Pedagogy Review: An International Journal of Educational Theories, Approaches and Strategies
2024, Vol. 4, No.1, 1 – 16 | ISSN Online: 3028-1040 | ISSN Print: 3028-1059
DOI: https://doi.org/10.62718/vmca.pr-ijetas.4.1.SC-0924-011

Digitized Mathematics Module: Its Acceptability and Influence on Students' Motivation and Performance

Article History:
Received: 27 September 2024
Accepted: 30 September 2024
Published: 11 November 2024

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Abstract

With the shift to online learning or distance education programs, higher education, in particular, has to focus on ways to cater with the demand of its clientele. Thus, Jose Rizal Memorial State University-Katipunan Campus developed a Digitized Mathematics Module to adapt with the changing landscape of education. However, it is imperative to determine if the module is effective. Thus, the study aimed to determine the acceptability of students towards the digitized Mathematics module and its influence on their motivation and performance of the Mathematics in the Modern World course. Utilizing a descriptive-correlational design, and stratified technique, the study employed one hundred seventy- two (172) students enrolled in Mathematics in the Modern World classes during the first semester of academic year 2020-2021 as respondents of the study. Two sets of questionnaires, adopted from Rio (2014) and Keller (2010), were used as instruments to yield the necessary data for the study. Frequency count, percentage, mean, chi-square, and Somer's D were the main statistical tools used. Based on the results, the Digitized Mathematics Module is acceptable. The study also revealed that the acceptability of digitized Mathematics module, level of students' motivation, and students' Mathematics performance have no significant relationship. As the students accepted the digitized module, they also claimed that they were motivated. Though the module is accepted at a certain level, it is still recommended that the mathematics module needs to be improved so that its acceptability level turns into very acceptable. Instructional Materials and Development Committee (IMDC) may intensify quality assurance in preparing the module to improve its acceptability and motivation levels. The researcher is also proposing to conduct an online seminar workshop serving as an intervention to increase the acceptability of the digitized Mathematics module.

Keywords: acceptability, digitized mathematics module, students' motivation, students' performance

INTRODUCTION

The unprecedented Coronavirus disease-2019 (COVID-19) outbreak resulted in significant changes in curricula and teaching practices among educators in Universities and Colleges in the Philippines. These changes in the higher education seem inevitable in a volatile, uncertain, complex, and ambiguous (VUCA) world. Indeed, providing quality education to college students has been a challenge among Higher Education Institutions (HEIs) during the pandemic, where face-to-face classes are discouraged, and continuity of quality education service delivery is upheld.

During the COVID-19 pandemic, almost all educational institutions in the country relied on technology to promote learning continuity, utilizing flexible learning systems and distance learning approaches, supported by not only online digital learning modalities and radio and television broadcast media, but also modular learning approach. The advantages of modular learning led Higher Education Institutions (HEIs) to offer it as a learning option, catering to the diverse needs of students in higher education. In Jose Rizal Memorial State University, online and modular learning modalities are offered but most, if not all of the students chose modular learning modality specifically in Katipunan Campus.

A growing concern on adverse offshoot of modular delivery modes rises prominently in the first month of the academic year. Several learners clamor about inconveniences and difficulty of learning through modules. Digitized Mathematics module has been new to the students specifically in Jose Rizal Memorial State University-Katipunan Campus thus its acceptability became an issue. One to consider is the Mathematics in the Modern World module's appropriateness on the learning

capabilities of the students, whether its use is feasible in the training environment, and whether they are appropriate to students' use. Moreover, digitized Mathematics module's benefit on the student's effective and creative learning should also be considered. Despite the studies championing the use of module and its influence on students' motivation and performance, many are still questioning its efficacy. The study of Rio (2014), titled "Development and Acceptability of Training Module in Switching Logic", showed that the training module was very much accepted. In his study, learning outcomes, content, pre-test and post-test, illustrations/photos, and usefulness were the indicators used to perceive the acceptability of the training module. On the other hand, Keller (2010) formulated the ARCS Model of Motivational Design which suggests that an instructional designer can routinely improve a learner's motivation to learn by focusing on Attention, Relevance, Confidence, and Satisfaction (ARCS).

