

Mobile Phone-Assisted Instruction (Mpai): Exploring the Perceptions of Students And Teachers of Taal Junior and Senior High School

Michael C. Mauricio

Abstract—Mobile phones have changed the way they are used today. From simple messaging and calling purposes, mobile phones can now perform numerous functions similar to what computers do. These mobile technologies are very visible even in educational institutions. This study evaluated the perceptions of students and teachers of Taal High School on Mobile Phone-Assisted Instruction (Mpai). Specifically, the study aimed at determining if there are significant differences among the students' and teachers' perceptions both from junior and senior high schools. Participants of the study were 40 teachers and 60 students of the school year, 2016-2017. In gathering the data, a survey questionnaire was developed and validated to identify the perceptions of the participants. The results show significant differences on the participants' perceptions in terms of usability of mobile phone features and applications, benefits, preference or support, mobile phone management approaches, and challenges of using mobile phones in the classroom. In general, participants recognized the potentials of mobile phones in assisting instruction and learning.

Keywords—junior high school, mobile phone-assisted instruction, mobile phones, mobile technology, perceptions, senior high school

I. INTRODUCTION

Advances in technology have noticeably and significantly influenced teaching and learning in the educational institutions (Hariry, 2015; Ranalli, 2014) Recognizing its role in the classroom, technologies are identified by teachers as useful tools to enhance instruction and to make learning experiences more meaningful for the learners (Ruggiero and Mong, 2015). However, not all technologies available are perceived to be helpful in improving students' learning (Rumanyika & Mashene, 2015)

Nowadays, the widespread use of mobile technologies especially by students (Hariry, 2015) gradually interests researchers to investigate if these digital tools can positively

influence or improve learning outcomes (Batista & Barcelos, 2014; Aamri & Suleiman, 2011; Selwood, n.d). Literature provides evidences where these handheld technologies were used as educational tools to support instruction and learning either inside or outside the classroom. Some used mobile phones as instant messaging tool for immediate feedbacking and assessment (So, 2016; Pellowe, Holster, Lake, 2014)), for teaching and learning language (Gautam, 2014; Habbash, 2015; Hariry, 2015), which include specific areas such as listening comprehension (Rahimi & Soleymani, 2015; Read & Kukulska, 2015), reading skills (United States Agency for International Development, 2014), pronunciation/speaking (Huo & Shen, 2015), and vocabulary learning (Habbash, 2015). Studies on the use of mobile phones for educational purposes have emerged investigating possibilities of using these devices as tools to improve instruction and to make learning more engaging and relevant.

Kim, Rueckert, Kim, and Seo (2013) argue that mobile technologies are potential tools in terms of providing opportunities for experiences which are new to the learners. In their study, they have concluded that students' view on the use of mobile tools for learning can be related to their experiences in using their mobile phones personally. Students' positive view of using mobile technologies would result to willingness to adopt such devices in the classroom (Kim et al., 2013).

In a recent study, Halder, Halder, and Guha (2015) found out significant differences on the attitude of undergraduate students in using mobile phones as aids for educational purpose. On the three dimensions of the study namely usability, barriers, and preferability, significant differences were identified with respect to college students' gender, medium of education, and residence.

O'Bannon and Thomas (2013) investigated on the perceptions of pre-service teachers from the universities of Kentucky and Tennessee to identify their positions on the use of mobile phones as learning aids in the classroom. Findings show that the pre-service teachers expressed strong support on the use of mobile phones for educational reasons such as practical benefits offered by the mobile phone features (O'Bannon and Thomas, 2013)

In another study, Şad and Göktaş (2014) examined perceptions of preservice teachers about the weaknesses and strengths of two identified mobile learning tools namely mobile

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phones and laptops. The researchers suggested the urgency of bringing awareness to preservice teachers about new learning modes with m-learning in particular.

Although numerous researches have been made, it is still inconclusive and the consideration of using mobile phones in the classroom remains a debatable issue among students, parents, teachers, and educational institutions. (Batista & Barcelos, 2014; Aamri & Suleiman, 2011).

