

Teachers' Practices in Curriculum and Instruction in a Science High School Amidst the Covid-19 Pandemic

Dennis P. Bacosa¹, Dennis G. Caballes²

^{1,2}National Teachers College

¹Puerto Princesa City National Science High School
bacosadennis@gmail.com, dg.caballes@ntc.edu.ph

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Abstract

The disruptions caused by the Covid-19 Pandemic do not excuse science schools from continuing to provide holistic quality education to their learners. This study determined teachers' practices in the Curriculum and instruction as part of School-Based Management Level-3 of a public science high school. The descriptive-correlation quantitative research design and data triangulation were employed. The teachers were on average age of 32.90 years, 75% of the respondents were female, the average years in service of the teachers is eight years, and the majority are Teachers I-III, about 93.8% of the respondents. About 18.8% of the respondents were full-fledged in their Master's Program. Results of the study showed that teachers' overall level of practice in Curriculum and instruction was denoted as highly practiced. Correlational analyses revealed a significant relationship between the highest educational attainment and general practices of teachers in Curriculum and instructions ($r=0.478, p=0.002<0.05$). A significant relationship between the provision for the development needs of learners and the Review, improvement, and contextualization of assessment tools for teaching and learning as teachers' practices in the Curriculum and Instruction was also presented ($r=0.449, p=0.010<0.05$). A significant relationship between the regular collaboration of the learning system and the Review, improvement, and contextualization of assessment tools for teaching and learning ($r=0.430, p=0.014<0.05$) was also significant.

Keywords— Public Science High School, Teachers' Practices, Curriculum and Instruction, School-Based Management (SBM) Practice.

I. INTRODUCTION

The Philippine educational system's Curriculum is constantly updated, innovated, upgraded, and changed to make it more adaptive and consonant to the present needs of the learners and help them become equally competitive with the quality of education of other countries. However, when the COVID-19 pandemic in the year 2020 has impacted the worldwide economy and education, it has delivered a new notion of education—the new normal. Everyone is pushed to adjust— the administrators, teachers, students, parents, and other stakeholders whose education and financial security are on the line. Thus, there is a shifting of all the facets of learning, particularly in the delivery of instruction, from one size fits all to individualized and differentiated learning (Herrera & Caballes, 2022), a shift in responsibility in the teaching and learning process where the active participation of household members is solicited.

Under DepEd Order No. 012, s. 2020, the Philippine Department of Education (DepEd) is addressing the challenges in basic education for the school year 2020-2021 through its Basic Education Learning Continuity Plan (BE-LCP).

The BE-LCP is consistent with the mandate of Section 1, Article XIV of the 1987 Constitution for the state to protect and promote the right of all citizens to quality education at all levels and to take appropriate steps to make such education accessible to all. Under Section 6, Chapter 1 of Republic Act No. 9155, or the Governance of Basic Education Act of 2001, DepEd is vested with the authority, accountability, and responsibility for ensuring access to, promoting equity in, and improving the quality of basic education.

As a result, the BE-LCP strives to ensure the health, safety, and well-being of the learners, teachers, and personnel during COVID-19 while ensuring that education continues despite the crisis (Caballes & Abenes, 2020). The

BE-LCP, in particular, has been built with a legislative framework that responds to the "new normal" while also upholding the constitutional responsibility to ensure that all people have access to high-quality education at all times. (Tibon, 2020).

The disruptions caused by the Covid-19 pandemic on education do not excuse science schools to continue providing quality education to their learners. Different science schools were able to pivot and adapt to the new normal. Different strategies were employed to continue applying various analytic and thought-related skills in order to learn better the various underlying scientific concepts and processes, which remain central to science education as mentioned by Caballes and Belen (2020) and provide quality science education as a whole to the country's future scientists despite the pandemic and the challenges posed in different circumstances.

