Instructional Practices of Coastal School Teachers and Its Influence on the Level of Technology Implementation in the Classroom

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Abstract:
This descriptive-correlational research studied the factors that affect the level of technology implementation by teachers among coastal elementary schools in Bataan, Philippines. It also sought to determine the significant relationship between the personal profile of the teachers, their current instructional practices and their level of technology implementation. The study made use of descriptive research which identified the factors the affect the level of technology implementation by teachers among coastal elementary schools in Bataan. Survey-questionnaire was used as the primary research instrument of the study. Also, the research conducted informal interview as necessitated to supplement data needed for the study. In testing the relationship between the personal profile of the teachers and their level of technology implementation and the relationship of instructional practices, computer competency, and teacher efficacy on the level of technology implementation, Spearman's Rho correlation which is the non-parametric counterpart of Pearson r correlation was used. It was revealed in the study that the respondents have a moderately high level of instructional practices and moderately high level of technology implementation. There is no significant relationship that exists between age, educational attainment and years of teaching experience and level of technology implementation of the teachers. Furthermore, instructional practices' is not significantly correlated to the level of technology implementation.

Keyword: *Technology in Education, educational technology, technology implementation, instructional practices.*

1. Introduction

Today, the world is advancing rapidly in terms of scientific discoveries and technological innovations. The work environments in various settings, both in fields or in offices, demand workforces who are technologically advanced and are equipped with digital age skills to address the compendium of challenges pose by these interesting phenomena. Moreover, Griffin (2003) points out those technological advances are changing the way that many organizations operate including schools and other academic institutions. It is further mentioned that schools cannot truly prepare their students to function within the society if the curriculum fails to cover the equipment and skills they will actually use in the real world.

Due to these changes, computer applications have recently become one of the most promising kinds of educational tool. These are now being used as instructional materials and management tools as well. Donahoo and Whitney (20006) pointed out that schools cannot hope to improve either the academic achievement of their students or the overall value of their programs without sufficiently integrating technology like computers, internet and the likes in the teaching-learning process. Moreover, stated that students must be able to use technology if they are going to live and work successfully in an increasingly complex and information- driven society (Miller, 2007), to excel in

future jobs and to be productive citizens (Griffin, 2003), help them improve their scores on standardized tests (Bain and Ross, 1999), improve their inventive thinking (Forum on Education and Technology, 2001), improve students' self- concept and motivation (Sivin - Kachala and Bialo, 2000) and technology can impact student achievement significantly (Valdez, 2004).

However, there are various factors that hinder teachers to successfully incorporate or integrate technology in the educational spectrum or in much defined term – in the teaching –learning process specifically in the classroom instruction. The barriers that the teachers face in integrating technology are compound and profound. These are teacher's inability to adapt the new technology to his or her teaching style (Nisan-Nelson, 2001), inability to deal with the expectations of the public that the teachers already possess the ability to use instructional technology (Clark, 2000); teachers' perception that integrating technology are more time consuming than traditional courses (Sullivan, 1999) and lack of a long-term or adequate training (Yildirim, 2000). As such, the provision of adequate, correct and reliable staff development programs on computer education and integration among teachers is very much essential for their professional growth and possible or continued integration of the technology into the classroom.

To be effective users of computer technologies and be models for students' computer use, teachers must have positive computer attitudes and feel self-efficacious in using them (Milbrath and Kinzie, 2000). However, discomfort with the equipment or pedagogical techniques reduce the likelihood of teacher use (Hugo, 2000). According to Atkins and Vasu (2000), a teacher's computer confidence level is strongly related to personal knowledge and use of technology in teaching. They found that as teachers become more knowledgeable about technology integration; their concerns tend to move from lower levels to higher levels of integration.

As such, the researcher investigates teachers' current instructional practices and its effect on the level of technology implementation among coastal elementary schools in Bagac, Bataan namely Paysawan Elementary Schools, Binuangan Elementary Schools and Quinawan Elementary Schools. With K to 12 curriculum in place, there is now a rapid increase in the call for the integration of technology into the classroom and teachers are now encouraged to keep pace with these requirements particularly in how to be proficient in the use of educational technology and to integrate this technology into the teaching-learning process. Lastly, the findings of the study will help serve as basis for Teachnology Extension Program of the BPSU-College of Education.