Likewise, the use of module specifically Mathematics module considers factors as to its acceptability, and that, may or may not influence students' motivation and performance. No study determining the acceptability of the digitized Mathematics module in Jose Rizal Memorial State University has been conducted due to the newness of this learning aid in the institution. With the underlying context and concepts, the researcher deemed it considerably essential to conduct a study that looks into the acceptability of digitized Mathematics modules and their influence on students' motivation and performance. Results of this research will be the basis in formulating recommendations that will improve modules in Mathematics leading to increased motivation and students' performance in Mathematics.

LITERATURES

Teaching during the Pandemic. Over the past years, face-to-face classes has been practiced to be the medium of delivering course content in different schools. Due to the COVID-19 pandemic, higher education all over the world is shifting to online learning or distance education programs. Bhutan first declared closing of schools and institutions and reduction of business hours during the second week of March 2020 (Kuensel, 2020).

The shift to any modality of teaching-learning had brought teachers of different schools into creating instructional materials which will be used as the mode of delivering the course content. According to Malik (2012), the approach has drawn a special attention in most nations' education system particularly in technical and vocational education and higher education. Unfortunately, coming up with the approach remains a challenge to the students, parents, and teachers.

Similarly, Subedi et al. (2020) emphasized that e-learning tools have played a crucial role during this pandemic, helping schools and universities facilitate student learning during the closure of universities and schools. While adapting to the new changes, staff and student readiness needs to be gauged and supported accordingly (Pokhrel, Sumitra & Chhetri, Roshan.,2021). Further, they stated that the learners with a fixed mindset find it difficult to adapt and adjust, whereas the learners with a growth mindset quickly adapt to a new learning environment.

On the other hand, according to Pokhrel, Sumitra & Chhetri, Roshan (2021), although there have been overwhelming challenges for educators, schools, institutes and the government regarding online education from a different angle, there are several opportunities created by the COVID-19 pandemic for the unprepared and the distant plans of implementing e- learning system. It has forged a strong connection between teachers and parents than ever before. The homeschooling requires parents to support the students' learning academically and economically. Children with disabilities need additional and special support during this ongoing emergency (Pokhrel, Sumitra & Chhetri, Roshan.,2021).

Modular Instruction. Modular teaching is one of the most widespread and recognized teaching-learning techniques in United States, Australia,

and many other Western countries including the Asian region (Sejpal, 2013). The Philippine Education Quarterly (1985), as cited by Figuerres, 1994) reported that modules can take the place of a teacher. These self-learning devices help pupils to learn or acquire skills, knowledge, and information in the absence of a teacher. These materials provide sufficient reinforcement, enrichment, and source materials. They allow also the learner to work at a rate style and level situated to his capacity.

According to Hornby, as cited in Yoseph and Mekuwanint (2015) and Malik (2012), a module is a unit of work in a course of instruction that is virtually self-contained and a method of teaching that is based on the building up of skills and knowledge in discrete units. Therefore, a module is a course that together with other related courses can constitute a particular area of specialization. Each unit or module is a measured part of an extended learning experience leading to a specified qualification(s) "for which a designated number, and normally sequence, of units or modules, is required" (Dejene,2019). Daries (2001) defined a module as a unit of work in a course of instruction that is self-contained, applying a method of teaching based on the concept of building up skills and knowledge among students in discrete units.

In a similar vein, Rilio (1995) as cited by Lim (2016) highlighted that among the forms of individualized instruction, modules are effective and economical in developing specific knowledge and skills. Modules induce learning with minimum teacher direction and supervision. Furthermore, these develop learning and grading strategies, improve classroom management techniques, and encourage achievement for greater use of existing educational resources through the establishment of realistic obtainable learning goals within an individualized program of studies. On the other hand, Rio (2014) stated that instructional aids should also be reviewed to determine whether their use is feasible in the training and environment and whether they are appropriate for the student's use.

Module and Motivation. Motivation is a central component of learning, including Mathematics learning (Gerholm, 2016; Schukajlow, Rakoczy, & Pekrun, 2017). It is relevant to investigate individuals' expressed motivations if we want to understand why, for instance, some students are positively or negatively disposed towards Mathematics or understand the differences in performance in mathematical tests. One possible consequence of students perceiving Mathematics to be hard, boring, and useless is students' choosing not to continue studying Mathematics as soon as they are given a chance to opt-out (Brown, Brown, & Bibby, 2008).

