

PRE-SERVICE SCIENCE TEACHERS' TEACHING COMPETENCE IN A NEW NORMAL LEARNING ENVIRONMENT

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Abstract. The Covid-19 pandemic has had a massive effect on education. The education sector quickly transforms its curriculum to address the need of both teachers and students. Online learning has become the mode of instructional delivery; however, not everyone can fully participate in and benefit from this modality. A similar experience has taken place with the Pre-Service Teachers doing their teaching internship. In the Philippines, a teaching internship is a required component of all teacher education programs. Student teachers must undergo practice teaching in a real classroom setting. Due to the transition of instructional delivery from face-to-face to online learning, Pre-service teacher need also to adapt to this. They have to observe classes online and perform their teaching demonstrations remotely. Hence, this study aimed to determine the perceived teaching competency of the pre-service science teachers in terms of pedagogical skills, student performance assessment skills, and classroom management skills. It also described the teaching internship performance level in the new learning environment. Furthermore, this also served to investigate the significant relationship between perceived teaching competency and teaching internship performance of Pre-service Science Teachers. This study employed a descriptive-correlational design. It was conducted on 55 Pres-service Science Teachers in one of the Teacher Education Institutions (TEIs) of Iligan City, Philippines. The findings of the study indicated that pre-service science teachers were perceived to be very competent in their pedagogical skills, student performance assessment skills, and classroom management skills. Moreover, there was a significant relationship between the teaching internship performance level and their perceived teaching competency in terms of their pedagogical skills.

Keywords: Pedagogical, Competency, Assessment, Internship

INTRODUCTION & OBJECTIVES OF THE STUDY

In the Philippines, a teaching internship is a required component of all teacher education programs. Student teachers must undergo practice teaching in a real classroom setting. Individuals who are enrolled in teacher education and training programs to prepare them for future roles as educators are referred to as pre-service teachers. However, the role of pre-service teachers is becoming increasingly challenging as the education system shifts its instructional delivery from face-to-face to online learning generally known as the new normal learning environment (Hodges et. al., 2020). In this new normal learning environment, pre-service teachers must have a variety of competencies to effectively facilitate student learning and support learners' changing needs via online learning classrooms. They need to adapt to the new mode of learning delivery. They have to observe classes online and conduct their teaching demonstrations remotely (Hill, 2021; Bai, 2022).

On the other hand, many students have suffered learning loss as a result of school closures and the shift to remote learning, particularly disadvantaged students who lack access to digital resources and the internet (Engzell et. al., 2021). With a poor learning environment at home, students cannot benefit from or fully participate in remote learning (Rotas & Cahapay, 2020). The immediate transition of instructional delivery from face-to-face to remote learning has neglected an unpleasant learning environment, which may have an influence on student performance. Furthermore, students complained that remote learning schedules interfered with their home responsibilities. This type of disruption is typical in remote learning since students are obliged to participate. According to Chang & Fang (2020), creating an appropriate learning environment has always been a challenge in remote learning, especially in how to maintain students' learning



attention since the majority of them come from low-income families. If this problem persists, students' productivity and attentiveness will face additional challenges that must be addressed.

With the online learning platform, Naila and Sadida (2020), found out that a single student, alone, and typically only one engaged in the form of lectures or presentations at home had a big impact on how well pre-service teachers performed in the areas of motivation, enthusiasm, and understanding. More than half of the study participants acknowledged that adjusting to online learning methods was challenging when they were more accustomed to face-to-face learning. This made it difficult for them to complete a task assigned by the supervising teacher because they were unable to discuss it with their peers in real time or use a hands-on approach.

In addition, SEAMEO (2010) states that teachers should have acquired the necessary knowledge and skills to improve their teaching performance. Also, the Philippine Professional Standard for Teachers (PPST) is ensuring that pre-service teachers are fully equipped with relevant skills and that they are ready to partake their knowledge to the learners, and by experiencing the actual teaching, PPST is confident that this will produce high-quality and fully equipped state-of-the-art teachers.

