21st Pedagogical competence of pre-service teachers in the new normal modalities

Darrel M. Ocampo

Central Bicol State University of Agriculture-Sipocot

*Corresponding Author

Darrel M. Ocampo

Central Bicol State University of Agriculture-Sipocot

Abstract

This study examined the use of 21st-century learners and teacher skills by pre-service teachers required in classrooms in the 21st-century, particularly in new normal modalities. The goal was to identify the connection between learners' and pre-service teachers' teaching abilities in the 21st century. Since they are all significant in this sense, the attributes and skills of 21st-century learners and teacher skills have been studied. Research questions were thus answered using a single research survey model. The correlation method was used to assess the association between the use of 21st-century learners and teaching skills. Meanwhile, to determine the results' accuracy and veracity, the researcher used statistical tools to analyze and interpret the data collected. Frequency Count and Percentage Methodology was used to define the portrayal of respondents based on their particular levels. Pearson Product Moment Correlation was used to assess if there was a significant correlation between the usage of 21st-century learners and pre-service teachers' instructional abilities. The results revealed that there are a significant and positive correlations between 21st-century learner skills and 21st-century teacher skills. This finding reflects the fact that as the use of 21st-century learner skills by pre-service teachers increased, their use of teacher skills in the 21st century increased as well, and as the use of 21st-century learner skills decreased, their use of teacher skills in the 21st century also decreased.

Keywords: 21st Pedagogical Competence; Learner Skills; Teacher Skills; New Normal Modalities

Introduction

A pre-service teacher will carry out practice teaching at his/her last stage of the teacher education program. A culmination of his/her formal education and the transitional phase from being a student to becoming a future teacher. It aims to provide opportunities to apply the principles learned in the teaching-learning process; to discover their weaknesses in teaching; to gain a realistic picture of the teaching profession; to develop the skills and attitudes needed by the teacher; and to develop the skills needed to make the necessary adjustments to changing classroom conditions (Archer and Davidson, 2008).

Practice instruction is of utmost significance for the vocational preparation of student teachers. This immersion in the modern world of school prepares students to switch from trainees to professionals. After finishing their education, several issues face the teachers who enter the workplace for the first time. Student teachers who apply for existing teacher preparation programs are not necessarily ready to reach the classroom. These issues are related to their classroom knowledge practice. Any student teachers tend to be inadequately trained for the actual situation during their teaching practice (Wagenaar, 2005).

The Philippine Constitution (Article IV, Section 23, Part 2) states that the objectives of tertiary education are: to train

human power in the skills required for national development; to instil and foster appropriate and relevant attitudes, skills, and knowledge; and to enable each individual to become a valuable, productive and knowledge-based member of society. If the Higher Educational Institution (HEI) graduates have the skills required to complete a teaching job, this provision may be implemented. It calls for a pre-service teacher to assess and evaluate his/her pedagogical skills required for the teaching climate of the 21st century.

As in various other fields, changing and progressing circumstances worldwide have contributed to changes in studying and teaching environments. A range of aspects is involved in this transition, from schools' technical architecture to teaching skills. Key players in this transformation are learners and educators who are stakeholders in the learning and teaching system. Despite the continuous progress in updating teacher training and in-service training, teachers remain inadequate and thus continue to become less-demanded professionals. Many graduates fail to land teaching jobs, aggravating the country's unemployment and underemployment. One of the issues mentioned in Flores' (2017) study regarding the College of Development Education's employability in Region V is the poor foundation given to graduates as far as pedagogical competence is concerned. According to him, less time is given to graduates of the course to concentrate on the skills teachers should have in the 21st-century. After the 21st-century teaching scenario was given less time, the students enrolled in their subjects were more exposed to the content and training students regarding the various strategies tailored; therefore, the graduates produced under the teaching education program become knowledgeable in content to lack pedagogical preparation and exposure.

The said place experiences this situation, but every university must also attune to society's needs. Thus, the researcher is enthralled to look into the 21st pedagogical competence of pre-service teachers, thereby using the study's findings to augment the program's goals for its graduates.