The literature reviewed presented limited evidences on the investigation on the use of mobile phones in the classroom for developing countries in Asia, like in the Philippines. In addition, most of the studies focused on the perceptions of pre-service teachers but there were limited studies on the views of teachers who are in the actual practice of teaching and students who are directly involved in the instruction.

It is in this light that the researcher would like to analyze the perceptions of students and teachers from one of the public secondary schools in the Philippines. With this study, teachers would be provided evidences as their baseline in considering new modes of delivering instruction whenever possible. Investigating possibilities of using portable and powerful tools like mobiles phones which students possessed would at least provide practical and potential ways of enhancing learning experiences of students.

Theoretical Framework

This present study is based on the Technology Acceptance Model (TAM) 2 by Venkatesh and Davis (2000). This model is an extended TAM which was originally developed by Davis (1986). The model was used by researchers in numerous studies with different contexts. Primarily, it examines how a user's behavior is influenced by technology. Originally, the model consists of two main factors, "Perceived Usefulness" (PU) and "Perceived Ease of Use" (PEU). With Venkatesh and Davis (2000) revision, additional factors were included in the model: "social influence processes that includes subjective norm, voluntariness, and image, and cognitive instrumental processes that includes job relevance, output quality, result demonstrability, and perceived ease of use" (p.187) (Venkatesh and Davis, 2000 in Austermann & Mertins, 2014).

Purpose of the Study

This study aimed at exploring the perceptions of teachers and students on Mobile phone-assisted instruction (Mpai). Specifically, this research would like to answer the following:

1. What are the perceptions of JHS students, JHS teachers, SHS students, and SHS teachers on Mobile phone-assisted instruction (Mpai) in terms of usability, benefits, preference/support, mobile phone management approaches, and challenges?
2. Do the students' and teachers' perceptions differ significantly in terms of usability, benefits, preference/support, mobile phone management approaches, and challenges?

II. METHODOLOGY

A. Research Design

This research used a qualitative and quantitative method. For qualitative, a survey approach was used to explore the perceptions on Mobile phone assisted instruction (Mpai) of students and teachers from the junior and senior high school departments. For the quantitative part, appropriate statistical analyses were used to determine if there are significant differences on students' and teacher's perceptions on the different domains as indicated in the research questions.

B. Sample

Students and teachers both from the junior and senior high school departments of Taal High School were chosen by stratified purposive sampling. The total number of samples was 100 composing 20 students from the Grades 9 and 10 (junior high school students), 20 from Grade 11 (senior high school students), 30 junior high school teachers, and 30 senior high school teachers of the school year 2016-2017.

C. Instrument

Survey Questionnaire adapted from O'Bannon & Thomas (2015) and revised to fit in the study was used for the data collection. The survey questionnaire with a 5 point scale (strongly agree-strongly disagree) was divided into 5 dimensions namely usability, benefits, preference/support, mobile phone management approaches, and challenges. The instrument was validated by a panel of experts from a renowned teacher education institution in the Philippines.

The initial form of the survey questionnaire was pilot tested in a public secondary school in the province of Bulacan distant from the school where the study was conducted . There were 25 teachers and 75 students who were randomly selected from different departments and grade levels (Grades 9 and 10). To check for internal consistency and reliability, the Cronbach's Alpha coefficients were calculated for the 4 domains or parts of the survey questionnaire. The USABILITY which was divided into two categories namely features and mobile phone applications have Cronbach's Alpha coefficient of 0.92 and 0.71, respectively, BENEFITS has Cronbach's Alpha coefficient of 0.91, MOBILE PHONE MANAGEMENT APPROACHES has Cronbach's Alpha coefficient of 0.78, and CHALLENGES has Cronbach's Alpha coefficient of 0.81.

D. Data Collection and data analysis

In gathering the data, the researcher distributed the survey questionnaire to the participants through a third party. Attached to the survey questionnaire are a letter explaining the objectives of the research being conducted and a consent form for those who were willing to participate? The survey questionnaire is composed of 18-item list for mobile phone features and 11-item list for mobile phone applications under usability, 13items for benefits, 2 items for preference/support, 6 items for mobile phone management approaches, and 6 items for challenges.

