

A Unified Integration of Interactive Digital Platforms for Enhancing Performance and Assessment in Technology and Livelihood Education

ACHILLES CHARLES G. GRANDEZA¹

ROCHELLE AMOR L. GRANDEZA²

Abstract. This research study investigates the effectiveness of using interactive digital platforms for Technology and Livelihood Education students to improve their performance and assessment grades. The author used a quantitative research design and employed the Mann-Whitney U test to assess statistical significance and the rank-biserial correlation to measure the magnitude of the effect. The study lasted for six weeks and involved using an integrated digital approach, with one platform for performance task submissions and another for assessments. The results showed that students using the integrated digital approach (Mdn = 89) achieved significantly higher grades compared to those using the traditional modular method (Mdn = 85), with a p-value of less than .001 and a rank-biserial correlation of 0.578, indicating a notably large effect size.

KEY WORDS

1. assessment 2. performance task 3. tiktok 4. digital approach

1. Introduction

Technology pedagogies and instructional methodologies must inevitably converge on the route to digital transformation. During the emergence of COVID-19, in particular, the utilization of the most recent digital technology has transformed from an option to a must.

Although a pandemic should not be a reason for digital pedagogy advancements through digital transformation, as stated by García-Morales et al. (2021), breaking the plateau of traditional education necessitates bridging the gap between traditional and technological lesson delivery using the most recent internet trend, TikTok, and other online assessment sites.

During the advent of COVID-19, (Ostrovsky Chen, 2020) discovered that youth screen time in the United States climbed significantly,

while there were 33 million users in the Philippines (Geysler, 2019). This number indicates to the education sector that more students have their faces on a screen than in a book, indicating that educators should capitalize on this trend. It is necessary and of great importance that teachers adapt to the current trends of young students, since if they do not, there will be a gap in education and the link between students and teachers may not be maintained.

Physical and digital connectivity are barriers, but parents are more than willing to compromise to overcome these obstacles. For example, they are purchasing phones with basic capabilities that enable students to make video calls and respond to a variety of activities. Teachers must do their share and take advantage of

this circumstance by introducing more effective techniques to augment the education of remote learners. It is also important to highlight that the tactics should be suitable for face-to-face classroom settings.

According to the number of accounts created in the Philippines, as stated previously, nearly one-third of the population uses TikTok, a Beijing, China-based company (Geyser, 2019). With the shorter attention span of learners nowadays (Stokel-Walker, 2020), it is stated that TikTok satisfies the desire for instant knowledge, in addition to judging things as factual based on the number of views and the popularity of the person in the content.

This is not without its caveats, however, as TikTok is the youngest of the extensively used social media platforms (Weimann Masri, 2020) claimed that the platform's youth prevents it from protecting its users and viewers from right-wing extremist content. The issue is that the majority of users are young students who are naive and credulous enough to absorb dangerous content without sufficient instruction.

Despite the platform's limitations and difficulties, there is still hope that it can be utilized for educational purposes. (Scalvini, 2020) discovered that although some users may engage with the information on TikTok, they do not abandon their moral beliefs and stay cognizant of the ethical concerns in the world. They continue to have sound moral goals, and their moral virtues are still evident in their online expression. These platform concerns can be minimized and guided toward a better learning experience with the assistance of teachers since even the media are repositioning and aligning their brand to the logic of TikTok as a new approach to journalism for younger generations (Vázquez-Herrero et al., 2020). As for teachers, it may be an excellent experience for grading.

When it comes to promoting a movement or new information, TikTok shows evidence of beating traditional information dissemination.

(Basch et al., 2020) found that while the World Health Organization WHO got 57 million views for promoting the wearing of masks on other social media, TikTok got almost half a billion views. This indicates that when this platform is used well, the potential to reach and educate students not just locally is possible.

However, this effect of digital technology in students' performance is not merely just in the utilization of TikTok. (Khan et al., 2017) found out in his study that gamification positively affects the academic performance of the students through an increase in engagement and interest due to a non-monotonous image of digital technology, this was also supported by (Liu et al., 2018) when she discovered that digital technologies using digital story telling enhances the language learning of student.

