# Preparedness of a Primary School in the Implementation of E-learning in Social Science Subjects

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***Abstract*** *– This research discusses the state of preparedness of The Nazareth School in an e-learning implementation based from its teachers', students', and administrators' readiness indicators along the factors in Khan's global e-learning framework. The researcher employed descriptive survey instruments to gather relevant data from the participants of this study. Data were analyzed and descriptive results given leading to a thorough discussion of the participants' preparedness indicators on all eight dimensions that affect the state of The Nazareth School's preparedness. Results revealed that the Nazareth School showed high level of preparedness in the pedagogical and evaluation aspects while the interface design and evaluation dimensions were found out to be ready but is in need of a few improvements. Management, resource support, and institutional factors were also concluded as ready in view of the very high percentage weight agreement obtained from the responses of the administrators while the technological aspect received an average agreement percentage weight placing it in the ready but needs a few improvements in the readiness category which holds the same with the technical skills of teachers and students, a factor that is also considered in the ethical aspect. The summary of these results concluded that The Nazareth School is determined to be ready but needs few improvements in its preparedness state.*

***Keywords*** *—learning, Online learning, Digital learning, Implementation preparedness, Readiness state, E-learning adoption, Education*

## INTRODUCTION

Ever since the advent of e-learning has found itself into the heart of education, many institutions have applied the various advantages this technology offers in its teaching and learning environment. Educational institutions greatly invest in e-learning systems to bolster and support teaching and improve their learners' performance and experience in the learning process [1], [2]. E-learning can be used by institution as a complement to the standard form of teaching or as an alternative to it [3]. By definition, e-learning provides an innovative and facilitated approach to deliver well-designed, learner-centred, and interactive learning environment to anyone [4]. E-learning is important for education because it can improve the quality of the learning experience of students, provides new and creative ways of motivating and engaging learners of all abilities, supports learning by offering differentiated learning particularly for those who need support in literacy, numeracy and ICT, offers a wide range of tools that enable teachers and learners to be innovative, creative and resourceful in all learning activities, provides individualized learning experience for all learners, and provides personalized learning support [5]. Al-Azawei and Lundqvist [6] enumerated the benefits of e-learning as easier information accessibility, and adaptability to accommodate difficult teaching approaches, provides efficient interaction opportunities out of campus and normal work hours, improves cooperation and collaboration using available communication tools, reduced cost, promotes teaching quality by consolidating different pedagogical theories and make lessons more interactive, and offers easier management of learner activities. E-learning provides freedom from the restrictions of time and place, flexibility, and alleviates the factors causing stress in teaching and learning.

However, regardless of the many advantages this technology presents, the fact remains that not all educational institutions have adapted e-learning as a new form of learning environment or at least employ it as learning supplement. Many educators and researchers applaud and commended e-learning over traditional learning but often fails in its implementation or obtain the desired result [7], [8]. Several studies have attributed this on various factors that pose as deterrence

in adopting e-learning and in which according to Al Gamdi and Samarji [9] inhibits users to appreciate and acknowledge e-learning, thus, preventing them to implement the e-learning technology. These factors that either pose as challenges or barriers in the implementation of e-learning in an educational environment contribute to the success rate of its implementation remaining as volatile as keeping the success rate of e-learning in schools that have it already implemented. This has been the topic of many researches [2], [10]-[15], and each stating their own solutions and recommendations as how to improve the success rate of an e-learning endeavor.

Nonetheless, an educational institution's state of preparedness from these barriers and challenges can certainly pose as a determining factor in its success or failure in implementing e-learning. Mercado [16] mentions that prior considering any e-learning tools and solutions, the necessity to assess and address factors that can contribute failures in education is imperative. One e-learning framework that can provide these preparedness factors is Khan's global e-learning framework. According to Khan [17], there are many systematically interdependent and interrelated factors that help designers create a meaningful learning environment. Khan clustered these factors into eight dimensions: institutional, management, technological, pedagogical, ethical, interface design, resource support, and evaluation. Each of these dimensions have several sub dimensions constituting issues related to a specific e-learning environment aspect. However, several literatures indicate a higher degree of correlation between the roles and concern of a specific group of stakeholder to issues covering the eight dimensions. According to Wagner [18], successful implementation of e-learning is dependent on the extent to which the needs and concerns of the stakeholder groups involved are addressed. Each specific group of stakeholder's concern for meaningful e-learning poses a closer relevance to a select group of dimensions in Khan's e-learning framework. This relates to another study that also employed Khan's e-learning framework, stating that there are roles specific to a group of stakeholders that have a higher or lesser degree of dependency on select dimensions in Khan's framework. This implies that the roles of specific stakeholders do not have exclusive coverage over all eight dimensions in Khan's framework. For example, the roles of teachers maybe more involved on dimensions relevant to pedagogy, ethical, evaluation, and technology [19].