Puerto Princesa City National Science High School is the sole legislated science high school in the MIMAROPA Region and the only science high school in the city of Puerto Princesa and the province of Palawan. Presently, this science high school is on its School-Based Management Level III of Practice, an advanced accredited level by the Department of Education, which implies a self-sustaining and self-renewing institution ensuring the production of intended outputs or outcomes and meeting all the standards integrated with the local community (Bacosa et al., 2019). The institution continuously brings pride and honor to the division and the MIMAROPA region in the different competitions. However, during the pandemic, it was quite challenging, particularly on how their teachers contribute to the sustainability of quality science education that they provide to their learners.

The Curriculum is considered to be the heart of the school; it is the area where the teaching and learning take place. Every educational institution, particularly in basic education, may offer different curriculum programs, such as special programs for the arts, sports, science, and others, in the case of Puerto Princesa City National Science school's core of its Curriculum in science education. Different task forces were established in order to respond holistically to the new normal's challenge, particularly to teachers on how to facilitate learning using the blended distance learning modality that the school adopted in light of local health conditions, resource availability, and the learners' particular context in the school or locality.

There were numerous studies over the recent years concerning teaching practices during pandemic (Caballes and Andino, 2020; Caballes and Abenes, 2020; Caballes and Balbuena, 2019; Caballes and Chua, 2020; Caballes and

Cruz, 2021; Caballes and Dapitan, 2019; Caballes and Doblada, 2021)

In this context, this study determined the level of teachers' practices in the aspects of the Curriculum in a science high school amidst the Covid-19 pandemic based on the mandate of the Department of Education in the area of Curriculum and Instruction as part of its school-based management principles. Specifically, this study sought to answer the following research questions:

1. What is the profile of the teachers, in terms of age, gender, length of service, plantilla position, and highest educational attainment?
2. What is the level of teachers' practices in Curriculum and instruction in terms of the development needs of learners, collaboration with others, assessment tools for teaching and learning, learner-centered and inclusive education?
3. Is there a significant relationship between the teachers' profile and their practices in Curriculum and instruction?

Further, the null hypothesis was tested at a 0.05 level of significance.

This study focused only on determining the level of practices of teachers in the Curriculum and instruction of teachers in a public science high school and the significant relationship between the related variables.

It was limited only to the important variables, the demographic profile of public science high school teachers, and their practices in the Curriculum and Instruction as indicated in School-based Management (SBM) for Level III of Principle 2- Curriculum and Instruction Assessment Tool.

The level of practices of Curriculum and instruction were limited to the following indicators: development needs of learners, collaboration with others, assessment tools for teaching and learning, and learner-centered and inclusive education.

II. METHOD

Descriptive correlational research was used in this study to test the relationship between the two variables. This design was appropriate for the study since it determined the teachers' profile and their level of practice in Curriculum and instruction during the Covid-19 pandemic.

The descriptive method was used to determine the teachers' demographic profile regarding leadership practices that are common among school heads in terms of a. age; b. gender; c. length of service; d. plantilla position; and e. highest educational attainment and the level of

practices in Curriculum and instruction in terms of a. development needs of learners; b. collaboration with others; c. assessment tools for teaching and learning; and d. learner-centered and inclusive education. The correlational method was employed to determine the significant relationship between and among teachers' demographic profiles and practices in Curriculum and development amidst the Covid-19 pandemic during the school year 2021-2022. The study's respondents were the selected Junior and Senior High School teachers of Puerto Princesa City National Science High School in the City Schools Division of Puerto Princesa for SY 2021-2022.

The study's respondents were the 32 Puerto Princesa City National Science High School teachers from 36 teachers.

Data were gathered through a survey questionnaire. Part I asked about the profile of the teachers. Part II constituted the perceptual assessment of their practices in Curriculum and instruction; this part comprised statements that determined the level of their practices in Curriculum and instruction guided by the indicators in School-based Management (SBM) for Level III of Principle 2- Curriculum and Instruction Assessment Tool based on DepEd Order no. 83, s. 2012. Each indicator is comprised of 10 statements.

The researcher used a 4-point Likert scale for easy administration and scoring of the questionnaire.

A communication letter was submitted to the school principal. After the approval of the letter, the researcher administered the survey questionnaire to the respondents. The study was carried out in the school. The respondents were informed before the data collection using permission letters containing important information about this research and the importance of their participation in the study. The aim was to seek their consent, ensure voluntary participation and provision of information, and give them free room to withdraw from the research participation any time they wished.