Rifandi (2013) highlighted that almost all education experts and education stakeholders agree on the role of motivation influencing students' behavior in the learning process. To facilitate students' motivation, rationales need to produce two effects: students need to see the importance and personal utility within the task, and students need to perceive high autonomy while working on that task (Jang, 2008). Fuqoha, Budiyono, & Indriati (2018) emphasized that students' motivation comes when they do work to gain experience from it. Further, they stated that motivation has function as stimulant effort and achievement.

Keller (2010) formulated the ARCS Model of Motivational Design which suggests that an instructional designer can routinely improve a learner's motivation to learn by focusing on Attention, Relevance, Confidence, and Satisfaction (ARCS). He further stressed that the first step in instructional design for motivation is to capture the learners' attention through either perceptual arousal or inquiry arousal, the second step is finding ways to connect the content to the learner's world ensures that the learning process is useful and that relevance helps connect the content to the real world, third step learners have to feel they can succeed, and the last step underlined that learning should be rewarding and satisfying for the learner and satisfaction comes at the end of learning the content as the learner meets the goals and objectives as well as has their needs met by the learning.

Motivation is an important component for students to achieve success in any learning environment (Bukhari et al., 2014). According to Lens and Vansteenkiste (2008), students' motivation was considered as a crucial factor in the teaching and learning process at all levels of education.

Module and Performance. According to Enu, Agyman, & Nkum, (2015), the availability, provision and use of teaching and learning materials go a long way to improve quality teaching which enhances academic performance. They also asserted that the provision of the needed human and material resources goes a long way to enhance academic performance. As mentioned by Hughes as cited by Rio (2014), modular instruction is a unique kind of individualized instruction which provides the basis for close interaction between the learners and the subject matter. Further, Rio (2014) that the use of different types of graphics in teaching-learning process promotes better retention of learning.

In a similar vein, a study conducted by Ali et al. (2014) as cited by Salcedo (2016) found in their study that modular learning has a high impact on the achievement of students. In a study conducted by Sadiq & Zamir (2014), the results' scores were in the favor of usage of the modular teaching approach. So it is recommended that the modular approach should be widely used at various levels of education.

Acceptability of Digitized Module, Motivation and Performance. Modular approach in Mathematics is a question to many of how it will become effective as to the students' motivation and performance. However, a teacher can have control over few things. Mathematics teachers play an important role in the innovation of teaching in Mathematics. With the shift of delivering instruction, teachers in Mathematics provided modules to be used as instructional material to produce quality and competent graduates. The use of the mathematics module can also play a positive and negative part in the students' motivation and performance.

The study of Naval (2014) "Development and Validation of Tenth Grade Physics Modules on Selected Least Mastered Competencies" showed that the developed modules were found acceptable for the 10th grade physics students. Similarly, a study conducted by Larawan (2013), on "Acceptability of Teacher-Made Modules in Production Management" revealed that the modules are generally very satisfactory in terms of physical aspects, objectives, instruction learning, and evaluative instrument using separate and combined evaluations of the two groups of evaluators. This points out that they are acceptable as a learning intervention.

On the other hand, a study on "Modular Cooperative Learning: A Designed Mathematics Instruction for 21st Century Education" conducted by Cabrera, 2014 found out that modular cooperative learning improved the mathematics performance of the students. It also performed significantly better than the traditional lecture-discussion method. Positive changes taking place when teachers change their teaching methods towards a more student-centered approach like modular cooperative learning.

Similarly, the interest and performance of students in learning Mathematics are placed on the module. The acceptability of the module on the way the module is being illustrated, learning outcomes, content, the pre-test and post-test, and usefulness may influence students' motivation and performance. Sampson et al. (2010) highlighted that learner satisfaction and experiences are crucial elements that contribute to the quality and acceptance of e-learning in higher education institutions.

According to Husen & et.al, 1986; Malik, 2012, the modular approach has proven to be an effective and efficient tool to help students learn. Most subjects can be taught with this approach. Relatively, Guskey (2010) & Carrol (1963) as cited by Larawan (2013), the use of teacher-made modules for classroom instruction is significant in the light of maintaining the students' motivation despite of their poor ability in grasping ideas and processes from a highly verbal lecture.