The Nazareth School in Lipa city is a school that has not yet implemented a dedicated e-learning to any of its subject. Despite having a technical infrastructure composed of 50 computers, internet connection with a speed of 100mbps and two dedicated computer laboratories where students can work on their activities, the use of an exclusive e-learning or any endeavour towards e-learning for that matter is not evident in this academic institution. It is due to this end that this study was conducted and has aimed to determine the state of preparedness of The Nazareth School in implementing e-learning in social science subjects based from the responses of its teachers, students, and administrators as to the different preparedness parameters that is based on the flexible e-learning framework of Khan. E-learning can be applied in other academic subjects besides social science, but the researcher of this study chose social science as an e-learning subject in view that according to Arkorful and Abaidoo [20] e-learning is ineffective to some disciplines in education. For example, scientific fields that entail hands-on practical experiences may be harder to study through e-learning. Researchers argued that social science and humanities are more appropriate subjects for e-learning than fields such as medical science and engineering that require the need for practical skills.

The findings of this research specifically, on the determined level of preparedness on various e-learning aspects outlined in Khan's framework, uncovered the preparedness state of The Nazareth School in implementing e-learning. The result can help The Nazareth School build a deeper understanding of its state of preparedness in adopting e-learning and be cognizant on the underlying factors that could well foster success or failure in its implementation. Moreover, these findings can be utilized by the Nazareth School to efficiently appropriate and direct its resources on preparedness factors that were determined to be in need of improvements in the event that it considers to implement e-learning while remaining adherent to the necessary e-learning factors that met the minimum requirement for an e-learning ready environment.

## OBJECTIVES OF THE STUDY

The general aim of this study is to determine The Nazareth School's state of preparedness in the implementation e-learning in Social Science Subjects. Specifically, the following objectives serve as guidelines to satisfy this aim: to determine the state of preparedness of The Nazareth School from the perspective of the administrators in terms of

institutional, management, and resource support considerations, perspective of teachers in terms of pedagogical, technological, evaluation, and ethical considerations, perspective of students in terms of technological, ethical, and interface design considerations; to test the differences on the state of preparedness of The Nazareth School based on the responses of teachers and students in terms of technological aspect; and to develop an action plan based on the results of the study.

## METHODS

### Research Design

The nature of this research is quantitative and survey approach, otherwise referred to as descriptive research was employed [21]. This research was conducted descriptively by employing questionnaire-based surveys. The questionnaires were designed to collect relevant data about the teachers', students', and administrators' perspectives on an e-learning adoption preparedness of The Nazareth School based from the factors in Khan's e-learning framework.

The instruments used were in Likert scale format consisting of five measurement scales where 5 scores the highest and 1 as the lowest.

Table 1. Five-point Likert Scale

| Mean Score | Verbal Interpretation |
|---|---|
| 4.50 - 5.00 | Always |
| 3.50 - 4.49 | Usually |
| 2.50 - 3.49 | About half of the Time |
| 1.50 - 2.49 | Seldom |
| 1.00 - 1.49 | Never |

To know or map the readiness degree of The Nazareth School based from the respondents' perspectives in terms of the considerations in the framework of Khan, this study used the Aydin and Tasci scale that divides the readiness state in four levels as seen in Figure 1 where it could be seen that the minimum mean required to be considered ready in an e-learning implementation is 3.4 either for the average mean of a question or the total average mean of all questions for a factor.

The givenAydin and Tasci readiness scale was used to interpret the result of the survey: 1.00-2.59: Not Ready- Needs a lot of work; 2.60-3.39: Not Ready-needs some of work; 3.40-4.19: Ready but needs few improvements; 4.20-5.00: Ready-Go Ahead. The expected level of readiness scale is 3.40.

### Setting and Participants

The setting of this study is in the secondary level of education, specifically in the senior high school division of The Nazareth School. The Nazareth School is originally a Christian Achievement Center located in the old house of Jose Rizal's Love, SegundaKatigbak on a 600 square meter lot at 128 Rizal Street in the heart of Lipa City. In its second year of operation, Msgr. Amador Litong, a friend priest ,changed its name from Christian Achievement Center to The Little Nazareth School.

The students, teachers, and administrators, specifically from the senior high school department constituted the main group of respondents in this study. There were 137 students, 10 teachers, and 9 administrators with an overall total of 156 respondents. Table 1 shows the summary of respondents based on their age and gender.

Table 2. Summary of respondents' age and gender

| Profile | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| 16 | 20 | 12.8 |
| 17 | 63 | 40.38 |
| 18 | 50 | 32.05 |
| 19 | 4 | 2.56 |
| 21-30 | 11 | 7.05 |
| 30 above | 8 | 5.12 |
| **Gender** | | |
| Male | 65 | 41.66 |
| Female | 91 | 58.33 |

### Instruments

The researcher of this study employed two instruments to collect data in terms of the considerations on Khan's e-learning framework from the three groups of respondents of The Nazareth School who are the subject of this study. The first instrument is the Readiness Assessment Tool of Mercado [16] and the second instrument is an instrument developed by the researcher to answer a specific dimension in Khan's e-learning framework.