Furthermore, the participants' identities in the study were kept anonymous. The respondents were given a letter for the approval of their voluntary participation. The completed questionnaires were checked for plausibility, integrity, and completeness.

The gathered data were collated and tabulated for statistical analysis. The data were subjected to the following statistical treatment. Frequency counts and percentages were used to describe the demographic profile of the teachers. Mean and Standard Deviation was used to describe the level of practice in Curriculum and instruction. Meanwhile, the Pearson correlation was used to determine the significant relationship between the practices in

Curriculum and instruction and some demographic characteristics such as age, gender, plantilla position, length of service, and highest educational attainment.

A data triangulation through an interview was applied to support the quantitative results.

III. Results and Discussion

The data gathered by the researcher, which had been presented, analyzed, and interpreted, revealed the demographic profile of teachers, level of practices in Curriculum and instruction, and correlation analysis of interrelated variables.

It can be seen from the results that the demographic profile of teachers: in terms of age has a mean of 32.90, when categorized, 18 representing (56.3%) of the respondents were between 21-30 years old and 14 representing (43.8%) of the respondents were on the age above 30; in terms of gender, 8 which represents (25%) of the respondents were Male and 24 which represents (75%) of the respondents were female; in terms of their length of service, it has a mean of 8 years, when categorized, 18 (56.3%) of the respondents are from 0-5 years and 14 (43.8%) of the respondents are from above 5 years; in terms of Plantilla Position, 30 representing (93.8%) of the respondents are Teachers I-III and 2 representing (6.3%) of the respondents are Master Teachers I-II; in terms of highest educational attainment, 26 which represents (81.3%) of the respondents were college graduate and earning units in Masters Program and 6 which represents (18.8%) of the respondents were graduate of Masters Program and earning units in Doctorate Program.

The number of teachers in this public science high school depends on their enrollees. This conforms to the Department of Education Undersecretary for Planning and Operations statement; Jesus Mateo mentioned that the improvement of the teacher-student ratio has changed in recent years (Montemayor, 2018). In addition, students entering the school in Grade 7 should pass the Admission examination administered by the Regional Office; a thus limited number of students can enter the school, which may also affect the number of teachers.

Most teachers are undergoing different professional development programs, including attending academic graduate programs within and outside the locality for their career growth.

Plantilla positions of teachers are based on the allotment of one (1) Master Teacher position per subject area with at least 5 to 7 teachers based on DECS Order No. 70, s. 1998. For a small category school, there were learning

areas with 3-4 teachers; thus, Teacher III is the maximum position a teacher may attain.

Table 1. Demographic Profile of Teachers (n=32)

Characteristics	Frequency	Percentage
Age (years)	(32.90)	
21-30	18	56.3
Above 30	14	43.8
Gender		
Male	8	25
Female	24	75
Length of Service	(8)	
0-5 years	18	56.3
Six years and above	14	48.3
Plantilla Position		
Teacher I-III	30	93.8
Master Teacher I-II	2	6.3
Highest Educational Attainment		
College Graduate; with Units in Masters	26	81.3
Masters Graduate; with Units in Doctorate	6	18.8

Data in parentheses are mean for continuous variables

Table 2. Level of Practices of Teachers in Curriculum and Instruction (n=32)

Indicators	Mean	SD	Adjectival Rating	Rank
Provision for the development needs of learners	3.53	0.30	Always	3
Regular collaboration of the Learning System	3.35	0.48	Always	4
Review, improvement, and contextualization of assessment tools for teaching and learning	3.68	0.31	Always	2
Facilitate learner-centered and inclusive education	3.87	0.26	Always	1
Overall Practices	3.60	0.25	Always	

Legend: 3.01-4 Highly Practiced; 2.01-3 Practiced; 1.01-2 Rarely Practiced; 0.01-1 Least Practiced