For the analysis, data gathered were processed using SPSS 20 software. Mean scores for each item per domain from the four groups namely JHS students, JHS teachers, SHS students, and SHS teachers were computed. To identify if there are statistically significant differences on the perceptions in the 5 domains among the four (4) groups of participants, one way ANOVA was used. The significance level was set to 0.05.

III. RESULTS

All of the participants (N= 100) reported that they have and are using their own smartphones. Participants were asked to rate their expertise in using the features and applications of their own mobile phones using a 5-point scale (1= novice; 5= expert) (M= 3.87, SD. = .825). From the total respondents (N= 100), 24% reported that they are experts, 43% rated proficiency at level 4, 29% said that they are at level 3, and 4% reported their proficiency at level 2.

1. Results about USABILITY

A. Mobile phone features/functions that assist student learning

In this part of the questionnaire, participants (N= 100) were asked to rate how strongly they agree or disagree that each of the mobile phone features/functions listed can assist students' learning. The one way ANOVA revealed that the perceptions of JHS students (n= 30), JHS teachers (n=20), SHS students (n=30), and SHS teachers (n=20) on the usability of mobile phone features/functions in the classroom have no statistically significant differences in almost all of the items except for item no.8 viewing videos offline (p= .001*). It is a good thing to note that all the four groups of participants in the study agree that most of the functions/features of mobile phones are useful for students' learning in the classroom such as *sending/receiving short messaging services (SMS), taking pictures, downloading files (pictures, videos, music, documents, etc.), playing music, saving notes/reminders, searching online, etc.*