The readiness assessment tool of Mercado is divided into several sets of questions grouped into sub categories that pertain to technology access, technology skills of teachers and students, students' and teachers' attitude towards e-learning, and the institutional readiness. Each category has several sets of questions grouped into sub categories. Technology access is grouped questions on computer, internet connectivity, and tools. Technology skills are grouped into questions

on basic computer skills, basic internet skills, and literacy on software applications. Attitudes are further divided into study habits, abilities, motivation, and time management for students and divided into teaching styles and strategies, abilities, motivation, and time management for teachers. Institutional readiness are divided into categories pertaining to administrative support on commitment, policies and instructions, as well as to financial, human, and technical support. The researcher has asked permission from the original author, Cecilia Mercado through e-mail to use her work for this study and was granted permission so long as the work was properly cited.

The second instrument is a survey instrument with six questions pertaining to issues concerning the interface design dimension in Khan's e-learning framework. A pilot test run was performed to determine the reliability of this instrument for this study. Having 0.754 reliability with acceptable remarks, the researcher employed this instrument to collect data specific to issues pertaining to the interface design dimension of Khan's e-learning framework.

**Procedures**

The researcher obtained permission from the school director addressed to The Nazareth School to conduct this study. The researcher worked with the principal, non-teaching staffs, and the coordinator of the senior high school department regarding the scheduling of the procedures conducted for this research. He was allowed to distribute the preliminary survey during free time of the students, teachers, and administrators of the school. However, to facilitate the administration of the preliminary survey, the staff administrator of the Nazareth School took the responsibility of distributing the questionnaire to all the respondents of this study. The administration of the preliminary survey lasted for five days; thereafter, the researcher was informed to collect the answered questionnaires.

In view that this study entailed the respondents to answer a survey questionnaire related to the interface dimension of Khan's e-learning framework, the respondents initially had to view the design of the e-learning website developed for this study prior to answering the survey questionnaire. Hence, the researcher requested the school's director and coordinator of the high school department to use the computer laboratory and all its facilities and equipment to carry out this endeavour and was given access to this request.

**Data Collection**

The first data gathering tool used was the instrument of Mercado [16]. There were three sets of questionnaires given to teachers, students and administrators. The questionnaire given to students contained a total of 53 questions on aspects pertaining to technological and ethical. The questionnaire given to teachers contained a total of 71 questions on aspects related to pedagogical, technological, evaluation, and ethical. The questionnaire given to administrators had a total of 30 questions on management, resource support, and institutional aspects of e-learning. The second data gathering tool used for this study is a 6 item questionnaire that pertained to questions on interface design. This questionnaire was given to students after they have used the e-learning website designed for this study. The activity for using the e-learning website necessitated the students to visit webroom.cloudaccess.host, register and login their account, open the Ancient East Asia lesson and browse its content, take a quiz after browsing the content, then log out after taking the quiz. The purpose of this activity was not to measure the students' result in their quizzes or how effective it is for their learning but to get their feedback on the e-learning website's interface design.

**Data Analysis**

All data were treated using a statistical software known as PASW version 10 to provide descriptive statistics, i.e., weighted mean, rank, frequency, composite mean, to further interpret the results of the study. In addition, Mann Whitney U Test was used to provide statistical difference between the teachers and student respondents. Mann Whitney U test, was employed to compare the two sample means that came from the same population and test whether the sample means are equal or not equal. Usually, Mann Whitney U test is used if the assumptions of t-test are not met making it a non-parametric alternative to the independent sample t-test [22].

**E-learning Website**

The E-learning website developed for this study is called WebRoom which can be accessed on webroom.cloudaccess.host. The website is developed using Joomla which is an open source content management software developed in PHP. WebRoom has the following capabilities: file upload and download, forum discussion of topics, lessons uploaded can be viewed in pdf format, create announcements and respond to comments, quizzes can be taken on the front

end, create and discuss topics on forums and post ideas and knowledge about the lesson, share posts with others, view each other's' posts and make comments.

## RESULTS AND DISCUSSION

Table 3 summarizes the readiness state for factors where the weighted mean was computed for each item and the composite mean for all items in their corresponding categories. The readiness degree was determined by mapping the composite mean of the factors to its corresponding readiness level in the Aydin and Tasci scale as shown in Figure 1 in the methodology section of this study.