It has long been proven that when digital assessments are used with the correct rules and protocols, the test delivery does not have any impact on the reliability and validity of the test administered as discovered by (Öz, 2018) which is contrary to the popular belief that cheating happens which renders that results unreliable which was also supported in the study of (Oladimeji et al., 2017) that computer-based testing is credible and easy to use.

It was argued by (Deeley, 2018) that adopting a flexible strategy and taking tiny, incremental steps, the use of various types of technology can be advantageous for supporting effective assessment for learning and feedback in higher education. In support of this (Sangmeister, 2017) discovered that values or scores using computer-based testing yielded a more consistent result than paper-based testing, and when it comes to general questions, the scores of those who used computer-based testing tend to be higher.

Some studies were also found to be inconclusive as with the study of (Carpenter Alloway, 2019) when she tested for working memory and (Umar Wilson, 2019) also found that computer based testing is not suitable in some learning

area which is also the motivation of this study to test if the same result will happen in the context of the researcher. However, the latter also made mention that the students perceived computer-based testing to be better.

When it comes to the perception and favourability of computer-based testing, it was found out by (Ubulom Wokocha, 2017) that computer based testing tend to be the more accepted choice for students which was also the

result of the study if (Khoshshima et al., 2017) where students tend to favour computer-based testing over paper based testing.

Furthermore, when it comes to technology and livelihood education, which is problem-based learning (Newhouse, 2017), his study discovered that the use of information and communication technology decreases students' boredom in solving problems and engaging in them.

2. Methodology

This study used a quantitative research design, as the researcher aimed to test theories as objectively as possible from a postpositivist perspective. Creswell and Creswell (2018) mentioned that this design is appropriate for structured, straightforward reporting of results while using statistical methods to validate claims (Kumar, 2011). Although the design was quantitative, the researcher applied theories of action research, wherein the teacher implemented a theory into practice with the goal of improving educational practice. This involved identifying problems and developing and testing solutions, in line with the theory of Mertler (2019).

2.1. Research Locale and sample—The research study was conducted at Crossing Bayabas National High School, located on Neptune Street, Toril, Davao City. This institution is classified as a very large school by the Department of Education. The primary participants were Technology and Livelihood Education stu-

dents from this school, regardless of their specific learning area within the department. The total sample size was 146, deemed sufficient at a .05 confidence level with an actual power of .929. This sample included 75 students using the full digital platform and 71 students using the modular method. The sample power was calculated using G*Power.

2.2. Data Source and Analysis—For a more comprehensive interpretation and analysis of the data, several statistical tools were employed. The primary source of data was secondary data, consisting of performance task grades and evaluation grades in Technology and Livelihood Education, irrespective of study area and grade level. The mean was used to determine the level of performance tasks and grades of the students. The median was used when the test of assumptions indicated the need for a non-parametric test, which relies on the median instead of the mean. The Kolmogorov-Smirnov and Shapiro-Wilk tests were applied to assess

whether the data significantly deviated from a normal distribution. The Mann-Whitney U test was utilized to examine whether there was a statistically significant difference between the performance and assessment grades of students using the integrated digital platform and those using the traditional modular method. Finally, the rank-biserial correlation was used to determine the effect size of the strategy being implemented.

2.3. Data gathering and Processing—The teacher researcher drafted a letter to the principal requesting permission to conduct research at the outset of the project (see appendix). Stu-

dents who participated in the action research had their parents' signed agreement, and data privacy was maintained throughout the process. Students were selected based on their previous average as a basis for grouping and to generate a counterfactual in which the conventional group should not differ considerably from the experimental group to avoid bias. The Mann-Whitney U test was performed, and 75 students were assigned to use Quiztokerist while the remaining 71 students were assigned to utilize full modu-

lar; the results are presented in this manuscript's results section. Once authorization was granted, the researchers chose activities where the intervention could be implemented, as not all competences can be addressed with this intervention, unlike other interventions. Following the selection of skills, each competency was assigned a Tiktok-based task for reporting its output, while knowledge-based competencies were assessed using Quizziz.

