# Improvement Plan on the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool

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**Abstract:- Information and Communications Technology (ICT) has transformed the traditional classroom into an innovative educational resource. It has converted everybody's needs to electronic forms, from book to e-book, learning to e-learning, and recently the general paper-pen tests/exams into the electronic assessment. Hence, investigating the utilization of mobile applications with technology-enhanced assessment (TEA) tool can help teachers enhance their knowledge and skills in using technology for classroom assessment. The researcher employed the descriptive research design and IPO approach in developing the TEA tool. Frequency count, percentage, and weighted mean was used to analyze and interpret the gathered data. The study involved 116 grade 5 teachers in the East Unit of the Schools Division of Ilocos Norte. Results revealed that most teachers have already earned units in their master's degree, have taught for 10 years, and have participated in local training and seminars related to ICT, Assessment, Content and Classroom management. Among the 10 identified available mobile applications with the TEA tool, the teachers sometimes use Kahoot It!, Google Quiz, Plickers, and Quizziz and they never utilized Quizalize, Socratives, Poll Everywhere, Quizlet, Padlet, and Edmodo. As to teachers' level of proficiency in the utilization of mobile applications with the TEA tool, most of them are at the Entry Level. The respondents agreed that they encounter the issues and concerns under accessibility, usability, and connectivity. The improvement plan is found very highly valid in addressing teachers' issues and concerns. Hence, the Improvement Plan on the Utilization of Mobile Applications with the Technology-enhanced Assessment (TEA) tool is recommended for possible adoption to help teachers develop their skills in using ICT for classroom assessment.**

***Keywords:- utilization; mobile aplications; technology-enhanced assessment (TEA) tool; improvement plan.***

## I. INTRODUCTION

An assessment has a significant impact on the education process to inform and improve ongoing learning. It acts as an agent for change in schools by informing policymakers about students' learning outcomes, helping teachers understand how to improve classroom instruction, and inducing societies as they think about education quality and learning goals. Additionally, it contributes to a successful education system reformation by providing information about students' achievement levels and contributing a means to hold stakeholders accountable for results. Assessment, being a crucial part of teaching (Taras, 2005, cited in Reimann & Sadler, 2017), allows educators to determine their students' knowledge, skills, strengths, and weaknesses. The feedback gained from the assessment provides teachers with information on how students learn and how they can motivate their learners. These pieces of information can help teachers improve student knowledge (Tosuncuoglu, 2018).

Consequently, according to Earl (2004; cited in Yüksel & Gündüz, 2017), assessment is an essential component of teaching and learning. Meidasari (2015) emphasizes that an effective assessment program is necessary because it gives teachers information about students' learning progress and teaching strategies' effectiveness. The value of the assessment in the educational process has a profound and well-established link to student performance. Moreover, he further argues that "regular monitoring and feedback are essential to improving student learning.

Since the advent of information technology, there have been changes in the teaching and learning process, from a conventional classroom turns into an invaluable educational resource. It has converted everyone's needs to electronic forms such as the use of e-book, e-learning, e-mail, e-banking, e-bay, e-game, among others. According to Trillo, et.al (2007; cited in Usta, & Ullman, 2016), the e-learning system has become a complement to traditional face-to-face classes which also drives the introduction of electronic assessment to replace the paper-pen tests/exams. E-assessment or technology-enhanced assessment uses technology in presenting assessment activity and recording responses, JISC (2006; cited in Appiah & Van, 2018).

Elmahdi, Al-Hattami, and Fwzi (2016) mentioned that mobile applications help teachers effectively and efficiently assess students' knowledge, concepts, and skills by providing user-friendly technology since teachers only need in their classroom a cell phone, or tablet in e-assessment. Similarly, McCain (2019) mentioned that mobile applications help overcome educational problems. Interactive and personalized learning are the assets that students get from mobile apps. Education-based apps provide convenience by helping students to realize more in less time.

According to My Edvisor (2020), mobile apps can be students' best friend in times of need and can build harmonious relationships among teachers, learners, and parents. Based on the research of Ayres, Mechling, and Sansosti (2013), the growing number of studies investigating

the utilization of technology-based interventions and mobile technologies shows the importance of technology to support students in education. Most research studies center on determining the relationship of assessing students' cognitive skills to their academic achievement.

