STARNET 2.0: AN OFFLINE LEARNING MANAGEMENT SYSTEM AND DATABASE FOR LEARNING MATERIALS, QUIZZES, AND LEARNERS' OUTPUTS

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ABSTRACT

StarNet was first introduced in the school during the peak of the COVID-19 pandemic in 2020. It was used to make contact less distribution of modules to the learners using the tablets provided by the Local Government Unit of Biñan City. In this study, the researchers used StarNet 2.0 as an offline learning management system and database for learning materials, quizzes, and collection or submission of learners' outputs.

This study compared the academic performance of the two sections from Grade 11. There were twenty-seven learners from Electrical Installation and Maintenance (EIM) and another twenty-seven learners from Shielded Metal Arc Welding (SMAW) section. The EIM were the Controlled Group, while the SMAW were the Experimental Group. After implementing the StarNet 2.0 to the EG, the researchers gathered the academic performance of the participants and tested them using Independent Samples T-Test to check if there is significant difference between the academic performance of the participants from the CG and EG.

Basen on the results of the study, there is highly significant difference between the academic performance of the participants of the CG and EG, meaning that the StarNet 2.0 helped the participants to access their learning materials and submit their outputs. Since the StarNet 2.0 is available offline, learners from the EG performed best and were able to improve their academic performance. Moreover, the researchers offered recommendations such as that the teachers of Biñan City Senior High School-Timbao Campus should also explore the use and benefits of StarNet 2.0 and integrate technology use in their classes. Also, school may create programs of activities that can maximize the offline system such during the periodical examinations, elections, and other school activities.

Keywords: *Academic Performance, Offline Learning Management System, StarNet,*

INTRODUCTION

Now that public schools are back to face-to-face classes and embracing the new normal set-up, teachers are maximizing the use of learning materials created during the peak of the COVID-19 pandemic. The schools are applying what was presented to the updated Aide Memoire of the Department of Education (DepEd) released on August 05, 2021, by the Office of the Undersecretary for Administration (OUA). DepEd instructs schools to provide and give access to basic education to all learners at all times and explores, develops, and enhances online learning and teaching measures and other alternative modes of education delivery. Alongside implementing the school's Basic Education Learning Continuity Plan (BE LCP), Biñan City Senior High School-Timbao Campus executed learning modalities suitable to the learners' capabilities. The school also maximizes the learning resources and gadgets from the Division Office (D.O.) and Local Government Unit (LGU) of Biñan City.

As public schools are transitioning to normal face-to-face classes, some schools no longer use the gadgets like tablets that were provided for their online classes. Some still use them to have soft copies of their modules but do not use them for interactive activities since public schools do not have an internet connection accessible to all students. Since the students have available tablets, it is then ideal to use them to improve their academic performance, especially now that they are in offline learning. Doherty (2022) asserts that offline learning is better because it allows the students to interact with fellow students in a real-life environment. They can ask questions, solve problems, and get one-to-one teacher feedback. Additionally, using the students' tablets may augment something to the learners' learning experience. Brown (2022) affirms that tablets can create an intuitive e-textbook experience for students since the modules have soft copies. They can access their learning materials offline since their tablets can be used without the use of wifi. Hence, the researchers want to take the opportunity to enhance the academic performance of the learners while maximizing the use of tablets by creating interactive activities accessible offline.

StarNet was first introduced and used in the school during the school year 2020-2021, which was the midst of the COVID-19 pandemic. Research entitled, "Starnet: An Innovative Mechanism for the Distribution of Learning Materials and Retrieval of Outputs in Grade 11-SMAW", was conducted which presents the StarNet, a localhost server, to design a safe mechanism for distributing learning materials and retrieval of outputs. It was revealed in the study that the participants felt safe since it lessened the contact of the students, parents, and teachers. Moreover, most of them were able to submit their outputs since the downloading and uploading of learning materials can be done easily offline at their convenience. Through this, the research thought of using the StarNet and improving it, making it version 2.0 which focuses on Offline Learning Management System and Database for Learning Materials, Quizzes, and Learners' Outputs.