Student Factors. Students' acceptability of the module will not only focus on the module itself. Factors may either affect students' acceptability of the module that may influence students' motivation and performance. One of which can be considered as a factor is sex. In terms of preparing for higher education, women seem to be at an increasing advantage. At the age of 16, women are catching up in Mathematics and the gap in English is widening in their favor (OECD 2008). Jorgensen et al. (2009) showed that males seem to feel less connected with and involved in the college community than their female counterparts. He further stresses that "males may be viewing other elements of their lives as more important than school-related tasks, leading them to devote less time to their studies and to become less involved in the college community compared to female students."

Choice of course may also be considered as a factor. The comparative research conducted by Sabir, Ahmad, Ashraf, and Ahmad (2014) on the undergraduate Engineering and Business students on factors affecting University and choice of course revealed that higher education commission ranking, institutional reputation, employment, and career prospects were the most important variables concerning to students' desired University and course of study. In addition, the study conducted by Kazi and Akhlaq (2017) revealed that an individual environment, talents, skills, and academic achievements exert an influence on career choice.

Parents' involvement at school and parents' financial status may also considered factors. McLachlan et al. (2013) emphasized that parents may affect the behavior and decisions taken by their children through genetic transmission, preferences, or/and environment- put simply, more educated and richer parents can provide a "better" environment for their children, which creates an inequity which is the focus of sizable policy attention. Similarly, Krueger (2004) reviewed various contributions supporting the view that financial constraints significantly impact educational attainment.

According to Laosa (2005), socio-economic differences – such as health and nutrition status, home environments that provide access to academically related experiences, mobility rates, and financial assets can certainly influence academic achievements."

However, Björklund and Salvanes (2011) posited that there is a large correlation between the educational level of parents and their children. A study on the effects of parental involvement as a form of social capital found a greater likelihood of the youth enrolling in both a 2-year and 4-year college (Perna & Titus, 2005). The data used for the analyses in Lippman, Guzman, Dombrowski Keith, Kinukawa, Schwalb, and Tice's (2008) report originated from the 2003 National Household Surveys Program (NHES) Parent and Family Involvement in Education Survey (PFI). They found 88% of students whose parents had earned at least a bachelor's degree had parents who expected them to finish college compared to 44% of students whose parents had graduated from high school or who had less than a high school diploma (Lippman et al., 2008).

On the other hand, Heckman and Masterov (2005) suggest that current parental income does not explain child educational choices, but the family fixed effects that contribute to permanent income, such as parental education levels, have a much more positive role. The study conducted by Machebe et al. (2017) revealed that greater academic achievement for a student is attained by those students from financially buoyant families. Further, Hoover-Dempsey et al. (2001) as cited by Ewings (2012) stated that appropriate parental support can contribute to a student's academic self-perception.

With the trend of today, the abovementioned were not only considered as factors. Digitized technology has put way forward to enable access to information and delivery of the latest learning content regardless of student's availability Jacobs (2013). One of the remarkable consequences of m-learning is that it engages, empowers, and supports learning in such a manner that radically transforms

knowledge-seeking mechanisms for students (West, 2012).

METHODOLOGY

This study was descriptive-correlational in nature since the research questions seek answers that lead to numerical data. This study utilized 2 sets of questionnaires of which were adopted from Rio (2014) for the acceptability of digitized Mathematics module, and from Keller (2010) for the level of students' motivation. This study utilized a four-point Likert scale to assess respondents' acceptability and motivation levels regarding a digitized mathematics module, with ratings from "strongly agree" (4) to "strongly disagree" (1), and interpreting the weighted mean scores according to defined ranges to determine levels of acceptability (very acceptable to not acceptable) and motivation (highly motivated to not motivated). Frequency count and percentage were used in profiling the respondents. Mean was used to determine the acceptable the digitized Mathematics module. It was also used to measure the students' level of motivation, and to describe the general performance of the students in Mathematics. Chi-square was used to test whether or not there exists a significant difference in the level of students' motivation and students' Mathematics performance when data are analyzed in terms of profile. While Somer's D was used to determine if there is a significant relationship between the acceptability of digitized Mathematics module and the level of students' motivation. Likewise, if there is a significant relationship between the acceptability of digitized Mathematics module and the level of students' Mathematics performance. The target respondents of the study were the students in Jose Rizal Memorial State University-Katipunan Campus who took Mathematics in the Modern World course during the first semester of the school year 2020-2021. Classes of the course were randomly selected through stratified sampling. Using Slovin's formula, the sample size is one hundred seventy-two (172) out of three hundred two (302) total amount of Mathematics in the Modern World students. Together with the letter of permission, the researcher administered the instruments to the respondents. They were distributed in person with utmost consideration of all the COVID-19 protocols and directives. It was also administered using an online platform (via Facebook and google mail). The grades of the respondents were collected from the instructor-in-charge, and also from the Registrar's Office.