The study aimed to develop an improvement plan on the utilization of mobile applications with technology-enhanced assessment (TEA) tool. Specifically, it sought to answer the following questions: (1) to determine the profile of teachers, (2) to identify the available mobile applications with technology-enhanced assessment (TEA) tool, (3) to determine the utilization level of mobile applications among teachers, (4) to assess the level of proficiency of teachers in the utilization of mobile applications with technology-enhanced assessment (TEA) tool, (5) to determine the issues and concerns of teachers in the utilization of mobile applications, (6) to identify the improvement plan needed to address the issues and concerns of teachers, and (7) to assess the validity of the developed improvement plan.

Considering the roles of technology in education, educators, administrators, policymakers, and practitioners should determine appropriate technological tools that support students' learning and assessment. Hence, the researcher created an improvement plan in using mobile applications with a technology-enhanced assessment (TEA) tool. The said plan seeks to equip teachers with knowledge and skills about mobile applications and their functions.

## II. METHODOLOGY

This study employed the descriptive research design and IPO (Input, Process, and Output) Approach. The researcher utilized total population sampling which involved 116 grade 5 teachers from the different schools in the East Unit of the Schools Division of Ilocos Norte.

The researcher used two questionnaires to gather data. The first questionnaire was used to collect data and consisted of four parts: (1) respondents' profile, (2) available mobile applications with TEA tool, (3) teachers' level of proficiency in the utilization of mobile applications with the TEA tool, and (4) issues and concerns in the utilization of mobile applications with the TEA tool. The second questionnaire was a content validation instrument in the form of a rating scale patterned from the Evaluation Sheet on School Improvement Plan (SIP) of SDO-IN. After retrieving the data, statistical procedure followed, frequency count, percentage, and weighted mean was used to analyze and interpret the gathered data.

## III. RESULTS AND DISCUSSION

### A. Profile of Grade 5 Teachers

Table 1 presents the profile of teachers, specifically on their educational attainment, years of teaching experience, and training or seminars related to ICT or technical skill development, assessment/evaluation concepts and applications in the classroom, mastering subjects/content in the different learning areas, and classroom management.

| Variable | Frequency | Percent (%) |
|---|---|---|
| **Educational Attainment** | | |
| Bachelor's Degree Holder | 14 | 12.10 |
| Bachelor's Degree with MA Units | 100 | 86.20 |
| Master's Degree | 2 | 1.70 |
| | | |
| **Years of Teaching** | | |
| 0-3 | 14 | 12.10 |
| 4-6 | 27 | 23.30 |
| 7-9 | 21 | 18.10 |
| 10 and above | 54 | 46.60 |
| | | |
| **Training/Seminars** | | |
| **ICT/Technical Skills** | | |
| School/District Level | 60 | 51.70 |
| Division Level | 40 | 34.50 |
| Regional Level | 2 | 1.70 |
| National Level | 7 | 6.00 |
| None | 7 | 6.00 |
| | | |
| **Assessment/ Evaluation** | | |
| School/District Level | 58 | 50.00 |
| Division Level | 38 | 32.80 |
| National Level | 2 | 1.70 |
| None | 18 | 15.50 |
| | | |
| **Subject/Content** | | |
| School/District Level | 56 | 48.30 |
| Division Level | 43 | 37.10 |
| Regional Level | 3 | 2.60 |
| National Level | 2 | 1.70 |
| None | 12 | 10.30 |
| | | |
| **Classroom Management** | | |
| School/District Level | 74 | 63.80 |
| Division Level | 23 | 19.80 |
| Regional Level | 3 | 2.60 |
| National Level | 2 | 1.70 |
| None | 14 | 12.10 |

Table 1: Profile of Grade 5 Teachers in the East Unit (n=116)

In terms of Educational Attainment, Table 1 shows that 100 or 86.20% of the respondents have earned units in their master's degree, 14 or 12.10% of them are bachelor's degree holders, while two or 1.70% of the respondents are master's degree holders. On the other hand, none of the respondents have units at the doctorate level and doctorate graduate. The results imply that teachers pursue graduate studies to enhance their potentials and acquire new skills. Also, through continuous education, teachers can develop their communication and social skills because they meet people who have different backgrounds. Hence, they get to meet successful professionals.

The table shows that majority of the teachers (54 or 46.60%) have been in the profession for 10 years or more and have gained enough knowledge and skills in the teaching profession. Twenty-seven or 23.30% of them have served for four to six years. Meanwhile, 21 or 18.10% of them have taught for seven to nine years, while 14 or 12.10% have been in the teaching service for zero to three years. The data suggest that there is a big number of beginners in the profession; therefore, needs support in terms of training and enhancement programs.