This action research aimed to determine the effectiveness of the StarNet 2.0: an Offline Learning Management System and Database for Learning Materials, Quizzes, and Learners' Outputs in Empowerment Technology subject among Grade 11 EIM and SMAW students at Binan City Senior High School-Timbao Campus S.Y. 2022-2023. Specifically, it seeks to answer the following questions:
1. What are the learners' academic performance after the implementation of the StarNet 2.0 for both the Controlled and Experimental Group?
2. Is there a significant difference between the academic performance of the CG and EG after implementing the StarNet 2.0?
3. What are the implications of implementing the StarNet 2.0 or the Offline Learning Management System and Database for Learning Materials, Quizzes, and Learners' Outputs?

METHODOLOGY

Quantitative data analysis was used in this study. The gathered data from the learners' academic performance were used and analyzed using descriptive and inferential

statistics. The researchers employed the following statistical tools.

1. Mean – this was used to determine the center of the distribution of the responses.
2. Standard deviation – this was used to describe the level of agreement in the responses.
3. Independent Samples – test - this was used to determine the significant difference between the academic performance of the CG and EG.
4. Analysis of the implementation of the StarNet 2.0 or the offline learning management system and database for learning materials, quizzes, and learners' outputs was also performed to reveal the implications.

The participants of the study were the Grade 11 EIM and SMAW students of Binan City Senior High School-Timbao Campus. The researchers got to the total population of the section of Grade 11 SMAW, which is twenty-seven (27), while the EIM were originally thirty-five (35) and the researchers randomly selected the twenty-seven (27) students. Since the students are taking Empowerment Technologies subject, the teacher-researchers integrated the application of the offline learning system and database to the SMAW, which are the Experimental Group.

In this study, the researchers employed innovation and strategy that may affect the learners' academic performance. Additionally, it may influence other teachers to try the offline learning system and database for learning materials, quizzes, and learners' outputs to maximize the use of the tablets or personal gadgets of the learners.

Using Notepad++ the researcher begins creating an html, java script, and php codes for the three interfaces of the computer program that will run the whole system of the database and localhost server.

• The first interface of the system was the super admin panel, here the researcher, as assigned as the super admin and has the full control of the system. Credentials of the administrator will be asked upon entering the system including username and password.
• On the left part of the interface of the super admin contains responsive buttons like dashboard which shows the registered teacher, total number of teachers, registered students, total number of students, total number of classes, number of downloadable files, and subjects.
• Followed by subject button which lets the administrator to edit existing subjects and add for more.
• Next is the class button which enables the administrator to edit existing classes and add for more.
• Followed again by admin users which lets the super admin to add other admins in case the super admin is not available.
• Next is the department button where the super admin adds and edit some existing departments.
• Followed by student button where the admin can add all the students, assigned on each class, grade and section, and sets user id of each student.
• Next is the teachers button where the administrator can add all the teachers, assigned on each department, and set user id of each teacher.
• Followed by downloadable materials button where the administrator can upload the learning materials on each subject, grade level and section.
• Next is the uploaded assignment button where the administrator can upload assignments on each class, grade level and section.
• Followed by content, user log, activity log, school year, and calendar of events which the administrator can edit for more information about the system.

Another interface of the system was the login and sign up for both students and teachers. Here the students and teachers can sign up using the credentials created by the super admin and set their personal password for safety and data privacy protection. Once signed up, both teacher and student can now login to the system.

Upon login, the interface for a teacher, contains responsive buttons where he/she can change his/her profile picture, add class, upload learning materials that also can be downloaded by the students, create quiz, and assign it in a certain class, add and remove student in a class, create assignments, search student, message student individually, view notifications, and share files.

Upon login of the student this will be his/her interface which contains of his/her assigned classes in every subject area, students can also change their profile pictures, message both teacher and classmates, download learning materials provided by subject teachers, upload outputs in every subject area and teacher, download assignments, take quiz in every subject area assigned by the teacher, view their classmate, etc.

RESULTS

Academic Performance of the Participants after the Implementation of StarNet 2.0

Table 1 shows the academic performance of the Controlled Group in which the subject teacher did not applied the StarNet in teaching Empowerment Technologies and the Experimental Group after the implementation and integration of StarNet 2.0. It is evident that the academic performance of the CG is failing. Only two (2) students who are passing the subject, but their scores are not impressive. On the other hand, all students from the EG are passing the subject and high performance as well. The mean score of the CG is 50.78, while the EG is 96.19.