RESULTS AND DISCUSSION

Table 1 shows the profile of the respondents in terms of sex. It was revealed that 68.6% are female and 31.4% are male. It simply defines that more females were enrolled in Mathematics in the Modern World course for the first semester of 2020-2021. It implies that the higher percentage of female respondents suggests a greater female enrollment in the Mathematics in the Modern World course for the first semester of 2020-2021, which may reflect broader gender trends in course selection or academic interest in this subject. The current finding is similar to the result of the study of Jorgensen et al. (2009), who found out that males seem to feel less connected with and involved in the college community than their female counterparts.

Table 1
The Profile of the Respondents in Terms of Sex

	Frequency	Percentage
Male	54	31.4
Female	118	68.6
TOTAL	172	100

Table 2 shows the profile of the respondents in terms of college. The frequency and percentage revealed a greater number of respondents coming from the College of Business and Management. This was followed by the College of Agriculture and Forestry. While the least number of respondents are coming from the College of Arts and Sciences. It implies that the majority of the Mathematics in the Modern World students are coming from the College of Business and Management. Sabir, Ahmad, Ashraf, and Ahmad (2014) did comparative

research of undergraduate Engineering and Business students on factors affecting University and choice of course. It was revealed that higher education commission ranking, institutional reputation, employment, and career prospects were the most important variables concerning students' desired University and course of study.

Table 2
The Profile of the Respondents in Terms of College

	Frequency	Percentage
College of Business and Management	78	45.35
College of Arts and Sciences	33	19.19
College of Agriculture and Forestry	61	35.46
TOTAL	172	100

Table 3 shows the profile of the respondents in terms of parents' combined income. In this survey, parents' combined income refers to the respondent's monthly parent's income. The table revealed majority of the respondents' parents' combined income is 10,000 or below. This simply defines that the respondent's parents' combined income cannot fully sustain the needs of the family given that they earn 10,000 or below. McLachlan et al. (2013) emphasized that parents may affect the behavior and decisions taken by their children through genetic transmission, preferences, or/and environment- put simply, more educated and richer parents can provide a "better" environment for their children, which creates an inequity which is the focus of sizable policy attention.

Table 3
The Profile of the Respondents in Terms of Parents' Combined Income

	Frequency	Percentage
10,000 or below	158	91.86
10,001-30,000	8	4.65
30,001-50,000	4	2.33
50,001 or above	2	1.16
TOTAL	172	100

Table 4 shows the profile of the respondents in terms of parents' highest educational attainment. The results revealed that the majority of the respondents' parents are high school graduates with 45.35% and 1.16% of the respondent's parents are full-fledged masters and have undergone vocational and both high school and college level. This defines that most of the number of the Mathematics in the Modern World students' parents were High School graduates and elementary graduates. Instructors/professors often expected parents to become involved in their child's homework, but many parents are unsure of the strategies to use when helping. According to Björklund and Salvanes (2011), there is a large correlation between the educational level of parents and their children.

Table 4
The Profile of the Respondents in Terms of Parents' Highest Educational Attainment

	Frequency	Percentage
Masteral	2	1.16
Bachelor	19	11.05
Diploma	21	12.21
High School	78	45.35
Elementary	50	29.07
Others (Vocational)	2	1.16
TOTAL	172	100

Table 5 shows the profile of the respondents in terms of digital and broadcast devices accessed. In this survey, the types of digital and broadcast devices accessed by the students refer to technological gadgets used by the students in accessing and retrieving the module given by the instructor/professor. The survey reveals that 54.07% of the respondents' uses smartphone (video cam) and 1.16% uses books/prints. This means that students specifically those who are enrolled in Mathematics in the Modern World course, can access and retrieve the module through their smartphone (video cam). This further implies that Mathematics in the Modern World students greatly rely on the use of a smartphone with videocam to achieve good performance outcomes. Technology supports the need for divergent learning approaches, helping to

create a sense of community as well as a meaningful experience (Futurelab, 2009).