With regards to trainings and seminars, in this study, there are four categories of training or seminars: ICT/Technical Skills, Assessment/Evaluation, Subject/Content, and Classroom Management. The table shows that half of the respondents participated in ICT-related training at the school or district level which comprises 60 or 51.70%. Meanwhile participation in the regional level has only two or 1.70% of them. The results imply that teachers in the province have very little participation in regional, national, and even international training or seminars. This is because the training or seminars are mostly invitational or undertaken by private organizations, and only a few are offered by DepEd for free.

According to Gonong (2014), teachers seldom participate in training or seminars because of a lack of time for professional learning, overlapping duties and responsibilities in school, and financial constraints. Further, the findings imply that teachers need to participate in more intensive training or seminars to cope with the educational reforms, specifically on ICT.

As to trainings or seminars related to Assessment/Evaluation, data reveals that out of the 116 respondents, 58 or 50% have undergone school or district training on assessment/evaluation. On the other hand, 38 or 32.80% have division-level training. Meanwhile, 18 or 15.50% have no training, while only two or 1.70% have national-level training or seminars. The findings suggest that half of the total number of respondents have training or seminars related to assessment or evaluation at the school or district level only. According to Flow of Thoughts (n.d.), assessment is vital for the improvement of learning and suggests that teachers need training and support to enable them to make valuable assessment decisions, to provide quality feedback to learners, and to teach learners to receive feedback positively and use the information contained within it effectively to improve their work.

In terms of subject area or content, data show that 56 or 48.30% of the teachers have training or seminars at the school or district level. On the other hand, 43 or 37.10% have training or seminar at the division level, while there are 12 or 10.30% do not have any training related to subject area or content. Three or 2.60% of the teachers have training at the regional level, while only two or 1.70% of them have training at the national level. Kamamia, et al. (2014) stress that through the mastery of subject matter, teachers can impart the right skills of communication, collaboration, critical thinking, and creativity based on the three learning domains: cognitive, affective, and psychomotor and suggest that teachers need to master the contents of the different learning areas they taught by attending various seminars or training, which can help them achieve mastery and proficiency of the core contents of the subject.

As to classroom management, a great majority (74 or 63.80%) of the respondents have training or seminars at the school or district level. Twenty-three or 19.80% of them have division-level training, while 14 or 12.10% have no training. On the other hand, three or 2.60% have regional training, while only two or 1.70% have national training or seminar. According to Marzano, et al. (2003), teachers play various roles in a typical classroom, but one of the most important is the role that they portray as classroom managers. To Marzano, et al. (2003), well-managed classrooms provide an environment, where teaching and learning can flourish. Marzano, et al. (2003) state that a well-managed classroom does not just appear out of nowhere, but it takes a good deal of effort to create.

Among the four categories of training or seminars, teachers participate the most in training or seminars on classroom management. This implies that teachers want to equip themselves with skills and techniques that they can employ to keep students organized, orderly, focused, attentive, on task, and academically productive during a class (Great School Partnership, n.d.).

*B. Mobile Applications with Technology-Enhanced Assessment (TEA) Tool Available for Teachers*

The use of digital technology, specifically mobile applications, in education has attracted much interest in recent years. Mobile applications are a fundamental feature of mobile devices, and the volume and complexity of apps continue to increase unabated. These features include being interactive, motivational, autonomous. Also, mobile applications provide immediate feedback, review, retention, engagement, and practical applications to current and future learning experiences. Some of this available mobile application with technology-enhanced assessment (TEA) tool includes Kahoot It!, Google Quiz, Plickers, Quizziz. Quizalize, Socratives, Poll Everywhere, Quizlet, Padlet, and Edmodo.

*C. Utilization Level of Mobile Applications with Technology-Enhanced Assessment (TEA) of Teachers*

Data shows that teachers sometimes utilized four out of the 10 free mobile applications in assessing their learners' knowledge and skills. The table shows that Kahoot It!, an application that promotes both individualized and team collaborative assessment, got the highest mean (1.90). On the other hand, Google Form (Quiz), a survey and polling software, obtained a mean of 1.86; Plickers, a mobile application that uses QR Codes, has a mean of 1.72; and Quiziz, an application similar to Kahoot, got a mean of 1.54.

| Mobile Applications | Weighted Mean | Descriptive Interpretation |
|---|---|---|
| Quizalize | 1.28 | Never Utilized |
| Quiziz | 1.54 | Sometimes Utilized |
| Plickers | 1.72 | Sometimes Utilized |
| Socrative | 1.21 | Never Utilized |
| Poll Everywhere | 1.32 | Never Utilized |
| Kahoot It! | 1.90 | Sometimes Utilized |
| Google Form (Quiz) | 1.86 | Sometimes Utilized |
| Quizlet | 1.37 | Never Utilized |
| Padlet | 1.20 | Never Utilized |
| Edmodo | 1.23 | Never Utilized |