Objectives

With the previous statements, the purpose of the analysis was to establish the relationship between 21st-century learner and teacher skills. In particular, its main objectives are as follows:

1. Identify the level of pre-service teachers' 21st-century learner skills in the new normal modalities;
2. Identify the level of pre-service teachers' 21st-century teacher skills in the new normal modalities;
3. Determine the demographic difference between the utilization of 21st-century learner and teacher skills by pre-service teachers based on a) gender, b) course program and c) year level; and,
4. Determine if there is a significant relationship between the application of 21st-century teacher skills by pre-service teachers and the skills of 21st-century learners.

Theoretical Framework

The study is framed and guided by theories that served as the foundation in explaining the current phenomenon. These are Theory of Connectionism (Thorndike, 1988), Theory of Connected Learning (Walberg, 1981), (1965) Socio-Cultural Theory (Vygotsky, 1965), and Transactional distance Theory (Meyers, 2014)

According to Edward Thorndike Theory of Connectionism, human activity is based on the association between stimulus and responses (1898). Any action has placed his cognitive emphasis on observation learning as the most important means of changing human behavior. This theory supports the researchers' study because they initiate what they have observed and put into action through how they think and behave. By integrating things based on observable situations, the students acquire effort to imitate and possibly contribute to how they perform and share their learning. If the individual follows the observed behavior, his peers also imitate his actions. First, stimulating situations that influence or affect the individual make towards the problem and second, a connection between the question and the response using what the stimulus can produce in the reaction. This study shows the connection between stimulus and response; if the value's integration is in the stimulus, the learning behavior and the answer will depend on it, either positive or negative. When a strong connection or bond between stimulus and response is formed, learning takes place.

Walberg's (1981) Learning Theory suggests that people's social features and their immediate psychological contexts affect educational outcomes. Walberg identified nine main variables that influence educational outcomes: student capacity/priority achievement, incentive, age/developmental stage, educational quantity, classroom atmosphere, home setting, peer group, and out-of-school exposure to mass media. These features are a crucial component of sustainable natural resource management and the development of desirable behavioral change (Muro & Jeffrey 2008). The hypothesis underpins the belief that people benefit from encounters with others in a social setting. Separately, through watching the actions of others, individuals acquire identical habits. People assimilate and mimic others' actions, mainly if their observational encounters are favorable or provide incentives relevant to the observed behavior.

Vygotsky's Socio-Cultural Theory of Human Learning (1965) explains learning as a collective phenomenon and the root of human knowledge in society or community. The core theme of Vygotsky's theoretical theory is that social interaction plays a crucial role in cognition growth. Learning is in two stages, according to Vygotsky (1965). First, by contact with others, and then incorporated into the mental system of the person. The second feature of Vygotsky's theory is that the capacity of cognitive growth is limited to a "zone of proximal development" (ZPD). This "zone" in the field of experimentation for which students are cognitively

prepared but need support and social interaction to evolve ultimately (Briner, 1999).

Transactional Distance Theory (Meyers, 2014)

For online course design and teacher help, where self-regulated learning can be implemented, this principle is essential. It has three components: form, dialog, and autonomy. Course materials establish the layout, content, assignments, and deadlines set before the course is made available to students. The framework is a valuable pedagogical method, providing learners with predictability in deciding how the system is structured, sequencing instructional modules and assignments, and timeframes for submission of assignments. Classes are usually structured so that each lesson has the same parts and various pages in the system have the same structure, similar to the textbook. This structure allows learners to know what to expect as they advance through the course. Teachers should also provide a foundation for students by detailed contact. This communication is referred to as a dialog that involves some conversation or participation in a course. Classes are usually structured such that each lesson has the same parts and various pages in the system have the same structure, similar to the textbook. This structure allows learners to know what to expect as they move through the course. Teachers may also provide students with a framework by detailed contact. This dialogue is referred to as dialog, which involves some exchange or participation in a course.