Table 3. E-learning readiness along factors and readiness level

| Factor | Mean | Readiness Level |
|---|---|---|
| Pedagogical | 4.34 | Ready go ahead |
| Evaluation | 4.34 | Ready go ahead |
| Interface Design | 4.17 | Ready but needs a few improvements |
| Ethical | | |
| Teachers' Abilities | 4.32 | Ready go ahead |
| Teachers' Time management | 3.90 | Ready but needs a few improvements |
| Teachers' Motivation | 4.31 | Ready go ahead |
| Students' Abilities | 3.55 | Ready but needs a few improvements |
| Students' Time management | 3.57 | Ready but needs a few improvements |
| Students' Motivation | 3.47 | Ready but needs a few improvements |
| Students' Study habits | 3.50 | Ready but needs a few improvements |
| Average composite mean | 3.80 | Ready but needs a few improvements |

It could be seen that the pedagogical (4.32) and evaluation (4.32) factors in this table are considered to be ready if it refers to the Aydin &Tasci scale. The readiness level for interface design (4.17) were shown to be ready but needs a few improvements.

Similarly, five out of seven sub-factors in the ethical aspects namely he teachers' time management (3.90), students' abilities (3.55), students' time management (3.57), students' motivation (3.47), and students' study habits (3.50) are all in the ready but needs a few improvements readiness level. The other two sub-factors of the ethical aspect, teachers abilities (4.32) and motivation (4.31), were indicated to be in the ready go ahead readiness level.

Table 4 summarizes and presents the readiness state for factors where their readiness levels are shown in percentage weight as agreed by the respondents and the average percentage agreement weight are shown for each factors and sub-factors in this table.

As shown in table 4, the institutional and resource support factors have a 96.3% readiness level as indicated by the average agreement percentage weight of the respondents. The management factor also showed to have high readiness level based from the percentage agreement weight of 94.45% it received.The ethical factor has an 83.14% readiness level based from average the percentage weight of its sub-factors. The readiness state for each sub-factors in the ethical aspect are as follow: 94% for the teachers' computer skills, 98.3% for the teachers' internet skills, 87.5% for the teachers' software literacy, 80.63% for the students' computer skills, 71.62% for the students' internet skills, and 66.8% for the students' software literacy.

Table 4. E-learning readiness along factors and percentage agreement weight

| Factors | Yes | No |
|---|---|---|
| Institutional | 96.3% | 3.7% |
| Resource Support | 96.3% | 3.7% |
| Management | 94.45% | 5.55% |
| Ethical | | |
| Teachers' Computer skills (teachers) | 94% | 6% |
| Teachers' Internet skills (teachers) | 98.3% | 1.6% |
| Teachers' Software literacy (teachers) | 87.5% | 12.5% |
| Students' Computer skills (students) | 80.63% | 19.37% |
| Students' Internet skills (students) | 71.62% | 28.37% |
| Students' Software literacy (students) | 66.8% | 33.06% |
| Average percentage weight | 83.14% | 16.81 |
| Technological | | |
| Teachers' Computer access | 90% | 10% |
| Teachers' Internet access | 100% | 0% |
| Teachers' Tools | 90% | 10% |
| Students' Computer access | 51.6% | 47.6% |
| Students' Internet access | 69% | 31% |
| Students' Tools | 54.35% | 45.65% |
| Average percentage weight | 75.82% | 24.04% |

The technological factor has a 75.82% readiness level based from the average percentage weight of its sub-factors. For each sub-factors in the technological aspect, teachers' computer access obtained a 90% percentage weight, 100% for the teachers' internet access, 90% for teachers' tools, 51.6% for students' computer access, 69% for students' internet access, and 54.35% for students' tools.

It could be seen from this table that the readiness level of the factors in this table based from the average percentage agreement weight ranges from 75.82% to 96.3% where three out of five factors received very high percentage weights of 96.3%, 96.3%, and 94.5% namely the institutional, resource support, and

management factors respectively which could indicate that these factors are ready for an e-learning implementation while the average percentage weight for the technological and ethical dimension, I.e., 83.14% and 75.82% respectively could also indicate that these factors are ready but needs some improvement for an e-learning implementation.

Referring to table 3 and table 4, it can be concluded that the teachers' perspectives in the preparedness of The Nazareth School is ready in terms of pedagogical and evaluation aspects and ready but needs a few improvements on the technological and ethical aspects. The students' perspectives as to interface design, ethical, and technological aspects are also ready but needs a few improvements. The administrators' perspectives on management, institutional, and resource support aspects were very high ranging to 94.5% to 96.3% which can be concluded that their perspectives in terms of these factors in an e-learning implementation is ready. By summarizing the results of these different perspectives, we can conclude that The Nazareth School in implementing e-learning is ready but needs a few improvements.