Table 2: Utilization Level of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool of Teachers (n=116)

Legend:

| Range of Mean Values | Descriptive Interpretation |
|---|---|
| 3.51-4.00 | Always Utilized |
| 2.51-3.50 | Often Utilized |
| 1.51-2.50 | Sometimes Utilized |
| 1.00-1.50 | Never Utilized |

According to Clark and Mayer (2008, cited in Plump, et al.,2017), the benefits gained from using new technologies will depend on the extent to which they are used in ways compatible with the learning process. In the case of Kahoot, they state that using it can support student metacognition by providing immediate feedback. He also point out that Kahoot supports the construction of new knowledge and understanding by providing explanations during or after the game.

Meanwhile, six out of 10 free mobile applications with TEA tool were never utilized. Padlet, a virtual bulletin board where learners can post their answers, got the lowest mean (1.20). Quizalize, a gamified-based platform, obtained a mean of 1.28, while Socrative an application allowing the teacher to create true/false-based questions, got a mean of 1.21. Edmodo, a learning management system including the construction of formative assessment, has a mean of 1.23, while Poll Everywhere, an application gathering learner's responses through polls, has a mean of 1.32. Finally, Quizlet, a similar application to Kahoot and Quizzes, has a mean of 1.37. Weller (2013, cited in Kleinsmith, 2017) investigated the effects of using Padlet at the elementary level. It appears promising that Padlet may serve as a tool that can be easily incorporated into any classroom, specifically at-risk students receiving remediation.

In general, these mobile applications are classified as free applications. It means that these are free of charge and are readily available to download in Apple Store and Playstore via smartphones or tablets. In this study, the researcher found out that the teachers are only starting to use these mobile applications with the technology-enhanced assessment (TEA) tool in their classroom.

*D. Level of Proficiency of Teachers in the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool*

| Level of Utilization | Frequency | Percentage (%) |
|---|---|---|
| Entry | 46 | 39.70 |
| Adoption | 39 | 33.60 |
| Adaptation | 21 | 18.10 |
| Appropriation | 5 | 4.30 |
| Innovation | 5 | 4.30 |
| Total | 116 | 100 |

Table 3: Level of Proficiency of Teachers in the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool (n=116)

Table 3 reveals that most of the respondents are at the Entry Level (Level 1), which means that 46 teachers (39.70%) know the basics of using mobile applications. Based on the ACOT Model, teachers at this level tend to have a little discomfort with the use of technology and rely on the technical help of others At this level, teachers typically use mobile applications in group activities. The big number of teachers at the Entry Level means that teachers have little experience using mobile applications with the technology-enhanced assessment tool. This is because most of them have only training or seminars on ICT at the school or district level. Hence, these seminars are not adequate to enhance their technical and assessment skills.

The table also shows that 39 (33.60%) of the respondents are at the Adoption Level (Level 2), which means that they have a higher level of utilization of mobile applications with the technology-enhanced assessment tool. The results imply that those teachers have already started and adopted using mobile applications in assessing their learners.

Meanwhile, 21 or 18.10% of respondents are at the Adaptation Level (Level 3), at this level, teachers figure out ways to use the devices to their advantage in teaching like finding new ways of monitoring student work, grading tests, creating new materials, and tailoring skills to each student.

Lastly, five or 4.30% of the respondents belong to the two highest levels: Appropriation (Level 4) and Innovation (Level 5). At the Appropriation level, teachers tend to make a traditional classroom into a student-centered learning environment, which uses technology and promotes cooperative and interdisciplinary works. Teachers are at this level if they have shifted their attitudes toward using technology in the classroom. Moreover, according to Cuban (2016), teachers, who are at the Innovation level, often use mobile applications to create or design authentic task or assessment which they employ new ways of teaching like project-based learning.