The amount of structure and discourse in a course determines autonomy defined by components of self-direction. Lower levels of architecture and debate accompany more relevant degrees of freedom. Some learners can fit well with pre-design and dialog stages, while others require more substantial assistance. Autonomous learners can set learning objectives and actions to meet those goals. Both instrumental freedom and emotional equality are available to them. In other words, with no support, they will advance through the course and require no support. One might predict that learners would become more independent over the weeks they are enrolled in an online course as they grasp expectations and develop trust in their performance. This trust-building can be encouraged by teachers. The purpose of structure, dialogue, and autonomy is to facilitate learning outcomes and avoid attrition. There are links to the principle of transactional distance to that of self-regulated learning. The self-regulated learning system in Figure 1 establishes a sort of mechanism for learners to assist them in setting goals, executing practice plan, and using dialogue (i.e., the social environment) to gain assistance in a self-evaluating greater capacity for autonomous learning as appropriate
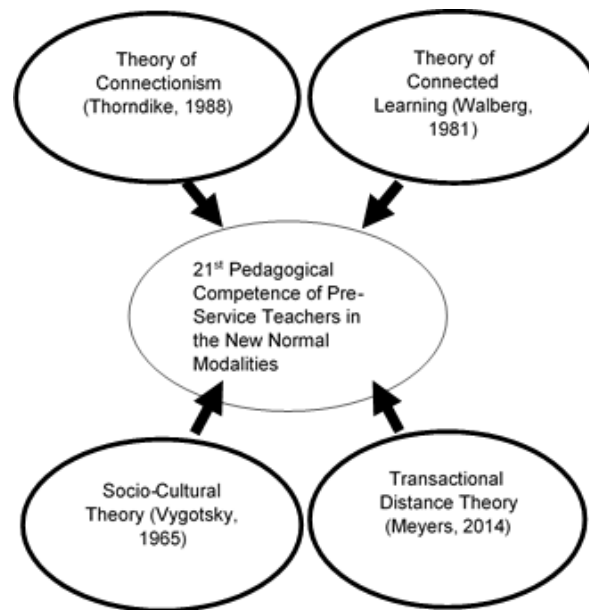

Figure 1: Theoretical Framework

Methodology

The present study was conducted using a single, evaluative-correlational analysis. The goal of the analysis was to unveil the 21st-century learner and 21st-century teacher skills of pre-service teachers. Research questions were thus answered using a single research survey model. The correlation method was used to assess the association between the use of 21st-century learners and teaching skills. As individuals, pre-service teachers must prepare educational exercises parallel with their academic skills, which they can utilize while they work in their profession.

The data were collected from a sample of practice teachers at the CBSUA-Sipocot Campus. A modified survey questionnaire based on the PISA (Program for International Student Evaluation, 2002) and following the PPST (Philippine Professional Standards for Teachers, 2017) was the primary collection device. The data were processed and interpreted.

Meanwhile, to determine the results' accuracy and veracity, the researcher used statistical tools to analyze and interpret the data collected. Frequency Count and Percentage Methodology is used to define the portrayal of respondents based on their particular levels. Pearson Product Moment Correlation was used to assess if there was a significant correlation between the usage of 21st-century learners and pre-service teachers' instructional abilities.

Data Collection Tools

A modified survey questionnaire based on the PISA (Program for International Student Evaluation, 2002) and following the PPST was the primary collection device used (Philippine Professional Standards for Teachers, 2017). 21st-century learner skills use scale, and the data are gathered using the scale for teaching skills in the 21st-century. The scale comprises four components: cognitive ability, autonomy, adaptability, and creativity. In the meantime, the scale of teachers" skills use is divided into five variables: managerial skills, technical skills, confirmatory skills, adaptive teaching skills, and productive skills. Both instruments for gathering data are in the context of a Likert-type scale of five points that reflect the frequency of usage. By taking the arithmetical mean, overall scores for the scales were determined. The regular scores were collected for all data collection instruments; the analysis thus obtained true and accurate statistical comparisons.