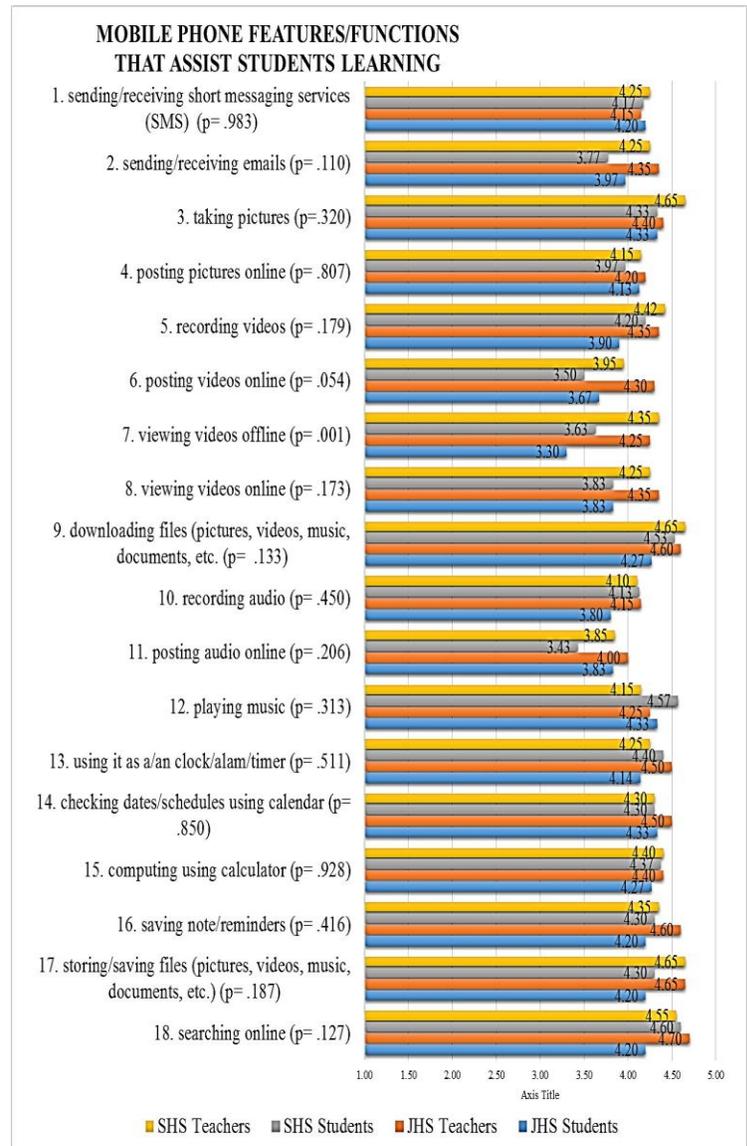


Fig. 1a: Comparative Analysis of JHS students', JHS teachers', SHS students', and SHS teachers' perceptions on the usability of mobile phone features/functions in the classroom. (values expressed in MEAN)

B. Mobile phone applications that assist students learning

The results of comparative analysis using one way ANOVA of the perceptions of JHS students (n= 30), JHS teachers (n=20), SHS students (n=30), and SHS teachers (n=20) on the usability of mobile phone applications show statistically significant differences on applications namely *e-book reader/pdf reader, excel (spreadsheet), and word processor*. It is also interesting to note that participants perceived *e-dictionary, share it/Bluetooth, video editor/movie maker, social networking apps (Facebook, messenger), and web browser (i.e. google chrome)* as useful tools that can assist students learning.

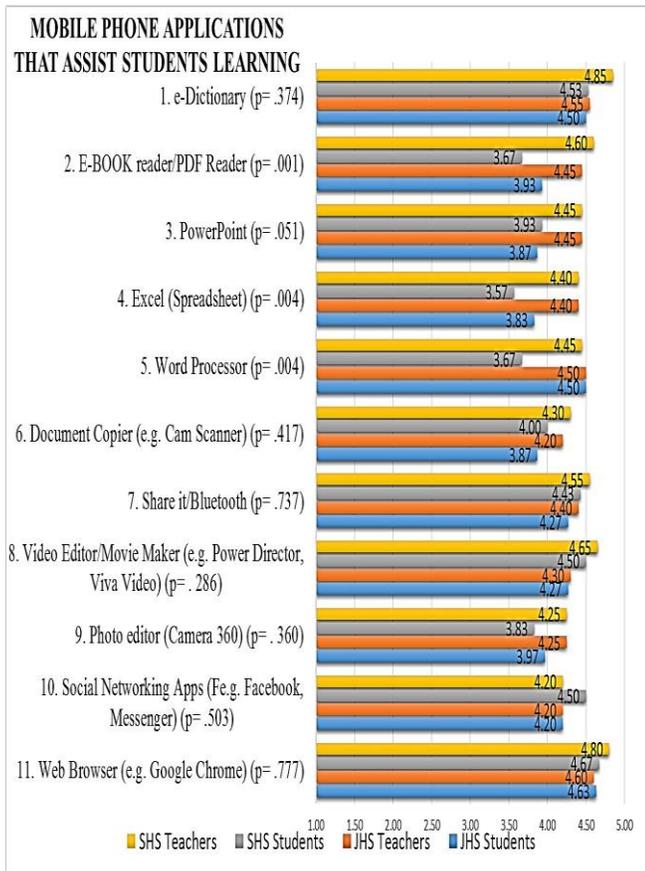


Fig. 1b: Comparative Analysis of JHS students', JHS teachers', SHS students', and SHS teachers' perceptions on the usability of mobile phone applications in the classroom. (values expressed in MEAN)

2. Results about BENEFITS of using mobile phones in the classroom

The results of one way ANOVA revealed that there are statistically significant differences among the four groups' (*JHS students, JHS teachers, SHS students, and SHS teachers*) perceptions on the benefits of using mobile phones in the classroom on items namely *enhances students creativity* ($p = .009$), *offer sharing/distribution of instructional materials electronically* ($p = .027$), *allow easy access to instructional materials electronically* ($p = .012$), *enhance teachers' instruction in the classroom* ($p = .028$), and *develop digital fluency* ($p = .001$). Based from the mean scores, it also shows that mostly of the group of participants agree that the benefits of using mobile phones in the classroom include *increase students' motivation to learning, provide opportunities to learning conveniently (i.e. learning anytime, anywhere), provide individual/personal learning, and make learning fun and enjoyable*.