3. Results and Discussion

This section are the answers from the research questions presented in this paper. The assumption testing, analysis of data to tell if Quiztokerist really had an effect on the performance task and assessment grades of the students.

Table 1. Test of Normality (Shapiro-Wilk)

Performance	W	p
Utilized Quiztokerist	0.952	0.006
Full Modular	0.806	< .001

Note. Significant results suggest a deviation from normality.

Checking the assumptions for good statistical analysis and impartial outcomes is a crucial element of research, as non-compliance with this technique will result in grossly erroneous results (Leech et al., 2015). The test of normality was performed as shown in Table 1 to determine if the grades were normally distributed and to determine the correct statistical

treatment to be used to determine if there was a significant difference between the grades of the two groups. The results of Kolmogorov-Smirnov Test and Shapiro-Wilk test indicate that the scores collected from both groups were not normally distributed, as the scores significantly deviated from a normal distribution with $p < .01$.

As seen in the results in Table 2 the students who are under the strategy of Quiztokerist had a higher median (Mdn = 89.00) than those in just

full modular approach (Mdn = 85.00). However, to determine the significance of this difference another statistical tool will be used.

A Mann-Whitney U-Test was used to determine if there is a significant difference between those that used Quiztokerist as an approach to learning and those that only used full modular approach. Results show that students who used

the Quiztokerist approach (Mdn = 89) scored higher than those learners who only used full modular approach (Mdn = 85). This difference showed to have significant difference, this difference was statistically significant, $p < .01$. Results

Table 2. Descriptive Statistics

	Utilized Quiztokerist	Full Modular
Valid	75	71
Missing	0	0
Mean	88.960	86.197
Median	89.000	85.000
Std. Deviation	2.607	2.303
Minimum	84.000	84.000
Maximum	93.000	92.000

Table 3. Mann-Whitney U-Test

	W	df	p	Rank-Biserial Correlation
Performance	4201.000		<.001	0.578

Note. For the Mann-Whitney test, effect size is given by the rank biserial correlation.

Note. Mann-Whitney U test.

further shows that, Quiztokerist approach has a large effect on the grades of the learners with $r_{rb} = 0.578$. The results above indicate that the identified difference in the performance of the responders is significant and that the Quiztokerist technique enhanced the performance tasks and assessment grades of the pupils. This also

indicates that the method has a significant impact on the performance tasks and assessment grades of students. Given that the implementation lasted only six weeks, the scores could have been higher if they had been applied for a longer duration.

4. Discussions and Implications

The study had two purposes. The initial objective was to investigate if there was a statistically significant difference between the grades of students who were taught using the Quiztokerist method and those who had merely been exposed to a full modular method. The other purpose of this study was to quantify the magnitude of the strategy's influence. The result of the study showed consonance with the studies of ((Deeley, 2018; Oladimeji et al., 2017; Sangmeister, 2017; Ubulom Wokocha, 2017; Umar Wilson, 2019), which showed that students showed favorable response and acceptance to technology-aided assessments. Furthermore, the results also showed that the results of those who were under the Quiztokerist approach were significantly higher than those who only experienced the full modular approach. The Quiztokerist strategy was also shown to have a significantly large effect, as evidenced by the rank-biserial correlation. As the education process progresses, it may be suggested that the education sector gradually adopt e-assessment, as indicated by (Adenuga et al., 2019). When it comes to presenting outputs of performance tasks, students' creativity and reflective practice are activated when they present it on a different platform, such as TikTok in this study, which is in video format (Allen et al., 2016), because they can easily review where they made mistakes and where they can improve. To remain relevant

and competitive with other countries, the Department of Education should continuously support educators in creating relevant strategies for 21st-century learners. The researchers strategy which is Quiztokerist is a step towards digital transformation where it could be considered as a disruption of natural practice (Vial, 2019) since this strategy is a mixture of Quizziz and TikTok which is considered as a process innovation or strategy which could lead to digital transformation (Arifin Frmanzah, 2015).