*E. Issues and Concerns in the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool*

| Issues and Concerns | Weighted Mean | Descriptive Interpretation |
|---|---|---|
| **A. Accessibility** | | |
| 1. It helps teachers to give a realistic picture of the task to the learners. | 3.41 | Agree |
| 2. It is better than printed material in presenting a certain task to the learner. | 3.09 | Agree |
| 3. It accommodates learner with disabilities through multimedia inputs which cannot be provided in the traditional assessment. | 3.14 | Agree |
| 4. It allows pupils to share their insights through input mechanism such as a chatbox | 3.30 | Agree |
| 5. It requires high skills in exploring and navigating all the content of the task. | 3.16 | Agree |
| **Composite Mean** | 3.22 | Agree |
| **B. Usability** | | |
| 1. It improves student efficiency in accomplishing a task in a given period. | 3.16 | Agree |
| 2. It provides an opportunity for teachers to present tasks interactively which improves learners' engagement. | 3.30 | Agree |
| 3. It provides satisfaction among learners while using it in accomplishing a certain task than the traditional assessments. | 3.18 | Agree |
| 4. It helps a teacher to gather accurate data on learners' achievement for its data analytical feature than manual checking and scoring | 3.28 | Agree |
| 5. It helps a teacher to score or mark learners accomplished task in a short period and can provide immediate feedback | 3.37 | Agree |
| **Composite Mean** | 3.26 | Agree |
| **C. Connectivity/Availability** | | |
| 1. It is effective when there are sufficient available devices for all the learners since it is for individualized learning only. | 3.43 | Agree |
| 2. It is only effective when there is fast and sustained internet access. | 3.58 | Strongly Agree |
| 3. It needs technical skills in implementing assessment using mobile applications | 3.43 | Agree |
| 4. It provides discomfort on learners who have a low awareness and of how to use a mobile application | 3.24 | Agree |
| 5. It requires the availability of the latest devices in the market | 3.17 | Agree |
| **Composite Mean** | 3.37 | Agree |
| **Overall Mean** | 3.28 | Agree |

Table 4: Issues and Concerns on the Utilization of Mobile Applications

Legend:

| Range of Mean Values | Descriptive Interpretation |
|---|---|
| 3.51-4.00 | Strongly Agree |
| 2.51-3.50 | Agree |
| 1.51-2.50 | Disagree |
| 1.00-1.50 | Strongly Disagree |

The table shows that the composite mean 3.22, suggests that the respondents agree that they encounter all the presented issues and concerns under accessibility. The item, it helps teachers to give a realistic picture of the task to the learners, obtained the highest mean (3.41). The result denotes those mobile applications use images, audio, videos, and others that can capture or improve the interest of learners. This is under the perceivable principle. On the other hand, the item, it is better than printed material in presenting a certain task to the learner, got the lowest mean (3.09). This suggests that technology does not replace the traditional way of instruction and delivery of assessment, but it helps and supports in bringing up a quality instruction as well as assessment. This is under the design principle.

In terms of usability with a composite mean of 3.26, suggests that the respondents agree that they encounter all the presented issues and concerns under usability. The item, it helps a teacher to score or mark learners' accomplished task in a short period and can provide immediate feedback, obtained the highest mean (3.38).

According to Nielsen (1993, cited in Dourado & Canedo, 2018), one important component of mobile applications is their usability features like efficiency, effectiveness, and satisfaction. On the other hand, the item, it improves student efficiency in accomplishing a task in a given period, got the lowest mean (3.16). Technology helps learners accomplish certain tasks because it gives more resources and information about a question or problem. However, it does not guarantee learner's efficiency because there are other factors like knowledge and skills that contribute to the learner's performance.

As to Connectivity/Availability, the table shows that the composite mean, 3.37, suggests that the respondents agree that they encounter all the presented issues and concerns under connectivity or availability. The item, it is only effective when there is fast and sustained internet access, got the highest mean (3.58). Meanwhile, the item, it requires the availability of the latest devices in the market, obtained the lowest mean (3.17). This means that teachers can only use these mobile applications successfully if consideration is given to the availability of devices with good specifications.

According to Quareshi, et al. (2012, cited in Kanwal & Rehman, 2017), technology innovation comes with challenges in the implementation of the said project or program. Some of these challenges are technical difficulties and access to computers/mobile devices. include installation, availability of latest technology, fast Internet connection, and uninterrupted supply of electricity, maintenance, administration, security, and absence of technical support.

The overall mean, 3.28, suggests that the respondents agree that they encounter all the presented issues and concerns under accessibility, usability, and connectivity/availability. It is essential to know the issues and problems that confront teachers to implement appropriate interventions that can improve the educational perspectives of using mobile applications to support and deliver the assessment.