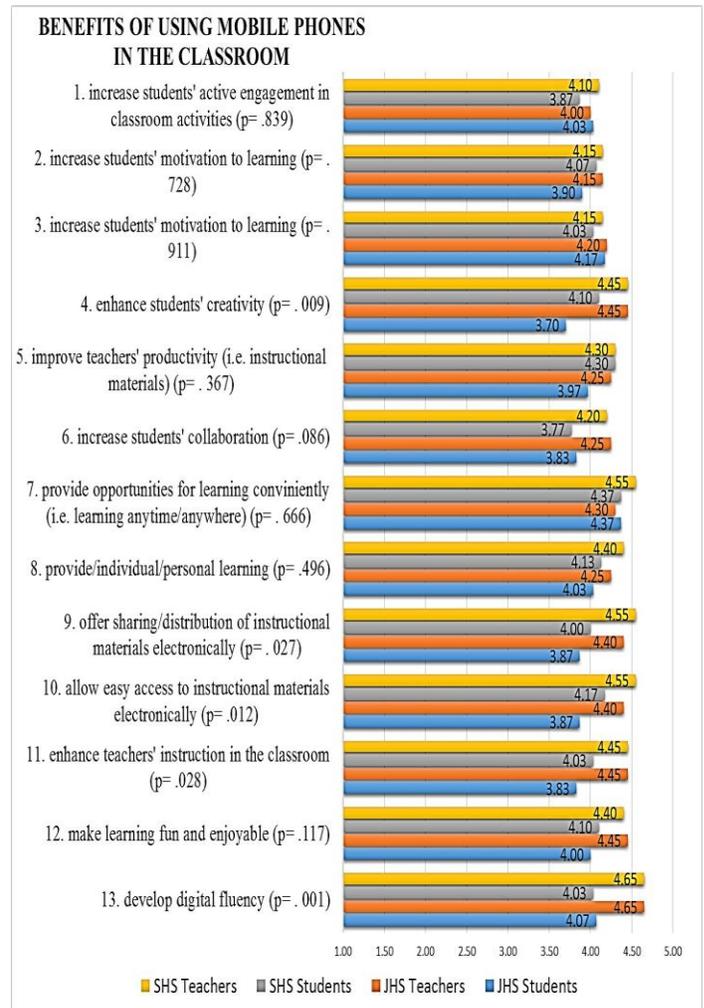


Fig. 2: Comparative Analysis of JHS students', JHS teachers', SHS students', and SHS teachers' perceptions on the benefits of using mobile phone applications in the classroom. (values expressed in MEAN)

3. Results about PREFERENCE/SUPPORT of using mobile phones in the classroom

Participants were asked to choose on what level should mobile phones be used for classroom instruction purposes whether (3) both in junior and senior high schools, (2) only in senior high school, (1) only in junior high school, or (0) none of the secondary school levels. The one way ANOVA revealed that the mean scores of the four groups, JHS students ($M = 2.90$, $SD = .305$), JHS teachers ($M = 2.80$, $SD = .410$), SHS students ($M = 2.43$, $SD = .504$), and SHS teacher ($M = 2.40$, $SD = .753$) have statistically significant difference ($p = .000$). However, the difference has small practical significance. The results also reveal that participants ($M = 2.64$, $SD = .542$) generally prefer the use of mobile phones for classroom instructions only for senior high school level.

Participants were also asked how frequently mobile phones should be used in classroom instruction whether (3) Always, (2) Often, (1) Sometimes, or (0) Never. The comparative analysis of each group's mean scores, JHS students ($M = 1.83$, $SD = .1053$), JHS teachers ($M = 1.55$, $SD = .686$), SHS students

(M= 1.67, SD= .661), and SHS teacher (M= 1.50, SD= .688) using one way ANOVA revealed no statistically significant difference ($p= .473$). The results also reveal that participants (M= 1.63, SD. = .720) prefer the use mobile phones in the classroom sometimes.

