital devices.

Summary of Findings

Based on the key findings of the study, the following summary is presented. The demographic profile of the respondent group indicated that the majority were male students enrolled in the Humanities and Social Sciences (HUMSS) strand, and most possessed a single personal digital device. Regarding the perceived effects of using these devices, the study revealed that respondents agreed that personal digital devices had a significant impact on both their cognitive and affective domains. However, when it came to the behavioral dimension, the respondents disagreed that device usage negatively influenced their actions. Academically, the learners maintained a satisfactory level of performance as reflected in their general weighted average for the school year.

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Analysis of the relationships between variables yielded important insights. A significant relationship was found between the students' sex and their behavioral engagement with personal digital devices. Furthermore, a significant relationship was established between the students' academic strand and all three dimensions—cognitive, affective, and behavioral—of device usage. Notably, the study found no significant relationship between the perceived effects of personal digital device use and the academic performance of the respondents. Among the various issues and concerns identified, the most prominent problem reported by the respondents was that "cellphone distracts my attention in class," highlighting a key challenge in balancing technology use with academic focus.

Conclusions

Based on the findings of this study, it can be concluded that the demographic characteristics of learners, specifically their sex and academic strand, serve as significant influencers on their cognitive, affective, and behavioral engagement with personal digital devices. This indicates that the impact of technology is not uniform but is filtered through individual and contextual factors. Furthermore, the study affirms that learners' perceptions of their device use directly shape their behavioral conduct within the classroom environment, underscoring the subjective dimension of technology integration.

A pivotal finding is that the mere quantity of available devices does not correlate with the nature of their perceived effects, suggesting that the critical factor is not access itself, but the quality and purpose of use. Ultimately, while personal digital devices are a pervasive element in the modern educational landscape, the evidence from this research concludes that they are not a primary determinant of academic performance. This implies that academic achievement is governed by a more complex interplay of variables, and that device use, in itself, is neither a significant driver nor a primary hindrance to scholarly success.

Recommendations

Based on the conclusions of this study, the following recommendations are proposed to enhance the integration of personal digital devices in the educational environment. It is recommended that educators and school administrators develop and implement strand-specific digital literacy programs. These programs should be tailored to address the distinct cognitive, affective, and behavioral patterns of device use identified across different academic tracks, thereby providing targeted support where it is most needed.

Furthermore, educational institutions should institutionalize a school-wide framework for the responsible use of technology. This device-agnostic strategy should focus on teaching students self-regulation skills to manage distractions, thereby transforming personal digital devices from a source of interruption into a tool for academic enrichment. To ensure these initiatives are effective, it is crucial that support services and intervention plans, such as the proposed Project PRUDE, are designed with consideration for the differing needs and behaviors related to sex, as identified in the study.

For future research, it is recommended that longitudinal studies be conducted to further investigate the complex relationship between personal digital device use and academic performance over time. Additionally, replicating this study in other learning contexts or with different demographic groups would help validate the findings and contribute to a more nuanced understanding of this critical educational dynamic.

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