*F. Summary on the Issues and Concerns in the Utilization of Mobile Applications*

| Issues and Concerns | Weighted Mean | Descriptive Interpretation |
|---|---|---|
| Accessibility | 3.22 | Agree |
| Usability | 3.26 | Agree |
| Connectivity/ Availability | 3.37 | Agree |
| **Overall Mean** | **3.28** | **Agree** |

Table 5: Summary on the Issues and Concerns in the Utilization of Mobile Applications

Legend:

| Range of Mean Values | Descriptive Interpretation |
|---|---|
| 3.51-4.00 | Strongly Agree |
| 2.51-3.50 | Agree |
| 1.51-2.50 | Disagree |
| 1.00-1.50 | Strongly Disagree |

Table 5 shows the summary of issues and concerns encountered by teachers in the utilization of mobile applications with the technology-enhanced assessment (TEA) tool, particularly on accessibility, usability, and connectivity or availability.

In this digital era, teachers can use ICT, particularly mobile applications, to give students the opportunities to learn, transfer, and assess their skills. Hence, it is vital to identify the issues and concerns related to the use of mobile applications in teaching and learning.

The table shows that among the three, connectivity or availability got the highest composite mean (3.37). Meanwhile, usability got the second-highest mean (3.22), while accessibility got the lowest mean (3.22). The overall mean, 3.28, suggests that the respondents *agree* that they encounter all the presented issues and concerns under accessibility, usability, and connectivity/availability.

Thus, it is important to solve these issues and concerns by providing enough funds for additional resources like tablets and smartphones, enhancing and securing strong and fast internet connectivity, and implementing skills development programs and training for teachers.

*G. Improvement Plan on the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) tool for Teachers*

An improvement plan refers to a plan that could help teachers to improve their utilization of technology such as mobile applications with the technology-enhanced assessment (TEA) tool revealed by the data gathered. The improvement plan has four parts: the Preliminaries, which include the plan's rationale and objective; Three-year Plan; the Annual Implementation Plan (AIP); and the different programs to be implemented.

The Three-Year Plan gives an overview of the improvement plan. The plan consists of priority improvement areas (PIAs), root causes of the problem or area to be improved, data based on the findings of the study, and the success indicators for three years in each program which covers school years 2021-2023. Meanwhile, the Annual Implementation Plan (AIP) covers the year 1 (SY 2021). It includes programs, activities, expected output, persons involved, time frame, the budget, and its possible sources.

Finally, the different programs can help teachers in their use of technology for classroom assessment, particularly in using these mobile applications with the technology-enhanced assessment (TEA) tool. Specifically, these programs aim to improve teacher's level of proficiency and to address the different issues and concerns of teachers encountered as to its accessibility, usability, and connectivity/availability. These programs are Empowering Teachers' ICT Skills Towards a Transformative Education, Promoting, Exploring and Enriching the Use of Mobile Applications in Re-engineering Classroom Assessment Strategies (PEERS), Teacher's Engagement on Authentic Classroom Assessment Strategies for Children (TEACH), and Enhancing Technology through Networking and Linkages.

*H. Improvement Plan on the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool*

| Components | Weighted Mean | Descriptive Interpretation |
|---|---|---|
| **A. Areas of Concerns** | | |
| The programs presented adapt to the results of the study. | 4.00 | Very Highly Valid |
| The proposed programs/projects are relevant to the needs of the teachers in the present times. | 4.00 | Very Highly Valid |
| **Composite Mean** | 4.00 | Very Highly Valid |
| **B. Objectives** | | |
| The proposed improvement plan meets the educational goals of the Schools Division of Ilocos Norte. | 4.00 | Very Highly Valid |
| The proposed improvement plan in the utilization of mobile applications with technology-enhanced assessment (TEA) tool suit the objectives of the K to 12 Curriculum. | 3.67 | Very Highly Valid |
| **Composite Mean** | 3.84 | Very Highly Valid |
| **C. Contents** | | |
| The proposed improvement plan is comprehensive. | 4.00 | Very Highly Valid |
| The specified programs and activities are attainable. | 3.34 | Highly Valid |
| **Composite Mean** | 3.67 | Very Highly Valid |
| **D. Persons Involved** | | |
| The improvement plan includes clear and direct involvement of the concerned persons. | 4.00 | Very Highly Valid |
| **Composite Mean** | 4.00 | Very Highly Valid |
| **E. Organization** | | |
| The presentation of the proposed improvement plan is sequentially organized. | 4.00 | Very Highly Valid |
| **Composite Mean** | 4.00 | Very Highly Valid |
| **F. Resources** | | |
| The resources are sufficient and available with alternative resources | 3.34 | Highly Valid |
| **Composite Mean** | 3.34 | Highly Valid |
| **G. Time Frame** | | |
| The proposed activities are reasonable and achievable within the target periods. | 3.67 | Very Highly Valid |
| **Composite Mean** | **3.67** | **Very Highly Valid** |
| **Overall Mean** | **3.79** | **Very Highly Valid** |