Table 5
The Types of Digital and Broadcast Device Accessed by the Students

	Frequency	Percentage
Mobile Phone (keypad only)	15	8.72
Smartphone (video cam)	93	54.07
Tablet	1	0.58
Laptop	3	1.74
TV	27	15.7
Books/Prints	2	1.16
Internet/Data	20	11.63
Radio	10	5.81
Others (Uses Both Mobile and Smart Phone)	1	0.58

Table 6 shows the profile of the respondents in terms of learning management or online resource accessed. The survey reveals that 48.26% of the respondents use Google Classroom, 29.65% use Messenger, 20.93% use Facebook, no one uses Google Meet, and 1.16% use a combination of the online platforms in accessing the Mathematics in the Modern World module. This means that the Mathematics in the Modern World students find it convenient to use Google Classroom compared to any other online platform.

Table 6
The Learning Management or Online Resource Accessed by the Students

	Frequency	Percentage
Facebook	36	20.93
Google Classroom	83	48.26
Messenger	51	29.65
Others (Uses Facebook, Messenger, and Google Classroom)	2	1.16
TOTAL	172	100

Table 7 shows the profile of the respondents in terms of data/internet promo accessed. In the survey, data/internet promo accessed refers to the daily and weekly registration of the respondent to any data/internet promo to access the Mathematics in the Modern World module sent through different online platforms. The survey revealed that 38.95% of the respondents availed the Php 10 daily promo, 28.49% spent Php 50 daily to register to a data/internet promo, 20.35% availed Php 100 a week, 4.07% of them spent Php 200 in a week, and 8.14% uses other promos in a day and a week. Students register to a data/internet promo only to access the instructional material given by the instructor/professor and to update on the additional instruction and announcement made by the instructor/professor.

Table 7
The Data/Internet Promo Accessed by the Students

	Frequency	Percentage
Php 10 daily	67	38.95
Php 50 daily	49	28.49
Php 100 a week	35	20.35
Php 200 a week	7	4.07
Others (Php 50 in 2-3 weeks)	14	8.14
TOTAL	172	100

Table 8 shows the level of acceptability of digitized Mathematics module in terms of learning outcomes, content, pre-test and post-test, illustrations/photos, and usefulness. The respondents accepted the Mathematics in the Modern World module with a mean of 3.16. This means that the digitized mathematics module is suitable to the needs of the students, but it still needs improvement for it to be highly accepted. This is somehow in line with the discussion of Cross as cited by Vergara (2017) who stressed that learning modules are the progeny of two reform movements in education that included programmed learning and mastery learning. Mastery learning plans contain the major features of the present-day modules, such as educational objectives were specified, instruction was organized into learning units, diagnostic progress tests were administered after each unit, and mastery of one unit was required before the learner is allowed to proceed to the next module or unit.

Table 8
The Level of Acceptability of Digitized Mathematics Module

Indicators	AWV	Interpretation
Learning Outcomes	3.17	Acceptable
Content	3.20	Acceptable
Pre-test and Post-test	3.15	Acceptable
Illustrations/Photos	3.14	Acceptable
Usefulness	3.13	Acceptable
Mean	3.16	Acceptable

Table 9 shows the level of students' motivation in terms of attention, relevance, confidence, and satisfaction. The students are motivated in responding to the math module. This means that the module helped the students to perform positively in Mathematics in the Modern World course. Motivation is a central component of learning, including Mathematics learning (Gerholm, 2016; Schukajlow, Rakoczy, & Pekrun, 2017). It is relevant to investigate individuals' expressed motivations if we want to understand why, for instance, some students are positively or negatively disposed towards mathematics or understand the differences in performance in Mathematical tests.

Table 9
The Level of Students' Motivation

Indicators	AWV	Interpretation
Attention	2.39	Motivated
Relevance	3.07	Motivated
Confidence	2.91	Motivated
Satisfaction	2.58	Motivated
Mean	2.74	Motivated

Table 10 presents the test of significant difference in the level of student's motivation when data are analyzed in terms of profile at 0.05 level of significance. The table shows that there is no significant difference in the level of students' motivation when data are analyzed in terms of sex, college, parents' combined income, parents' highest educational attainment, learning management or online resource accessed, and data/internet promo accessed (p-value > 0.05 level of significance) while there exists a significant difference in the level of students' motivation when data are analyzed in terms of broadcast device accessed (p-value < 0.05 level of significance). A serious look at the contingency X2 table further discloses that the level of students' motivation when data are analyzed in terms of digital and broadcast device accessed, is directly associated. This implies that the digital and broadcast devices used by the students may lead to the level of students' motivation. According to Jacobs (2013), digitized technology has put way forward to enable access to information and delivery of the latest learning content regardless of student's availability.