**On Pedagogical Readiness**

The pedagogical aspect showed a mean of 4.34 which is verbally interpreted as usually. This shows that teachers regard the school highly prepared in terms of using teaching methods to address a variety of student learning styles, supporting student-centered learning and using strategies to encourage active learning, using strategies to accommodate varied talent and skills among their students, encouraging independence and creativity, and having methods that address a variety of student learning styles. The approach employed in pedagogy is a vital consideration in implementing e-learning in view that the method of teaching and learning in e-learning greatly differs from the accustomed traditional teaching system [23]. It is necessary to employ different ways in improving teacher and student interaction [24]. Teachers need to be able to employ strategies that evoke students' interest and motivate them which can also be accomplished using various interactive learning technologies [25]. Using activities that evoke interesting learning interaction effectively improves the students' learning and motivation [26].

**On Evaluation Readiness**

The responses of the teachers regarding the level of preparedness on evaluation aspect also showed a mean of 4.34 and can be verbally interpreted as usually. This suggests that teachers considered the school highly prepared in giving immediate consultation with students on correcting problems, having flexibility in dealing with students' needs, advocating critical thinking and problem solving as important skills for their students, facilitating and monitoring appropriate interaction among students, and providing timely, constructive feedback to students about assignments and questions. Bystrova [25] explained that it is essential to regularly monitor results as they are important elements in e-learning. This allows teachers to give the necessary instructions to improve their students' performance in the process of e-learning [27]. Moreover, continuous assessment, frequent follow-ups and intervention from teachers have an evident impact on e-learning [26].

**On Interface Design Readiness**

The responses of the students regarding the level of preparedness on Interface Design showed a mean score of 4.17. This shows that students agreed that the account registration and login system was easy, the page design of the e-learning was attractive to use, there was an evident ease of navigation based from the organized content materials in menus, and that the e-learning labelling system was clear.

When the users of e-learning consider the technology as easy to use, they perceive it as useful [15]. An interface that is user-friendly and have clear contents positively impacts users' satisfaction [28]. Moreover, user-friendliness are key elements for a lively e-learning system [27]. Nevertheless, the interface design of the e-learning employed in this study can still be improved since bad interface design negatively affects the students' interest in using e-learning [29].

**On Ethical Readiness**

As seen in table 3, teachers considered the school highly prepared in their abilities and motivation to use e-learning. This shows that teachers have the abilities to be resourceful, disciplined, flexible, and are motivated to teach online since their interest to teach online is motivated by enthusiasm, the flexibility and convenience it provides them to decide when they do their work. However, their time-management skills (3.90) has shown to be in need of a few improvements. Continuous management of electronic courses makes the work of teachers difficult and time consuming which they perceive as a massive obstacle in view that a

lot of time is needed to plan, develop, and maintain their e-courses [15], [30].

The students' abilities, motivation, time-management, and study habits were all shown to be ready but needs a few improvements especially in the students' motivation to use e-learning since it was shown to have the lowest mean score (3.47) compared to the other items in this table. Lack of awareness, interest, and motivation toward e-learning technology is a hindrance in the implementation of e-learning [6]. Their study habits also need improvement since it reflects their success in e-learning. Students with good study habits allow them to focus on significant things that contribute effectiveness in their learning [4].

The teachers' and students' technical skills are also covered in the ethical dimension as seen in table 4. The table shows that the average percentage weight is 83.14% which suggests that teachers and students have adequate skills in computer, internet, and software literacy to perform well in an e-learning setting. Teachers and students should be competent enough to use computers otherwise they would not be able to learn the methods entailed in e-learning if they are not computer literate [5]. Technical illiteracy hinders an e-learning to be successfully implemented [6].

**On Institutional Readiness**

As shown in table 4, the institutional factor received a total of 96.3% agreement which reveals that the administrators considered the school highly prepared in commitment, policies, and instructional administrative support. E-learning is different from traditional classroom learning requiring collaboration among teachers, technical staffs, instructional designers, and other involved professionals [19].

Results indicate that the Nazareth school have strong commitment from institutional leaders in using technology to achieve academic goals, accepts e-learning as a method for teaching and learning, has available committee or at least is willing to set up a committee responsible for developing online contents and programs and is willing to provide technical assistance to teachers and students in the event of technical issues arising. Teachers and staffs are more motivated and committed when they feel that their school provides them enough technical support, training opportunities, and assistance [26]. Inadequate support from institutions in raising the confidence of users to adopt technologies results to users having a difficult experience in using e-learning prompting them to eventually avoid it [6].

Results of the assessment also show that the administrators recognize that The Nazareth School is willing to give professional development opportunities to their teachers intended in assisting and improving their capacity to teach online. Providing e-learning training for teachers extends the reach of their knowledge consequently improving the effectiveness of the learning experience in education [5].