Table 2 shows the level of practice of teachers in Curriculum and instruction. It can be gleaned that the indicator "Facilitate learner-centered and inclusive education" yielded a mean (and standard deviation) of 3.87 (0.26), denoted as highly practiced, ranked first, followed by the indicator "Review, improvement, and contextualization of assessment tools for teaching and learning" gained a mean (and standard deviation) of 3.68 (0.31) denoted as highly practiced. "Provision for the

development needs of learners" indicator yielded a mean (and standard deviation) of 3.53 (0.30), denoted as highly practiced, ranked third, and the indicator "Regular collaboration of the Learning System" gained a mean (and standard deviation) of 3.35 (0.48) denoted as highly practiced was last in rank. Based on the findings, the overall mean is 3.60, which explains that the level of teachers' practices in terms of Curriculum and instruction is highly practiced.

All indicators regarding teachers' practices in Curriculum and instruction were described as highly practiced. This aspect plays an essential role in the quality of instruction provided by the teachers, particularly in a public science high school. The Enhanced Basic Education Act of 2013 declares that "...the state shall create a functional basic education system that will develop productive and responsible citizens equipped with the essential competencies, skills, and values for both life-long learnings... In support of this, Caballes and Andino (2020) concluded that the instructions given by the school to the learners greatly influence their learning. Dacumos and Kita (2021) also added that the Curriculum in a science high school fosters a research culture among learners, creating critical thinkers and problem-solvers, preparing them to be globally competitive STEM professionals in the future;

thus, the practices to sustain a quality education must be sustained and continue to be uplifted.

The school being in the School-Based Management Level III, align its practices accordingly in consideration of all the indicators in the different principles, particularly in the Curriculum and Instruction. Some of their best practices in Curriculum and Instructions includes a list of awards and recognitions achieved by the school in the different academic contest at the division, region, and national level, active involvement of both students and teachers in different activities outside the school, development of different contextualized learning materials and enrichment programs and circulation of these outside the school, researches on content and pedagogy, active involvement of stakeholders in different activities related to the quality of instructions among others.

Table 3.1 Correlation Analysis between Highest Educational Attainment and Overall Practices of Teachers in Curriculum and Instructions (n=32)

Variables	Pearson Coefficient	Sig. Value	Interpretation	Decision to H ₀
Highest Educational Attainment*Overall Practices of Teachers	0.478	0.002	Significant	Reject

Table 3.1 reveals the correlation analysis between the highest educational attainment and overall practices of teachers in Curriculum and instructions. This implies that a significant relationship exists between the highest educational attainment and overall practices of teachers in Curriculum and instructions ($r = 0.478$, $p = 0.002 < 0.05$). Hence, the null hypothesis is rejected. Furthermore, the correlation coefficient indicates a moderate positive relationship between the two variables. It is similar to the findings of Galiza (2018) that the teachers' professional development was significantly related to their content knowledge and practices. It is further strengthened by the

claim of Zhang (2008) that teachers are possessing advanced degrees in education significantly and positively influenced student achievement.

Teachers learning experiences and insights from their graduate programs influence them positively and inspire them to apply some same strategies and techniques in their classes. Their knowledge of content pedagogy deepened, thus helping them to provide a more comprehensive explanation of the related content when facilitating it to their learners.

Table 3.2 Correlation Analysis between Provision for the development needs of learners and Review, improvement, and contextualization of assessment tools for teaching and learning as practices of teachers in the Curriculum and Instruction (n=32)

Variables	Pearson Coefficient	Sig. Value	Interpretation	Decision to H ₀
Provision for the development needs of learners * Review, improvement, and contextualization of assessment tools for teaching and learning	0.449	0.010	Significant	Reject

Table 2 reveals the correlation analysis between the provision for the development needs of learners and the Review, improvement, and contextualization of assessment tools for teaching and learning as teachers' practices in the Curriculum and instruction. This implies that there is a significant relationship that exists between the identified variables ($r = 0.449$, $p = 0.010 < 0.05$). Hence, the null hypothesis is rejected. Furthermore, the correlation coefficient indicates a moderate positive relationship between the two variables. This can be further supported by Price (2011), suggesting that the contextualization of assessment tools, particularly in the 21st-century classroom, can positively impact several key areas in the educational reform, including the students' capability, skills, engagement, and metacognition as these become a common practice in developed countries. With this, OECD (2008)

emphasized that the work of providing the needs of the learners, learning, and assessment goes hand in hand to ensure higher quality education.