4. Results about MOBILE PHONE MANAGEMENT APPROACHES in the classroom

The result shows that there are statistically significant differences on the perceptions among the four groups (JHS students, JHS teachers, SHS students, and SHS teachers) in terms of mobile phone management approaches. Specifically, the one way ANOVA showed significant differences for item 2. *Orient students during orientation week regarding the mobile phone or MP management policy (Dos and Don'ts)* ($p= .000$), and item 5. *Report to parents those students who repetitively mismanaged their mobile phones in the classroom* ($p= .011$). From the data, it can also be observed that all the respondents (students and teachers) agree on item 1. *Switch off mobile phones during classroom discussions unless there is a need to use it to assist instruction and learning*, and on item 6. *Switch off mobile phones on quarterly exams*.

5. Results about CHALLENGES of using mobile phones in the classroom

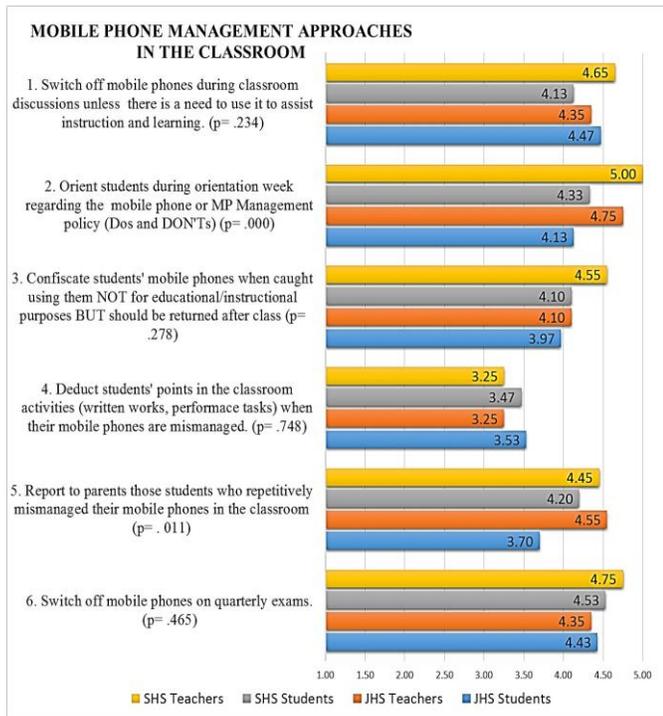


Fig. 3. Comparative Analysis of JHS students', JHS teachers', SHS students', and SHS teachers' perceptions on the mobile phone management approaches in the classroom. (values expressed in MEAN)

The analysis (using one way ANOVA) on the participants' perceptions on the challenges on using mobile phone in the classroom showed statistically significant differences

specifically for item 1. *Screen size of mobile phones is a problem especially when reading (electronic) materials* ($p= .010$) and item 4. *Teachers show no interest in experimenting the use of mobile phones to aid classroom instruction* ($p= .009$). Data also revealed that participants are neutral on item 3. *Teachers are resistant in incorporating mobile phone for classroom instruction* and item no. 6. *Students cannot purchase mobile phones due to cost*. Also, JHS teachers, JHS students, and SHS teachers are all neutral for item 5. *Administrator/s (principal, head teachers, and curriculum chairpersons) discourage/s the use of mobile phones in the classroom except for SHS students* whose average response is almost neutral.