**On Resource Support Readiness**

Table 4 showed an agreement of 96.3% in the resource support aspect. The administrators who responded yes are always higher than those who answered no in all 9 items surveyed. This can be interpreted that the administrators considered the school highly prepared in having available human resources or a department responsible for organizing training related to e-learning as well as to support an initiative to e-learning, and to provide teachers and students technical support in the event the technical issues arise. It is not possible to achieve a successful e-learning implementation without the presence of professional human resource such as technical staffs whose role is to set up and maintain an e-learning environment and support users [6].

The administrators also agreed that The Nazareth School has a learning management software through which learning content and programs are delivered and that the learning management software have the required system capacity to support the learning activities, and is able to provide the necessary communication tools for users to be able to work together. In e-learning, chats, forums, and discussion boards improves cooperation and collaboration between learners [6].

The Nazareth School has no existing e-learning software but is contradicted by the administrators' agreement on having one. This could be attributed to the school's employment of Math score software which is an online math practice system used to assess and enhance students' math solving capability. But in terms of owning an exclusive online learning website/program that has online and technical support resources for learning activities, The Nazareth School lacks it.

**On Management Readiness**

In table 5, the management factor received a total of 94.45% agreement from administrators. From this data, we can safely assume that the administrators regard the school highly prepared in its willingness to create a budget for an e-learning implementation, have an

adequate technological infrastructure to build and/or sustain an online learning environment, provide extensive bandwidth capability, and being financially ready to venture into e-learning.

Having such budget and willingness to create a budget for the implementation of e-learning would prevent The School of Nazareth in facing the challenge pertaining to financial constraints that hinder the maintenance and implementation of e-learning. One of the impediments that inhibit an e-learning implementation is financial constraint [11]. There is a necessity for institutions to acquire a plan in allocating budget for e-learning in view that inadequate funding poses as a challenge for educational institutions to implement e-learning [6].

An ICT infrastructure that provides fast internet connection is important to sustain an e-learning environment. it is frustrating to use e-learning if the internet connection is slow or not reliable [5]. It would be challenging to maintain and implement an e-learning environment without the availability of these technological infrastructure and connection speed requirements because slow internet connection and ineffective ICT infrastructure can serve as barriers in implementing e-learning [15], [11], [4].

**On Technological Readiness**

In table 4, it is seen that the average percentage agreement is 75.82% pertaining to computer, internet, and software tools access. This shows that majority of the teachers and students own or have access to a dependable computer with the necessary software installed as well as access to a reliable internet connection either at home or at school. Even though results show that majority of the students have computer and internet access either at home or school, it is undeniable that there can still be improvement in the increase of total percentage of students who have such computer (51.6%) and internet access (69%). For students to access the contents of e-learning, they must be given access to computers and internet connection at all times when they are in school [4]. This also holds true for teachers because teachers complained slow internet connection and not enough computers making it near impossible to use e-learning during their lessons [15]. Hardware availability, presence of improved software, and faster internet connection effectively improves e-learning [5]. Access to technology involves high speed internet broadband and adequate bandwidth capability [13]. Moreover, slow internet connectivity and insufficient computers negatively affects the attitude of e-learning users. Sufficient access to computers and internet connection is a requirement in e-learning [23].

The difference on the level of preparedness is done based from an overlap in the readiness indicators between teachers and students on technological aspect. Table 5 presents the statistical evidence of difference in technological preparedness in access to computer, internet connection, and tools between teachers and students of The Nazareth School using the Mann-Whitney U test.

Table 5 presents the comparison of responses of teachers and students on the level of preparedness as to technological aspects using the Mann-Whitney U test. P-value is compared to the significance level (0.05) to determine whether the difference between the medians is statistically significant.

Table 5. Differences on the Level of Preparedness on Technological Aspect between teachers and students

| Indicators | U-value | p-value |
|---|---|---|
| **Computers** | | |
| 1. I own a computer | 375.0* | 0.005 |
| 2. I have access to a dependable computer | 395.0* | 0.008 |
| 3. I have access to a computer with the necessary software installed | 380.0* | 0.006 |
| 4 A printer is attached to my computer | 559.0 | 0.258 |
| **Internet Connectivity** | | |
| 1 . I have / I am willing to obtain access to a computer and Internet connection at home? | 500.0 | 0.058 |
| 2. I have access to a computer in campus or Internet cafes with stable Internet connection | 445.0* | 0.023 |
| **Tools** | | |
| 1. I have one of these Java-enabled web browsers? Netscape™ 6.2 (PC and Mac), or 7.0(PC); Internet Explorer 5.0 or higher | 408.5* | 0.014 |
| 2. I have a virus protection on my computer | 473.5 | 0.054 |