Results and Discussion

Table 1 shows the pre-service teachers' scores on the scale of 21st-century learner skills use. It is listed descending order as cognitive ability, creativity, adaptability, and autonomy.

Table 1: Pre-service Teachers Use of 21st-Century Learner Skills

Score	n	x̄	sd
Cognitive ability	92	4.33	.538
Creativity	92	4.12	.414
Adaptability	92	3.51	.564
Autonomy	92	3.32	.702
The total score of 21st-century learner skills use	92	3.82	.483

The most frequently used skill by the pre-service teachers in the school scheme was cognitive ability (x=4.33, sd=.538). However, the fact that autonomy abilities were the least used ability (x=3.32, sd=.702) means that pre-service teachers were less likely than others to use self-management abilities. Meanwhile, the adaptability skill is under the description of average.

The 21st-century teacher skills usage scores for pre-service teachers are determined by the mean scores obtained for five sub-factors and general use scores from 21st-century teacher skills use scale scores. Mean scores were matched while addressing the study query. Table 2 shows the associated ratings.

Table 2: Pre-service Teachers Use of 21st-Century Teacher Skills

Score	N	x̄	sd
Confirmatory skills	92	4.52	.439
Managerial skills	92	4.43	.476
Productive Skills	92	4.36	.431
Flexibility Skills	92	4.21	.448
Technological Skills	92	3.82	.673
The total score of 21st-century teacher skills use	92	4.26	.454

As shown in Table 2, pre-service teachers' scores on the teacher skills use. The listed is in descending order having confirmatory skills as the highest and technological skills as the lowest. The Confirmatory skills received the highest score suggests that pre-service teachers have a confirmatory mindset towards learners' characteristics and

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constructive actions. However, the low scores obtained in using technological skills in the literature (Meyer, 2013) indicate that pre-service teachers' technological skills are lower than other skills. Nevertheless, the insufficient commitment suggests that they did not use such skills much. Teacher skills usage performance (Teacher Skills Use = 4.26) was high.

Differences between the 21st Century Learner and Teacher Skills Uses of the Pre-Service Teachers based Demographic Variables

The MANOVA parametric test was conducted to answer this research question. Compared to other comparative tests, the superiority of variance analysis is its ability to include the interaction between independent variables or variables in the study and reduce the margin of error in the final analysis (Stringer, 2011). In cases where there is more than one dependent variable, MANOVA is conducted. It is one of the most effective analysis methods, significantly reducing the margin of error (Morris, 2015). Since there were two dependent and three independent variables in the current study, data analysis was performed with MANOVA to increase the reliability of the findings and decrease the error margin. Findings from MANOVA are provided in Table 3.

Table 3: 21st Century Learner and Teacher Skills Uses of the Pre-Service Teachers based Demographic Variables (Gender, Course Program, and Year Level)

Variance	F	Df	η2	Power p	Power p
Gender	4.106	20	.011	1.000	.000
Course Program	4.212	3	.007	.716	.018
Year Level	2.982	12	.006	.977	.001
Gender*Course Program	1.782	21	.021	.983	.029
Gender*Year Level	1.912	47	.007	1.01	.000
Course Program*Year Level	.780	13	.021	.389	.791
Gender*Course Program*Year Level	.921	46	.009	.926	.805

The MANOVA findings shown in Table 3 show no significant difference when three independent variables (gender*course program* Year Level) df 46 = .926; p > 0.05) were considered simultaneously. The MANOVA findings were not significant (df13 = .780; p > 0.05) where course program and year level variables were considered in concurrence. Likewise, the relationship between the course program and year level was relatively low (course program*year level = .389). This fact indicated that a larger sample was needed to compare course program and year level variables simultaneously.

Analysis of the other variables presented in the table showed that the use 21st century learners and teachers skills differed individually based on gender, course program, and year level. Since the calculated gender rating was close to the .80 value, it could be argued that it was at an appropriate level (Cohen, 1988). All these findings showed that the differences mentioned above were statistically significant between the dependent variables and that the sample size was adequate for the analysis carried out.