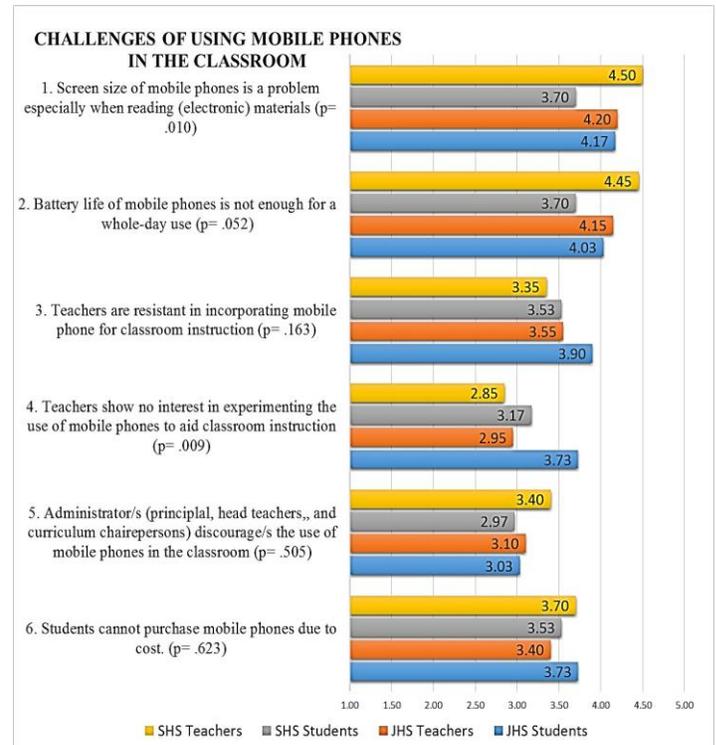


Fig. 4: Comparative Analysis of JHS students', JHS teachers', SHS students', and SHS teachers' perceptions on the challenges of using mobile phones in the classroom. (values expressed in MEAN)

IV. DISCUSSION

In the present study, it has been found out that there are significant differences on the perceptions of students and teachers of Taal Junior and Senior High School in Mobile phone-assisted instruction (Mpai) particularly on five domains namely, usability, benefits, preference/support, mobile phone management approaches, and challenges. Results indicate positive views of participants on the usability in most of the mobile phone features in assisting students learning in the classroom. This is in parallel with the findings of the study of O'Bannon and Thomas (2013). Although, preservice teachers were involved in their study, it can be observed similarly, there is an interesting positive recognition of the usability of mobile phone features for in assisting instruction and learning. Considering the objective of this study, significant difference was identified for *viewing videos offline*, where teachers of both junior and senior high school agree that it assists students

learning, however students of junior and senior high school are both neutral on this. This suggests that there may be significant factor/s or experiences which have influenced students' and teachers' views on using mobile phone for viewing videos offline. For the usability of mobile phone applications, results showed significant differences on *eBook reader/pdf reader, excel (spreadsheet), and word processor*. In general, teachers both from junior and senior high school agree that these mobile apps can assist students learning in the classroom. However, students both from junior and senior high school are neutral in most of the items. It implies that this may be because teachers frequently use this mobile apps in preparing their instructional materials and thought that this could also be useful when used by students in the learning process. On the other hand, students from junior and senior high school may not have used such mobile apps as frequent as their teachers.

Significant differences were also identified in terms of the benefits of using mobile phones in the classroom such as *enhance student's creativity, offer sharing/distribution of instructional materials electronically, allow easy access to instructional materials electronically, enhance teachers' instruction in the classroom, and develop digital fluency* in which teachers from both junior and senior high school expressed positive views while students both from junior and senior high school have relative views. Some of the identified benefits are similar with the findings of study conducted by O'Bannon and Thomas (2013). However, in this study findings suggest that secondary school teachers have clearer views on the potential benefits of mobile phones in the classroom compared to students.

Also, from their mean scores, participants suggest that mobile phones should be used for classroom instruction purposes but only in senior high school level and should only be used sometimes. It is an indication that students and teachers are considering the maturity of students as one factor to consider in integrating mobile phones in classroom instruction. Generally, students on this level are already 15-18 years old who are more matured and responsible than the lower grade levels.

In terms of mobile phone management approaches, significant differences were identified specifically on *orienting students during orientation week regarding the mobile phone or MP Management policy (Dos and DON'Ts and report to parents those students who repetitively mismanaged their mobile phones in the classroom, with teachers both from junior and senior high school expressing a stronger support compared with the students from both junior and senior high school*. Interestingly, in general participants expressed positive perception on the MP management approaches except *deducting students' points in the classroom activities (written works, performance tasks) when their mobile phones are mismanaged*. Findings suggest that a detailed mobile phone (MP) management policy should be crafted and be reflected on students' handbook with a consultation from teachers, administrators, students, and teachers as a reference for the rules and regulations to follow in the classroom.