Table 1
Academic Performance of the Participants from Controlled Group (Without Starnet 2.0) and Experimental Group (With StarNet 2.0)

Learner/ Participant	Academic Performance Without StarNet 2.0	Academic Performance With StarNet 2.0
1	20	98
2	24	84
3	30	90
4	38	98
5	78	98
6	30	90
7	60	98
8	60	100
9	57	97
10	50	90
11	58	98
12	57	97
13	58	98
14	31	91
15	58	98
16	58	98
17	78	98
18	40	100
19	48	98
20	58	98
21	58	98
22	48	88
23	48	98
24	58	98
25	70	100
26	58	98
27	40	100
Mean	**50.78**	**96.19**

Independent Samples T-Test results of the Academic Performance of the Participants

Table 2 presents the results from the Independent Samples T-Test of the Academic Performance of the Controlled and Experimental Group. As shown in the table below, there is a significant difference (p = 1.08 x 10-20) between the academic performance of the CG and EG. This means that the StarNet 2.0 or the Offline Learning Management System and Database for Learning Materials, Quizzes, and Learners' Outputs has significantly contributed to the academic performance of the experimental group. Moreover, the standard deviation of the EG which is 4.23 is lower than the standard deviation of the CG which is 15.01, making the performance of EG more consistent in passing their subject.

Table 2
Independent Samples T-Test results of the Academic Performance of the Participants

	Mean	SD	t	p	Interpretation
Controlled Group	50.78	15.01	-15.133	<0.000	Highly Significant
Experimental Group	96.19	4.23			

Implications of the StarNet 2.0

Since the StarNet 2.0 is an Offline Learning Management System and Database for Learning Materials, Quizzes, and Learners' Outputs, students, particularly the participants in this study were given more convenient time to access the learning materials and submit their outputs. This is one of the advantages participants in the EG that the researchers noted when comparing the overall performance of the participants. Those who were in the CG, especially those who are always absent and do not have internet access had a hard time submitting their outputs. Considering the requirement from the Curriculum Guide of Empowerment Technologies subject is to submit soft copies of outputs, those participants in the EG found it more effective and efficient for them to use StarNet 2.0. They do not need to spend extra money to but data or connect to Wi-Fi when they got home, rather they can send fast and easy their outputs using the offline system.

For those students who were part of the CG, they were given chance to comply to pass the subject. In most cases, the participants CG were failing because of absences or failure to submit their outputs,

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again due to lack of data or internet connection. However, the participants who are part of the EG can access the StarNet anytime within the vicinity of the school which helped them to submit their outputs anytime as well. In terms of their outputs like photos and videos, they can also send their outputs right away or withing the class hours. These positive outcomes resulted to impressive academic performance of the participants in the EG. Thus, the innovation under StarNet 2.0 is indeed effective and could be used in the school with other subjects as well.

DISCUSSION

From being resilient in times of the COVID-19 pandemic to being resourceful, innovative, and responsive to the needs of the students, this research proves that teaching cannot just be improve using internet or having an online access. The StarNet 2.0 which serves as an Offline Learning Management System and Database for Learning Materials, Quizzes, and Learners' Outputs, confirms that the use of technology combine with the innovative work of a teacher can bring progress among the learners' academic performance.

The findings of this research led to the following conclusions:
1. Only two (2) participants were passing the subject in the CG, while all of the participants in the EG are passing, which indicates very effective integration of the StarNet 2.0.
2. There is highly significant difference between the academic performance of the participants of the CG and EG, meaning that the StarNet 2.0 helped the participants to access their learning materials and submit their outputs.
3. Since the StarNet 2.0 is available offline, learners from the EG performed best and were able to improve their academic performance.

Based on the findings of the study, the following recommendations are proposed:
1. The teachers of Biñan City Senior High School-Timbao Campus should also explore the use and benefits of StarNet 2.0 and integrate technology use in their classes.

2. School may create programs of activities that can maximize the offline system such during the periodical examinations, elections, and other school activities.
3. Students should support and utilize the use of the StarNet 2.0 even with the use of their personal gadgets.

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