Table 4: Correlation between 21st Century Teacher Skills and 21st Century Learner Skills Use Sub-Dimensions

n-92	Cognitive Ability	Autonomy	Adaptability	Creativity
Autonomy	.466**	-	-	-
Adaptability	.513**	.521**	-	-
Creativity	.542**	.426**	.511**	-
21st century teacher skills	.642**	.411**	.547**	.422**

According to Holtzaman (2011), when interpreting the correlation coefficients shown in Table 4, coefficients below 0.30 define low; coefficients between 0.30 and 0.70 define intermediate, and coefficients above 0.70 define a high level of correlation. Based on these ranges, it could be observed

that all variables that were subjected to analysis had an intermediate level correlation. It could be noted that there was a significant connection between the use of teacher skills in the 21st century and learner skills in cognitive ability, autonomy, adaptability, and creativity. Also, the

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relationships between cognitive ability and autonomy were significant, as it was with adaptability.

Conclusion

The results disclosed that the cognitive skills were the most widely used abilities, whereas autonomous skills were the least used. Due to this, the teachers should initially know learners and then design the teaching activities that would highlight thir cognitive skills. The fact that the current study results indicate that cognitive skills were the most frequently used skills could be interpreted that the learners are inclined more into activities that challenge them to think critically and apply such knowledge in situational contexts.

In the current study, pre-service teachers were found to use cognitive skills at a high level; however, their use of other skills such as autonomous skills, collaboration, and flexibility skills to solve real-life issues is within intermediate level only. Because of this, the teachers who trained the pre-service teachers must allow them to explore other facets of learning opportunities to maximize their potentials as soon-to-be teachers. The use of 21st-century learner abilities should be developed for pre-service teachers to conduct to prepare them in the real challenges of teaching profession.

The pre-service teachers could effectively deliver the expected competencies of a teacher if they are more aware of their learning and abilities, and if they can improve these abilities beyond their current level. The results further revealed that pre-service teachers used of 21st-teacher skills is above the intermediate level, in parallel with their use of 21st-century learner skills. A study by Wurdinger (2015) that today's teachers' pedagogical approaches could not meet the requirements of 21st-century learners, showing the significance of the level of use of teacher skills in the 21st century. Thus, developing the 21st century learner skills of the pre-service teachers could help them improve as well their 21st-century teacher skills.

It was observed that among the abilities mentioned above, confirmatory skill is the most frequently used by the pre-service teachers mostly. The current study found that technological skills were the skill dimension that pre-service teachers least used. A review of teacher training programs revealed that, with the sole exception of the Computer Education and Instructional Technology department curriculum (Cheng, 2017), technology knowledge courses were limited to Computer I and Computer II courses. Although evolution is experienced in teaching techno pedagogical content knowledge, no training curriculum has been found for technological content knowledge courses.

The teacher training program could be considered one reason why, compared to current standards, pre-service teachers trained with an outdated curriculum used technological skills at the lowest level. Teaching innovations and enriching ancient teaching techniques with the technology used to prepare learners for the 21st century is essential.

The MANOVA analyses showed that dependent variables varied with gender, course program, and year level. Therefore, it could be argued that pre-service teachers differentiate according to their accomplishments based on the various independent variables mentioned above. These various learning experiences could have influenced both teacher skills in the 21st century and the use of teacher skills by pre-service teachers in the 21st century.

Lastly, the results revealed that there is a significant and positive correlations between 21st-century learner skills and 21st-century teacher skills. This finding reflects the fact that as the use of 21st-century learner skills by pre-service teachers increased, their use of teacher skills in the 21st century increased as well, and as the use of 21st-century learner skills decreased, their use of teacher skills in the 21st century also decreased.

Recommendations

Based on the findings, it is recommended that that educational institutions may start to develop pre-service teachers' learner skills and train pre-service teachers to acquire teaching skills. The mentors of pre-service teachers should aim to diversify the learning processes and give activities that will highlight the different teaching processes for the students.

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