*Legend: *Significant at p-value < 0.05*

The evidence of significant difference is determined if the p-value is less than the significance level. In contrast, there is not enough evidence of significant difference if the p-value is greater than the significance level. Statement on owning a computer in computer accessibility was significant (p-value 0.005 < 0.05), having access to a dependable computer was significant (p-value 0.008 < 0.05), as well as having access to a computer with the necessary software installed (p-value 0.006 < 0.05), however, (p-value 0.258 > 0.05) on the statement a printer is attached to computer indicating that there is no evidence of significant difference. Statement on willingness to obtain access to a computer and internet connection at home in access to internet connectivity reveals that there is

no significant difference (p-value 0.058 > 0.05) while having access to a computer in in campus or internet cafes with stable internet connection indicates significant difference (p-value 0.023 > 0.05). Statement on having java enabled browsers in tools shows significant difference (p-value 0.014 > 0.05) while there is no significant difference in having virus protection on computer (p-value 0.054 > 0.05). From this data, it can be concluded that assessment on computers of the student group was statistically significantly higher than the teachers ($p$ = 0.005, 0.008, and 0.006). While for the internet connectivity (p = 0.023) and tools (p = 0.014), it was found out that students have higher level of preparedness as to technological aspect.

This significant difference regarding the teachers' and students' preparedness in the technological aspect as to computers, internet connection, and tools could well be attributed on the students' propensity to utilize various modern technological tools, especially computers, in fulfilling either their academic or personal tasks. There is a rapid change in technology and this consequently enabled students to become proficient in the use of technology [19]. As technology becomes prevalent, young people are becoming more interested in technological products. Their interest to use various technologies correlates with a significant amount of time in learning the utility of these technologies on students [31].

The students' heightened interest in the use of technology and their option to rely and integrate technology in their learning could well pose as fitting reasons on this table's findings about students having a higher level of preparedness as to technological aspect than of teachers.

## ACTION PLAN

The results provided by this study as revealed by the state of preparedness of teachers, students, and administrator perspectives may serve as factors that should be looked into in the event that The Nazareth School implements e-learning in their social science subjects. Table 6 below shows the following objectives for each preparedness aspect that could heighten the success rate of an e-learning implementation.

The table above presents the overall objectives to increase the success rate of implementing e-learning in Social science subjects in The Nazareth School. These objectives were based from the results that were found out to be in need of improvement. The realization of these objectives could potentially increase the rate of success in an e-learning implementation to 90% for the technological, pedagogical, evaluation, interface design, and ethical aspects and 100% for the management, resource support, and institutional e-learning aspects. Note the last three aspects, I.e., management, resource support, and institutional aspects, were given a 100% success rate in the accomplishment of these objectives as compared to the success rate given to the other factors. This is because of the very high agreement response rate given to these aspects by the administrators that ranged from 94.45% to 96.3% as presented in table 4.

Table 6. Action plan to raise the success rate of implementing e-learning in The Nazareth School

| Key Result Area | Objectives | Success Parameter |
|---|---|---|
| Technological | Improve access to dependable computers and internet connection<br>Computers must have the necessary software installed (e.g., java enabled browsers, utilities, etc.) | 90% improvement on teachers' and students' access to their online e-learning resources |
| Pedagogical | Improve teaching strategies that engage students in the learning process<br>Develop and apply a variety of interesting learning interactions to keep their students active and motivated in using an e-learning program | 90% improvement in keeping keep their students active and motivated in using an e-learning program for their learning process |
| Evaluation | Improve strategy on providing feedback on student assignments and questions | 90% improvement on students knowing how they can improve their works in an e-learning setting |
| Institutional | Align an e-learning initiative with the Nazareth School's mission<br>Incorporate computing into the institution's culture | 100% improvement on the institution's commitment and support to policies entailed in an e-learning endeavour |
| Resource Support | Provide a Learning Management Software through which electronic contents are delivered, have the necessary system capacity to support learning activities, and have the appropriate tools for communication and collaboration<br>Dedicate qualified staff(s) to set up and maintain the e-learning system | 100% improvement on online services and technical assistance |
| Management | Allocate budget for the maintenance and improvement of the technical infrastructure that would sustain the e-learning environment | 100% improvement the overall performance of the e-learning environment |
| Interface Design | E-learning program must be designed to have an attractive page layout, clear labelling system, easily navigated content materials, and user friendly tools | 90% improvement on the users' performance as to content navigation |
| Ethical | Improve students' technological confidence, study habits, abilities, | 90% improvement on students' study habits, |

| | |
|---|---|
| motivation to take e-learning classes, and time management skills<br>Provide students seminars/trainings related to ICT skills and online learning environments, workshops on building good study habits, abilities to be self-starters, time management skills, and motivation to use various technologies for their learning<br>Improve teachers' technological skills as well as their time management in teaching in an e-learning environment.<br>Teachers have to be trained to use ICT tools as well as have them attend workshops/seminars related to online learning | abilities, time management, and motivation to take e-learning classes as well as improvement on teachers' time management and technological skills necessary in an e-learning setting |