Table 6: Validation of the Proposed Improvement Plan on the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) Tool (n=3)

Legend:

| Range of Mean Values | Descriptive Interpretation |
|---|---|
| 3.51-4.00 | Strongly Agree |
| 2.51-3.50 | Agree |
| 1.51-2.50 | Disagree |
| 1.00-1.50 | Strongly Disagree |

Table 6 presents the content validation of the proposed Improvement Plan on the utilization of Mobile Applications with the Technology-Enhanced Assessment (TEA) Tool, specifically on the areas of concerns, objectives, contents, persons involved, organization, resources, and time frame.

In terms of Areas of Concerns. The composite mean, 4.00 which is very highly valid suggests that the improvement plan has programs or activities that adapt to the results of the study (4.00), and it is relevant to the needs of the teachers in the present times (4.00). As to the Objectives with a composite mean of 3.84 (very highly valid) implies the proposed improvement plan meets the educational goals of the Schools Division of Ilocos Norte (4.00), and it suits the objectives of the K to 12 Curriculum

(3.67). These suggest that the plan jibes with the goals and objectives of the Schools Division and DepEd in general. Also, data shows the proposed improvement plan has very highly valid contents with a composite mean of 3,67.

In terms of the persons involved, with a composite mean, 4.00 which is very highly valid depicts that the proposed improvement plan integrates a clear involvement of those people because they will take part in the successful implementation of the plan by fulfilling their roles and responsibilities. Lastly, as to its organization, the mean, 4.00, suggests that the proposed improvement plan has a very highly valid organization because the presentation of its contents is organized in sequential order.

## IV. CONCLUSION

In the light of the findings, the researcher presents the following conclusions: In terms of the teachers' level of proficiency in the utilization of mobile applications with TEA tool, majority of the teacher-respondents are still at the three lowest levels: Entry, Adoption, and Adaptation Levels. Only four out of the 10 mobile applications with the TEA tool are sometimes utilized.

In addition, there are issues and concerns that challenge them in the implementation and integration of the mobile applications with TEA tool into their classroom assessment. Thus, the researcher developed the Improvement Plan on the Utilization of Mobile Applications with Technology-Enhanced Assessment (TEA) tool that seeks to address teachers' issues and concerns and increase their skills in using mobile applications with TEA tool for classroom assessment.

### REFERENCES

[1.] Almeida, A. B., Gaerlan, A. A., and Manly N. (2016). Research Fundamentals. From Concept to Output. Adriana Publishing Inc.J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68-73.

[2.] Altuna, Jon & Lareki, Arkaitz. (2015). Analysis of the Use of Digital Technologies in Schools That Implement Different Learning Theories. Journal of Educational Computing 183-204. https://www.researchgate.net

[3.] Appiah, M., & Van Tonder, F. (2018). E-Assessment in Higher Education: A Review. International Journal of Business Management & Economic Research, 9(6). https://www.researchgate.net

[4.] Ballantyne, Mars & Jha, Archit & Jacobsen, Anna & Hawker, John & El-Glaly, Yasmine. (2018). Study of Accessibility Guidelines of Mobile Applications. https://www.researchgate

[5.] Beatty, Ian & Gerace, William. (2009). Technology-Enhanced Formative Assessment: A Research-Based Pedagogy for Teaching Science with Classroom Response Technology. Journal of Science Education and Technology. 18. 146-162. https://www.researchgate.net/

[6.] Marco Billi, Laura Burzagli, Tiziana Catarci, Giuseppe Santucci, Enrico Bertini, Francesco Gabbanini & Enrico Palchetti A unified methodology for the evaluation of accessibility and usability of mobile applications. Univ Access Inf Soc 9, 337–356 (2010). https://link.springer.com/

[7.] Chung, C. J., Hwang, G. J., & Lai, C. L. (2019). A review of experimental mobile learning research in 2010–2016 based on the activity theory framework. Computers & Education, 129, 1-13.