2. Methodology

The study made use of descriptive-correlational research which identified the factors that affect the level of technology implementation by teachers among coastal elementary schools in Bataan. As exemplified by Vizcarra (2003), this type of research involves the purposive process of gathering, analyzing, classifying, and tabulating data about prevailing conditions, practices, processes, trends, and cause and effect relationships and then making adequate and accurate interpretation about such data with or without the aid of statistic method. In descriptive design, the study focuses at the present condition. These are valuable in providing facts on which scientific judgments may be based.

The researcher made use of a survey-questionnaire as the primary research instrument of the study. Also, the research conducted informal interview as necessitated to supplement data needed for the study. In measuring the level of instructional practices of teachers, the Classroom Practice Measure by Solomon (2010) was used. In assessing the level of perceived computer competencies of teachers, the researcher adopted the survey-questionnaire from the study of Domingo (2011). In identifying the level of teacher efficacy, Goddard and Hoy Collective Teacher Efficacy Scale (2001) was utilized. Finally, in analyzing the level of technology implementation of the teachers, the survey-questionnaire of Hermans (2008) was used. There were 30 elementary teachers who participated in the study and was selected using universal sampling method.

Frequency and percentage distribution were used to present the personal profile with respect to age, educational qualification and years of teaching experience of the teachers and principals of the three (3) schools involved in this study. Likewise, weighted mean was used to illustrate the level of current instructional practices and their level of technology implementation. In testing the relationship between the personal profile of the teachers and their level of technology implementation and the relationship of instructional practices on the level of technology implementation, Spearman's Rho correlation which is the non-parametric counterpart of Pearson r correlation was used.

3. Results and Discussion

The study revealed that 41% of the teacher-respondents are 30 to 39 years of age and also are 40 and above years old. Only 18% are as young as 21 to 29 years old. In Area 1, it is evident that majority of teachers are 40 years old and above. In terms of educational attainment, 59% of all the respondents are baccalaureate degree holder, and 29% are undertaking their master's degrees. Twelve (12%) percent have already finished their master's degree programs, majority of which came from Area 3. In Area 2, majority are still undergoing their Master's Degrees while most of the teachers from Area 1 and Area 3 are baccalaureate degree holders and are not yet pursuing further studies. With respect to years of experience, the respondents have wide range of teaching experiences. As shown, 1% has less than a year teaching experience while 41% have been working for one (1) to five (5) years already. Also, 41% of the respondents have been teaching for 11 years or more.

Table 1 presents the perceived level of instructional practices of teachers from Area 1, Area 2 and Area 3.

Table 1: Perceived Level of Instructional Practices of Teachers

Criteria	Area 1	Area 2	Area 3	Total	Descriptive Equivalent
1. Students are greeted during, or before, meeting.	4.67	4.20	4.67	4.53	Strongly Agree
2. There is a specific time set aside for children to share things, events, and feelings about themselves.	5.00	3.80	4.67	4.53	Strongly Agree
3. There is an age appropriate prepared message on the chart/blackboard that contains the important news for the day.	4.67	3.60	3.83	4.06	Agree
4. I work together with students to form classroom rules and expectations.	5.00	4.40	4.83	4.76	Strongly Agree
5. When a rule or consequence is introduced, modeling and discussion are used to emphasize appropriate behavior.	5.00	4.60	4.83	4.82	Strongly Agree
6. Rules are stated in the positive (e.g. "We will take care of our classroom by cleaning up our materials".)	5.00	4.40	4.67	4.71	Strongly Agree
7. Rules are posted at the students' eye level in a conspicuous place in the room.	5.00	4.60	4.83	4.82	Strongly Agree
8. I remind, reinforce, and redirect children in the practice of the rules when appropriate.	5.00	4.40	4.83	4.76	Strongly Agree
9. Logical consequences are used to hold children accountable for the rules.	4.50	4.00	4.50	4.35	Agree
10. The classroom is orderly, accessible, and allows for safe and independent work.	4.83	4.40	5.00	4.76	Strongly Agree
11. The classroom is arranged in a manner to accommodate whole group, small group, and individual work.	4.17	4.40	4.00	4.18	Agree
12. There is an established class meeting space.	4.50	4.40	4.67	4.53	Strongly Agree
13. The majority of bulletin boards display students' work.	4.00	3.80	4.33	4.06	Agree
14. New materials are methodically introduced before making them available for student use.	4.33	4.00	4.17	4.18	Agree
15. Students demonstrate ideas for use of materials, try them out with supervision, and think through their care.	4.33	3.80	4.17	4.12	Agree
16. Students use classroom materials in choice and independent work regularly.	4.00	4.20	4.00	4.06	Agree
17. Children's development is a major consideration in choosing lessons.	4.33	4.00	5.00	4.47	Agree
18. Students share their work with other students regularly.	4.83	4.20	4.33	4.47	Agree
19. Students reflect on their work and participate in self-evaluation in addition to the teacher's assessment.	4.83	4.20	4.50	4.53	Strongly Agree
20. Structures are in place (and are used) that enable students to participate in solving classroom problems.	4.67	4.00	4.67	4.47	Agree
Composite	**4.63**	**4.17**	**4.53**	**4.46**	**Moderately High Level**