The pandemic brought many challenges to both learners and teachers. The school employed blended distance learning during the two years of the new normal; however, it cannot be denied that there are still learners who have no access to the internet; thus, the teachers made some solutions such as providing a copy of the lesson recording, printing of worksheets and other learning materials exclusively for learners with connectivity problems. Competencies in learning areas that were not met satisfactorily were emphasized during the enrichment week to bridge gray areas and misconceptions about the topic.

Table 3.3 Correlation Analysis between Regular collaboration of the Learning System and Review, improvement, and contextualization of assessment tools for teaching and learning as Practices of Teachers in Curriculum and Instruction (n=32)

Variables	Pearson Coefficient	Sig. Value	Interpretation	Decision to H ₀
Regular collaboration of the Learning System * Review, improvement, and contextualization of assessment tools for teaching and learning	0.430	0.014	Significant	Reject

Table 3.3 reveals the correlation analysis between the regular collaboration of the learning system and the Review, improvement, and contextualization of assessment tools for teaching and learning as teachers' practices in Curriculum and instruction. This reveals that there is a significant relationship that exists between the identified variables ($r = 0.430$, $p = 0.014 < 0.05$). Hence, the null hypothesis is rejected. Furthermore, the correlation coefficient indicates a moderate positive relationship between the two variables. A similar finding of Meijer (2020) that the improvement of assessment tools was significantly related to the learning system that must be worked collaboratively. He also suggested that the teachers reflect on the current assessment practices using the current information considering the context of education. It also agrees with the claims of Le (2016) that collaboration should transpire from teachers to students, particularly on the assessment tools that must be shared with the stakeholders, including the learners.

A big difference in educational setup happened during the new normal. Assessments were no longer done face to face, actual, or through printed materials but electronically and virtually through the use of google forms, zip grades, and other virtual forms of assessment. The grading system also changed; it only consisted of two parts-written works and performance tasks. These are all some of the changes in the case of assessment review and improvement done in consideration of the context of new normal education, which was also communicated to the parents and students through the general orientation at the beginning of the school year and as part of quarterly homeroom parents and teachers meeting. Feedback and concerns of parents and students are communicated and appropriately addressed.

IV. CONCLUSIONS

The study is focused on the teachers' practices in the Curriculum and instruction. The teachers in a public

science high school are smaller in number, as revealed by the policy on student and teacher ratio used in all public secondary schools. This may tend to affect the professional growth of teachers, such as promotion in their plantilla position, where it would be more favorable for a public science high school to have a separate policy on the merits and promotion of their teachers. The institution is classified as School-Based Management Level III can be manifested by teachers' overall level of practice in Curriculum and instruction denoted as highly practiced.

This study was delimited to the indicators of teachers' practices in curriculum and instruction school (development needs of learners, collaboration in the learning system, Review and improvement of assessment tools, and learner-centered and inclusive education). Since teachers' practices in Curriculum and instructions are all described as highly practiced, these should be sustained as the school's best practices. At the same time, the school may impose sustainability and enrichment of existing best practices to ensure more efficient practices and learning outcomes in the Curriculum and instruction.

Teachers' interest in attending graduate programs is a significant predictor of the level of practices of teachers in Curriculum and instruction; schools should continue to encourage teachers and cultivate a positive attitude and culture of support to pursue and finish their programs. During this pandemic, teachers did not fail to sustain their highly practiced level of practice in Curriculum and instructions. Any support that may be given to them, including instructional and professional support, matters to enhance their self-development and have an enormous bottom-line impact on their roles and responsibilities in the organization.

For future researchers, other indicators in the Curriculum and instructions such as localization of Curriculum, development of creative thinking and problem-solving skills of students, among others, may be studied, including other principles of the School-Based Management of the school.

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