[8.] DepEd Order 29, s. 2017, Policy Guidelines on System Assessment in the K to 12 Basic Education Program https://www.deped.gov.ph/

[9.] DepEd Order 8, s. 2015, Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program Rhttps://www.deped.gov.ph/

[10.] Drigas, Athanasios & Pappas, Marios. (2015). A Review of Mobile Learning Applications for Mathematics. International Journal of Interactive Mobile Technologies. https://www.researchgate.net

[11.] Farrah, Mohammed & Abu-Dawood, Ala (2018) Using Mobile Phone Applications in Teaching and Learning Process. International Journal of Research in English Education. http://dspace.hebron.edu/

[12.] Gonzales, Richard & Callueng, Carmelo. (2015). Classroom Assessment Practices of Filipino Teachers: Measurement and Impact of Professional Development. https://www.researchgate.net

[13.] International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2016, Vol. 12, Issue 3, pp. 37-57. Experiences, perceptions, and attitudes on ICT integration: A case study among novice and experienced language teachers in the Philippines. https://files.eric.ed.gov/

[14.] Kanwal, F., & Rehman, M. (2017). Factors affecting e-learning adoption in developing countries–empirical evidence from Pakistan's higher education sector. https://files.eric.ed.gov/

[15.] Karabatzaki, Zoe & Stathopoulou, Agathi & Kokkalia, Georgia & Dimitriou, Eleni & Loukeri, Paraskevi & Economou, Alexandra & Drigas, Athanasios. (2018).Mobile Application Tools for Students in Secondary Education. https://www.researchgate.net

[16.] Kay, Robin & Lauricella, Sharon. (2018). Exploring the Use of Mathematics Apps for Elementary School Students. https://www.researchgate.net/

[17.] Kumar, B. A., & Mohite, P. (2018). Usability of mobile learning applications: a systematic literature review. Journal of Computers in Education, 5(1), 1-17.

[18.] Leung, C.-K., Chang, H.-H., & Hau, K.-T. (2003). Computerized Adaptive Testing: A Comparison of Three Content Balancing Methods. Journal of Technology, Learning, and Assessment, 2(5). http://www.jtla.org

[19.] McLean, K. (2018). ICT for Learning: Technology and Pedagogy. In Personalising Learning in Teacher Education (pp. 41-54). Springer, Singapore. http://www.jtla.org

[20.] Mizirli, Zeynel (2016). Integrating Technology Into Teaching And Learning Using Variety Of Models. Ihlara Journal of Educational Research. https://dergipark.org

[21.] Neumann, M. M., & Neumann, D. L. (2017). The use of touch-screen tablets at home and pre-school to foster emergent literacy. Journal of Early Childhood Literacy. www.springer.com

[22.] Papadakis, Stamatios & Kalogiannakis, Michail. (2017). Mobile educational applications for children. What educators and parents need to know. International Journal of Mobile Learning and Organisation. https://www.researchgate.net

[23.] Plump, Carolyn & LaRosa, Julia. (2017). Using Kahoot! in the Classroom to Create Engagement and

Active Learning: A Game-Based Technology Solution for e-Learning Novices. https://www.researchgate.net

[24.] Shepard, L.M. (2001). The role of classroom assessment in teaching and learning. In V. Richardson (ed), Handbook of research on teaching (4th ed). Washington: AERA https://www.researchgate.net/publication

[25.] Sinclair, Nathalie & Yerushalmy, Michal. (2016). Digital Technology in Mathematics Teaching and Learning. The Second Handbook of Research on the Psychology of Mathematics Education https://www.researchgate.net/publication

[26.] Stefańska, Magdalena & Wanat, Tomasz. (2017). Benefits from using mobile applications by Millennials – a gender and economic status comparative analysis.The Proceedings of XVI International Marketing Trends Conference, Madrid, ed. J. C. Andreani, Paris-Venice Marketing Trends Association. 1-15. https://www.researchgate.net

[27.] Supandi, Supandi & Ariyanto, Lilik & Kusumaningsih, Widya & Aini, A. (2018). Mobile phone application for mathematics learning. Journal of Physics: Conference Series. 983. 012106. 10.1088/1742-6596/983/1/012106. https://www.researchgate.net

[28.] Sung, Y. T., Chang, K. E., & Liu, T. C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. Computers & Education, 94. https://www.researchgate.net

[29.] Tinoca, Luis & Pereira, Alda & Oliveira, Isolina. (2013). A conceptual framework for e-assessment in higher education: Authenticity, consistency, transparency, and practicability. https://www.researchgate.net

[30.] Usta, G., Günal, Y., & Uluman, M. (2016). Views of Instructors and Students Regarding Online Measurement and Evaluation Applications. https://www.researchgate.net

[31.] Whitelock, Denise & Gilbert, Lester & Gale, Veronica. (2011). Technology-enhance assessment and feedback: How is evidence-based literature informing practice? https://www.researchgate.net/publication/272415796