As gleaned from the table, the respondents provided an overall mean rating of 4.46 which indicate moderately high level of instructional practices. Specifically, the overall mean rating of teachers from Area 1 (4.63) and Area 3(4.53) indicate high level of instructional practices while that of Area 2 (4.17) implies moderately high level. Table 2 presents the perceptions of the teachers from three areas on their level of technology implementation. It must be noted that some of the criterion are negatively-stated. These criteria are reversed to attain a uniform direction of thoughts for all criteria as basis for getting the overall level of technology implementation.

Table 2: Level of Technology Implementation of the Teachers

Criteria	Area 1	Area 2	Area 3	Total	Descriptive Equivalent
1.I don't have any use for computer applications (software, interface equipment, video equipment connected to a computer, etc.) on a daily basis. (-)	1.83	3.60	1.33	2.18	Disagree
2.Communicating with others over a computer network can help me become a more effective teacher.	4.50	3.40	4.67	4.24	Agree
3.I am confident about my ability to be successful in a course that requires me to use computer applications.	4.33	2.80	3.83	3.71	Agree
4.Using computer applications in my future teaching job will only mean work for me. (-)	3.33	2.20	1.33	2.29	Disagree
5.I feel at ease learning computer applications.	3.83	3.20	4.50	3.88	Agree
6.With the use of computer applications, I will be able to create instructional materials to enhance my future teaching.	4.83	4.00	4.67	4.53	Strongly Agree
7.I am not the type that does well in using computer applications. (-)	2.17	3.00	1.33	2.12	Disagree
8.If I can use word processing software, I will be a more productive teacher.	4.50	3.80	4.67	4.35	Agree
9.Anything that computer applications can be used for, I can do just as well using some other method. (-)	4.17	4.20	3.50	3.94	Agree
10.The thought of using a computer makes me feel tense and uncomfortable. (-)	2.50	2.40	1.17	2.00	Disagree
11.Computer applications are too complicated to be of much use to me. (-)	2.00	2.80	1.17	1.94	Disagree
12.I could use computer applications to access various types of information sources.	4.17	3.80	4.83	4.29	Agree
13.I do not feel threatened or intimidated by computer applications.	3.33	3.80	4.50	3.88	Agree
14.I get nervous around computers because I feel like I might break them. (-)	2.00	1.80	1.00	1.59	Disagree
15.Computer applications can be used to assist me with classroom management techniques.	4.83	3.60	3.67	4.06	Agree
16.I don't see how computer applications can help me learn new skills. (-)	1.67	2.80	1.17	1.82	Disagree
17.I feel comfortable about my ability to use computer applications.	4.00	3.60	4.00	3.88	Agree
18.Knowing how to use computer applications will not be helpful in my future teaching position. (-)	1.67	2.60	1.17	1.76	Disagree
Composite	**3.94**	**3.37**	**4.45**	**3.95**	**Moderately High**

As reflected in the table, the respondents cited that they are applying technology to a moderately high extent having an overall composite mean of 3.95. Teachers from Area 1 provided a composite mean of 3.94 which indicate moderately high level of technology implementation. Likewise, Area 3 teachers provided a composite mean of 4.45 which also implies moderately high extent of technology implementation. Area 2 respondents, on the other hand, gave a composite mean of 3.37 which suggests an average level of technology implementation. By and large, there is a positive atmosphere in as much as the use and implementation of technology in the classroom instruction. Judging by the behavior of statistical data, it appears that the respondents have a positive attitude towards the use of technology and implementing such in the classroom instruction. It means that they are welcoming the opportunity to use technology as part of their classroom repertoire but cannot do so because of some valid reasons. For an instance, the highest total mean of 4.53 is on 'the use of computer applications in creating instructional materials to enhance teaching'. This echoed McCormick and Ayers (2009) who revealed that the stronger the teachers' beliefs were in their capabilities to teach in new ways, the stronger their beliefs were in their capability to use technology.