## CONCLUSION

This study presented a thorough discussion of the different preparedness indicators according to the perspectives of teachers, students, and administrators that contribute to the state of preparedness of The Nazareth School in an e-learning implementation in social science subjects. The readiness level of the factors considered along Khan's framework in an e-learning adoption based from the perspectives of the three groups were summarized and mapped to its corresponding readiness category revealing that The Nazareth School is ready but needs a few improvements level of preparedness. The statistical testing of difference between students and teachers concluded that assessment on computers of the student group was statistically significantly higher than from the teachers ($p$ = 0.005, 0.008, and 0.006), (p = 0.023) for the internet connectivity and (p = 0.014) for tools, revealing that students have higher level of preparedness as to technological aspect. This study also developed the necessary action plan that presents the necessary objectives for each e-learning aspect that was shown to be in need of improvements. The realization of these objectives raises the success rate parameter for each e-learning aspects which are all significant considerations in implementing e-learning for Social Science subjects.

## RECOMMENDATION

The state of preparedness of The Nazareth School were determined to be ready but is in need of a few improvements category which is a good indication that the school for the most part has met the minimum requirement in adopting e-learning based from the several preparedness indicators as considered by the eight dimensions in Khan's e-learning framework. It is due to this part that this study highlights those factors which were perceived by the different groups positively in their responses and in which this study suggests the teachers, students, and administrators to remain consistent in adhering to these practices since these factors are the key areas which placed The Nazareth School in the minimum requirement in the readiness criteria to implement e-learning. The following are the list of e-learning aspect along with their respective preparedness indicators that this study deemed as key requirements that enabled the School to achieve its current state of preparedness category and not any lower.

As to Institutional aspect: Recognition that a course redesign for e-learning initiative, involves a strong collaboration among the teachers, IT personnel, and administrators in the planning as well as the implementation, commitment on the part of institutional leaders to use technology to achieve strategic academic goals, commitment on the part of institutional leaders to use technology to achieve strategic academic goals, willingness to employ or to assign an academically capable and/ or experienced faculty to oversee the implementation of the e-learning environment, supporting employees who seek out non-traditional development programs or experiences, willingness to accept e-learning as a mode for teaching and learning, willingness to put up a committee that will work directly with the development of online courses and programs, willingness to put in place provisions that would ensure adequate and timely support to the teacher and students when technical issues arise, willingness to provide teachers with professional development opportunities to assist them in improving their online teaching.

As to Pedagogical aspect: Encouraging independence and creativity from student, encouraging learning through group interaction, employment of teaching goals and methods that address a variety of student learning styles, and teacher viewing themselves as facilitators.

As to Technological aspect: Owning dependable computers with reliable internet connectivity for both teachers and students, having computer access in school as well as willingness to obtain computer and internet access at home.

As to Resource support aspect: Availability of adequate and time support for teachers and students in the event that technical issues arise, willingness to provide teachers and students access to appropriate hardware and software needed in adopting e-learning,

and ensuring available, accessible and reliable instructional resources.

As to Evaluation aspect: Flexibility in dealing with students' needs as to due dates, absences, make-up exams, promoting critical thinking and problem solving as important skills for students, and providing immediate consultation with students to correct problems and keep them on task.

As to Management aspect: Willingness to create a budget for implementing e-learning, willingness to provide adequate technological infrastructure to build and sustain of an online learning environment, having extensive bandwidth capability, and having sufficient connection speeds necessary for accessing course materials.

As to Interface design aspect: Agreement that the page design of the e-learning program should be attractive to use with clear labelling system, contents should be easily navigated, and e-learning tools should be useful.

As to Ethical aspect: Teachers and students having basic technology skills to know the basic functions of computer software and hardware components. Students having study habits in getting important tasks ahead of time, learning independence, refraining from distractions, and formulate opinions of learned materials. Student having abilities in communicating effectively using online technologies, taking responsibility for their own learning, and the ability to express ideas in writing. Students having motivation in setting a goal prior starting a task. Students having time management skills in organizing time to avoid tasks building up, sacrificing personal time to complete assignments and readings, getting things done without having to be directed by others, and finishing what they have started. Teachers having the ability to use the Internet to locate resources for teaching, work and communicate well with students with different cultural background, be capable of self-discipline, and assume responsibility for preparation and presentation of learning tasks. Teachers having motivation on being committed and highly enthusiastic to teaching, and setting goal before starting a task. Teachers having time management to dedicate 4 to 6 hours a week to participate in the online teaching process, to be willing to log on and contribute to your online classroom discussions and interact with students online, and to be able to create schedules for themselves and stick to them.

These preparedness indicators as to their respective e-learning aspects are necessary perspectives that should be continually adhered by the teachers, students, and administrators of The Nazareth School for it to remain in the readiness requirement category of an e-learning implementation and not fall below the minimum criteria of an e-learning readiness level.

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