Table 10
Chi-square Test of Significant Difference in the Level of Students' Motivation when Data are Analyzed in terms of Profile

Variables	Chi-square Value	Degree of Freedom	P-value
Students' Motivation and Sex	4.184	3	0.242
Student's Motivation and College	3.512	6	0.742
Students' Motivation and Parents' Combined Income	16.305	15	0.362
Students' Motivation and Parents' Highest Educational Attainment	23.724	15	0.070
Students' Motivation and Digital and Broadcast Device Accessed	187.680	24	0.000
Students' Motivation and Learning Management or Online Resource Accessed	5.361	9	0.802
Students' Motivation and Data/Internet Promo Accessed	9.468	15	0.852

Table 11 presents the test of the significant relationship between the acceptability of the digitized Mathematics module and the level of students' motivation at 0.05 level of significance. The table shows that there exists a significant relationship between the acceptability of digitized Mathematics module and the level of students' motivation in terms of confidence (*p-value > 0.05 level of significance)* with negligible relationship. On the other hand, there exists no significant relationship on the acceptability of digitized Mathematics module and the level of students' motivation in terms of attention, relevance, and satisfaction (*p-value > 0.05 level of significance)* with a negligible relationship. Table 11 also disclosed that there exists no significant relationship on the acceptability of digitized Mathematics module and the level of students' motivation (*p-value > 0.05 level of significance)* with a negligible relationship. As seen in the table, the p-value is greater than 0.05 level of significance which indicates that the acceptability of digitized Mathematics module and level of students' motivation has no significant relationship. This implies that the student's acceptability of the digitized

Mathematics module and students' motivation should be leveled up. Further, the module has to be improved to increase the level of students' motivation on the areas of attention, relevance, and satisfaction. According to Guskey (2010) and Carrol (1963), as cited by Larawan (2013), the use of teacher-made modules for classroom instruction is significant in the light of maintaining the students' motivation despite of their poor ability in grasping ideas and processes from a highly verbal lecture.

Table 11
Somer's D Test of Significant Relationship Between the Acceptability of Digitized Mathematics Module and the Level of Students' Motivation

Variables		Somer's D Value	Strength of Relationship	P-value
Acceptability of Digitized Mathematics Module and Students' Motivation	Acceptability of Digitized Mathematics Module and Attention	0.039	Negligible Relationship	0.576
	Acceptability of Digitized Mathematics Module and Relevance	0.028	Negligible Relationship	0.703
	Acceptability of Digitized Mathematics Module and Confidence	0.168	Negligible Relationship	0.020
	Acceptability of Digitized Mathematics Module and Satisfaction	-0.029	Negligible Relationship	0.688
	Acceptability of Digitized Mathematics Module and Students' Motivation	0.067	Negligible Relationship	0.382

Table 12 shows the level of Mathematics performance of the respondents. As seen in the table, 60.47% of the respondents performed good, 23.26% of the students were very good, and 16.28% failed. Further, it can be seen in the table that the ordinal rank of the students is good. This implies that the students perform good in Mathematics. The performance of the students defines their academic accomplishments and how they respond to the course subject. Thus, the result of the study conforms with the result of the study of Sadiq & Zamir (2014), who found out that the results' scores were in the favor of the usage of the modular teaching approach.

Table 12
The Level of Mathematics Performance of the Respondents

	Frequency	Percentage	Ordinal Rank	Description
Excellent	0	0		
Very Good	40	23.26		
Good	104	60.47	3	Good
Failure	28	16.28		
TOTAL	172	100		

Table 13 presents the test of significant difference in the level of student's Mathematics performance when data are analyzed in terms of profile at 0.05 level of significance. The table shows that there exists no significant difference in the level of students' motivation when data are analyzed in terms of sex, college, parents' highest educational attainment, broadcast device accessed, learning management or online resource accessed, and data/internet promo accessed (*p-value > 0.05 level of significance)* while there exists significant difference in the level of students' Mathematic performance in terms of parents' combined income (*p-value < 0.05 level of significance)*. A serious look at the contingency X^2 table further discloses that the level of students' Mathematics performance when data are analyzed in terms of parents' combined income, is directly correlated. This implies that the students' parents' combined income significantly affects students' performance specifically in the Mathematics in the Modern World course. The descriptive statistics further explain that the income of the students' parents has an immense benefit to the child. The study conducted by Machebe et al. (2017) revealed that there is a greater academic achievement attained by those students from financially stable families.