Table 3 depicts the relationship between the personal profile of the teachers and their level of technology implementation using Spearman's Rho correlation which is the non-parametric counterpart of Pearson r correlation. It shows that there is no significant relationship that exists between age and level of technology implementation as suggested by the Spearman's rho correlation coefficient of -.19 significant at 0.47 level, which is greater than 0.05 level. It contradicted the Henry (2008) who notes that the age of teachers plays on the successful integration of technology into classrooms but affirmed Inan and Lowther (2010), Hermans et al. (2008), McConnell (2011), Van der Kaay and Young (2010) and Brunk (2008) who revealed that age is not a factor in the successful technology integration or implementation in the classroom. Likewise, educational attainment is not associated with the level of technology implementation as indicated by the low correlation coefficient of 0.35 significant at 0.17. Also, years of teaching experience is not correlated with the level of technology implementation having a negligible correlation of -0.14 significant at 0.60. The negative coefficient indicates inverse relationship; however, is negligible. Thus, personal profile of teachers is not associated with their level of technology implementation.

Table 3: Relationship between Personal Profile and Level of Technology Implementation of Teachers

Personal Profile	Spearman's rho	Remarks	Sig. (2-tailed)	Remarks
Age	-.19	Negligible correlation	.47	Not Significant
Educational Attainment	.35	Low correlation	.17	Not Significant
Years of Teaching Experience	-.14	Negligible correlation	.60	Not Significant

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

± .80 − ±1.0-high correlation; ±.60 - ±.79-moderately high correlation; ±.40 −± .59-moderate correlation; ±.20 - ±.3-low correlation; and ±.01 -± .19-negligible correlation

The findings denied the study of Russell, O'Dwyer, Bebell, and Tao (2007) which stated that the quality of technology implementation was related to the years of teacher service. It also contradicted the study of Henry (2005) revealing that a as the years of experience of teachers increased, the level of technology implementation also tended to increase. The results also opposed Baek, Jong, and Kim (2008) who revealed that those experienced teachers are less ready to integrate technology in the classroom than less experienced teachers.

Table 4 depicts the relationship of instructional practices on the level of technology implementation using Spearman's Rho correlation.

Table 4: Correlation Between Instructional Practices and Level of Technology Implementation

Independent Variable	Spearman's rho	Remarks	Sig. (2-tailed)	Remarks
Instructional Practices	.36	Low correlation	.15	Not significant

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

± .80 − ±1.0-high correlation; ±.60 - ±.79-moderately high correlation; ±.40 −± .59-moderate correlation; ±.20 - ±.3-low correlation; and ±.01 -± .19-negligible correlation

Noticeably, 'instructional practices' is not significantly correlated to the level of technology implementation as indicated by the low correlation coefficient of 0.36 significant at 0.15. It debunked the findings of Brunk (2008) who revealed that there is a significant correlation between instructional practices and level of technology implementation. The findings implied what Stipek and Byler (2004) noted that elementary education teachers' beliefs and goals were closely related to their instructional practices in the classroom. As such, Chai and Merry (2006) pointed out that teachers must acquire new knowledge technology implementation and weave it together with the demands of the curriculum, classroom management and existing instructional skills.

4. Conclusion and Recommendations
It was revealed in the study that the respondents have a moderately high level of instructional practices; and moderately high level of technology implementation. There is no significant relationship that exists between age, educational attainment and years of teaching experience and level of technology implementation of the teachers. Furthermore, instructional practices' is not significantly correlated to the level of technology implementation.

Hence, it is recommended that a needs assessment survey both institutional and personnel must be conducted to identify the equipment and instructional technologies that the coastal elementary schools and its teachers need. Moreover, to address the inadequate or even lacking technological equipment or materials in the school, the schools should look for tie-ups with LGUs and NGOs since the principal is empowered to do so by virtue of the school-based management policies. Likewise, a seminar-training on computer and digital age literacy must be conducted among teachers and personnel particularly focusing on basic computer skills like using internet, word processing, DTP, multimedia, devices, email, operating system, database, spreadsheet and simulation and painting and drawing. Meanwhile, to improve positive attitude towards technology among the teachers and staff, a team building seminar on computer self-efficacy must be incorporated in the annual development program of the schools. Teachers must also be encouraged to continue their graduate courses to make them updated with the trends, issues and challenges in educational technology and in the teaching profession as a whole. Finally, a seminar –training on classroom pedagogy vis-à-vis technology integration and implementation must also be incorporated in the annual development program of the schools so that teachers may apply these skills and concepts in the classroom instruction.

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