For challenges of using mobile phones in the classrooms, perceptions of participants show significant differences in two items. First, *screen size of mobile phones is a problem*

especially when reading (electronic) materials which is related to the findings of Şad & Göktas (2014). Second, *teachers show no interest in experimenting the use of mobile phones to aid classroom instruction*. Despite teachers' positive perceptions on using mobile phones in the classroom, finding reveals that they are neutral when it comes to their interests in using mobile phones in the classroom. The researcher assumes that this could be due to less exposure or insufficient knowledge on how to use mobile phones in the classroom strategically. Another, external variables could also be one of the reasons such as lack of support from the administration or no in-service trainings on the use of mobile tools for educational purposes or researched-based demonstrations or modeling from those teachers who are incorporating the use of mobile phones in their instruction. Moreover, as observed by the researcher the Department of Education has no clear policies and guidelines on mobile phones used as learning tools. This can be an area for a more thorough investigation. In general, participants are neutral to the perceived challenges of using mobile phones in the classroom.

V. CONCLUSION

This study aimed at exploring and understanding the perceptions of students and teachers of Taal Junior and Senior High School on Mobile phone-assisted instruction (Mpai). Specifically, this study investigated whether participants' perceptions differ significantly in terms of usability, benefits, preference/support, mobile phone management approaches, and challenges on using mobile phones in the classroom. In general, based from the results it shows that students and teachers from the Taal Junior and Senior High School have positive perceptions on Mobile phone-assisted instruction (Mpai) and that they agree in most of the potentials of mobile phones in assisting classroom instruction with only a number of aspects or items of significant differences. Findings also revealed that the participants support the use of mobile phones in the classroom, however suggesting that it should only be used in senior high school level when necessary probably because of the maturity of these students especially in handling and managing their mobile phones in the classroom.

Interestingly, students and teachers perceptions' showed possibilities for integrating mobile phones to assist instruction in the classroom. This is an indication that they are opening the doors for adoption of emerging mobile technologies as learning tools which can be useful for both teachers and learners. It is suggested that these views should be considered in developing or crafting instructional materials that fit this specific mode of delivering instruction. With this, research-based strategies and methods must also be crafted in order to gain optimum benefits these perceived mobile learning tools could offer.

VI. LIMITATIONS

This study provided evidence for understanding the perceptions of students and teachers in Taal Junior and Senior high school, a public secondary school from Bocaue, Bulacan, Philippines. However, there are limitations of the study due to the method used. Considering the survey questionnaire used in gathering the data, the participants may have not answered it

honestly and that there was no method used to verify their responses.

The grade levels of the study involved were only the Grades 9 and 10 students and teachers from junior high school and only Grade 11 students and teachers from senior high school considering that it is the first year implementation of the senior high school level in the Philippine public schools as part of the transition period of the K to 12 Program. This sets the limitation for generalizability of the study. Students and teachers of a larger sample from the other grade levels could possibly have different perceptions for the Mobile phone-assisted instruction (Mpai).

VII. RECOMMENDATIONS

Based on the findings and conclusion of the study, several recommendations can be considered for further research. The participants of the study involved only students and teachers from Grades 9, 10, and 11 levels. Further studies can be conducted to other grade levels in the secondary school. Aside from survey questionnaires, studies may also include interviews to ensure consistency of responses. Further studies may also include age, gender, track and strand (for senior high school students), and departments (for junior and senior high school teachers) as variables in their study. Purposeful studies can also be done for school administrators' perceptions on the Mobile phone-assisted instruction (Mpai) since they are authorities responsible for management decisions or school policies in their respective schools. Researchers may also consider investigating on existing school policies in the public and public schools in the Philippines in order to identify if there are regulations that concern mobile phone management approaches in the classroom.

Experimental studies on classroom instruction assisted by mobile phones may also be done in specific subject or skill to identify in which learning areas or skills mobile phones could potentially be useful for teaching and learning.

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