Table 13
Chi-square Test of Significant Difference in the Level of Students' Mathematics Performance when Data are Analyzed in terms of Profile

Variables	Chi-square Value	Degree of Freedom	P-value
Students' Mathematics Performance and Sex	3.311	2	0.191
Students' Mathematics Performance and College	1.484	4	0.829
Students' Mathematics Performance and Parents' Combined Income	20.009	10	0.029
Students' Mathematics Performance and Parents' Highest Educational Attainment	15.288	10	0.122
Students' Mathematics Performance and Digital and Broadcast Device Accessed	26.705	16	0.053
Students' Mathematics Performance and Learning Management or Online Resource Accessed	11.723	6	0.068
Students' Mathematics Performance and Data/Internet Promo Accessed	14.545	10	0.150

Table 14 presents the test of significant relationship between the acceptability of digitized Mathematics module and the level of students' Mathematics performance at 0.05 level of significance. The table shows that there exists no significant relationship between the acceptability of digitized Mathematics module

and the level of students' Mathematics performance (p-value> 0.05 level of significance) with negligible relationship. As seen in the table, the p-value is greater than 0.05 level of significance which indicates that the acceptability of digitized mathematics module and students' performance in Mathematics have no significant relationship. It implies that students have seen the shift of learning modality challenging. What made it challenging is the way the instructional material has been stated and presented. Some of the students find it strange and others may not. This concern may either affect the acceptability of Mathematics in the Modern World module and may on the other hand affect their Mathematics performance. According to Enu, Agyman, and Nkum, (2015), the availability, provision and use of teaching and learning materials go a long way to improve quality teaching which enhances academic performance. They also asserted that the provision of the needed human and material resources goes a long way to enhance academic performance.

Table 14
Somer's D Test of Significant Relationship Between the Acceptability of Digitized Mathematics Module and the Level of Students' Mathematics Performance

Variables	Somer's D Value	Strength of Relationship	P-value
Acceptability of Digitized Mathematics Module and Students' Mathematics Performance	-0.027	Negligible Relationship	0.683

Training Program for Enhancing Mathematics in the Modern World Module. Based on the findings of the study, a training program was advised. The training program is referred to as the "Online Seminar-Workshop on Module Enhancement for Mathematics in the Modern World". It mainly supports the teaching-learning programs in teaching Mathematics specifically in developing Mathematics in the Modern World module. The online seminar workshop will focus mainly on the formulation of the learning outcomes to be identified, presentation of content, writing pre-test and post-test, right illustrations/photos to be used, and fitting on the usefulness of the module. Different course subjects have different strategies to be used in the development of the module, thus, the digitized Mathematics module has also its strategy that would help level up students' acceptability of the module, students' motivation, and performance as well.

Conclusion and Recommendations. Based on the finding of the study, the researcher hereby concluded that although the acceptability of the digitized Mathematics module shows no significant relationship on the students' motivation and performance in Mathematics, the descriptive statistics shows that the students enrolled in the Mathematics in the Modern World course have accepted the digitized module and they are also motivated. It means that the Mathematics in the Modern Word module has to be improved to level up students' motivation and performance. Though there are still students who find the use of module strange, its use may be of advantage as this will bring the students to be motivated and performs well in Mathematics. Moreover, the acceptability of digitized Mathematics module does not link to students' motivation and performance in Mathematics specifically in Mathematics in the Modern World course. It is recommended that Mathematics module needs to be improved so that the acceptability level turns into very acceptable in terms of learning outcomes, content, pre-test and post-test, illustrations/photos, and usefulness. The Instructional Materials and Development Committee may intensify quality assurance in preparing the module to improve acceptability level and motivation level. As presented earlier, the researcher also proposed an online seminar workshop serving an intervention to increase the acceptability of the digitized Mathematics module.

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