4.1. Findings—This non-experimental research using correlation design in this study aimed to determine the extent of principle centered effectiveness and leadership characteristics of public elementary school heads. Specifically, this study aimed to determine the extent of principle centered effectiveness in terms of instructional program, staff personnel administration, learners' personnel administration, and financial and physical support. Moreover, this also identified the extent of leadership characteristics of public elementary school heads in terms of regard for learning, service orientation, self-energy, and belief in other people. Finally, this study determined the significant relationship between the extent of principle centered effectiveness and the level of leadership characteristics of public elementary school heads. Using non-experimental research, the extent of principle centered effectiveness and leadership characteristics of public elementary school heads was determined. The respondents of the study were the 120-public elementary school teachers in Maa District, Division of Davao City. A modified teacher-made survey questionnaire was adopted from the study of Principle Centered Effective Cove (1989) as cited by Bentor, et. al., (2016) and Hallinger and Murphy (1985) as cited by Al-mendora, et. al., (2016) was utilized as the main instrument of this study. After thorough analysis, significant findings showed that the extent of principle centered effectiveness in terms of instructional program, staff personnel administration, learners' personnel administration, and financial and physical support was extensive. Similarly, the extent of leadership characteristics of public elementary school heads in terms

of regard for learning, service orientation, self-energy, and belief in other was extensive which means that it was sometimes manifested while in terms of leadership characteristics which also extensive. Hence, the extent of leadership characteristics as demonstrated by public elementary school heads of Maa District, Division of Davao City was extensive. The overall p-value is equal to 0.000 with an r-value equal to 0.759. This means that there is a strong positive significant relationship between the principle-centered effectiveness and leadership characteristics of public elementary school heads of Maa District, Division of Davao City. Hence, this study rejects its established null hypothesis. Finally, indicators of principle centered effectiveness such as instructional program, learners' personnel administration, and financial and physical support have significant influence on leadership characteristics of public elementary school heads.

4.2. Limitations and Recommendations—After evaluating the significant positive effect of Quiztokerist on the performance task and assessment grades of the students at Crossing Bayabas National High School and discovering that the said strategy had a significant impact on the students' grades, the researcher offers the following recommendations based on the findings of the study.

4.2.1. Policy Recommendations—

- (1) A policy analogous to the academic freedom enjoyed by higher education institutions should be implemented so that instructors have more freedom to design working practices that will benefit future educators and students.
- (2) Organizational policy geared in the de-

velopment of e-assessment be established to save resources.

4.2.2. *Program Reform and Redirection*—

- (1) Developers of educational technology should re-evaluate their direction towards a more meaningful electronic assessments and establishment of social media presence which is acceptable to the modern minds of the students.
- (2) Develop leaders understanding that the way forward is technology when it comes to teaching which is the direction of education 4.0.

4.2.3. *Research Direction*—

- (1) It is recommended that other combinations of a social media platform be combined with another form of e-assessment system and studied for effectivity to create a pattern of digital assessment.
- (2) Study the same approach using a different learning area and a different level of education with a greater size for better

generalizability.

4.3. *Conclusions and Reflections*—The use of digital technologies, as indicated by the study’s methodology, demonstrates that even in a developing nation, instructional practice must adapt. To make learning enjoyable for the young, it is recommended that the materials and methodology be relevant to their age and current trends. Teachers and leaders must not just consider the traditional aspects of education, but also the students’ perspectives. As meaningless as TikTok may seem to teachers, it may become useful when integrated with education. The manner in which a person creates a video generates reflective practice in a fast-paced setting, since the review of what is being filmed is immediately fixed and enhanced. When it comes to a system where e-assessment is the goal, the education sector should also carefully consider picking a system where students can compete with other students and compete with themselves.

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