Based on our review of related literature and studies, we have found that the previous studies focus on the pre-service teachers' teaching competence in a work-based learning environment. Most of the respondents are non-science majors. Hence this study aimed to determine the teaching internship performance and the perceived level of teaching competence of pre-service science teachers in terms of pedagogical skills, student performance assessment skills, and classroom management skills. It also aimed to determine the relationship between the two variables.

METHODOLOGY

This section discusses the methods and procedures used in this study. It includes the research design, participants, research instruments, and data analysis used in the conduct of this research.

RESEARCH DESIGN

This study used a descriptive-correlational design. It is used to describe the teaching internship performance and the perceived level of teaching competence of pre-service science teachers in terms of their pedagogical skills, student performance assessment skills, and classroom management skills. It is correlational because it examines the correlation between pre-service science teachers' teaching internship performance and their perceived level of teaching competence.

PARTICIPANTS

The participants of the study were the fifty-five (55) science pre-service teachers enrolled in the Bachelor of Elementary Education with a specialization in Science and Mathematics for the academic year of 2021-2022.

RESEARCH INSTRUMENTS

There are two instruments used in this study. The first is the "Pre-service Teacher's Teaching Observation Rating". It was used to determine the teaching internship performance of the respondents. The second instrument is the "Pre-service Teachers' Teaching Competence" which was used in the study by Padagas (2019). This instrument was mainly used in the work-based learning environment. It was modified to fit the new normal learning environment. Some terms were changed into simpler forms and skills not applicable during the pandemic were removed. The internal reliability coefficient for this instrument was .86. To increase its validity & reliability, the modified instrument went content validation from the experts in the Department of Professional Education.

DATA ANALYSIS

Mean, frequency and percentage were used to describe the quantitative data, particularly the teaching internship performance and the perceived level of teaching competence of pre-service science teachers in terms of pedagogical skills, student performance assessment skills, and

classroom management skills. The 5-point scale (scored from 5=very competent, 4=competent, 3=somewhat competent, 2=somewhat incompetent, 1=incompetent) was used to interpret the variables being measured. Additionally, Spearman Rank Correlation was used to examine the association between the two ranked variables. To determine the strength of correlation, the following categorization is used.

TABLE 1. Guideline for Interpreting Spearman Ranked Correlation^a

Range	Interpretation
0.00 to 0.20	Negligible Correlation
0.21 to 0.40	Weak/Low Correlation
0.41 to 0.60	Moderate Correlation
0.61 to 0.80	High/Strong Correlation
0.81 to 1.00	Very High/Strong Correlation

^aSource: Prion and Haerling (2014)

RESULTS AND DISCUSSION

This part presents the analysis and interpretation of the data gathered. It consists of two sub-sections. The first sub-section describes the teaching internship performance and the perceived level of teaching competence of the Pre-service Science Teachers while the second sub-section discusses the correlation between the two variables.

Teaching Internship Performance and Perceived Level of Teaching Competence

This sub-section presents the teaching internship performance and the perceived level of teaching competence of the pre-service science teacher in terms of pedagogical skills, student performance assessment skills, and classroom management skills.

TABLE 2. Teaching Internship Performance

Rating	f	%	Mean	Qualitative Description ^a
1.00-1.25	46	83.64		
1.50-1.75	9	16.36		
2.00-2.25	-			
2.50-2.75	-		1.22	Excellent
3.00	-			
INC	-			
5.00	-			

Note: a. N=55


^aScale: 1.00-1.25=Excellent; 1.50-1.75=Very Good; 2.00-2.25=Good; 3.00=Passing; Below 3.00 but above

5.00=Incomplete; 5.00=Failed

Table 2 shows the data results of the teaching internship performance of pre-service science teachers. As shown, the performance of the pre-service science teachers in their teaching internship during Covid-19 is excellent. This means that despite the pandemic, the science student teachers have demonstrated exceptional performance in terms of the skills expected from them as a teacher. It also implies that their tedious preparation before the pandemic allowed them to develop mastery in teaching their specialization. They are able to effectively & efficiently complete their tasks and assignments. According to Minor, Onwuegbuzie, Witcher, & James (2002), pre-service teachers are trained to be topic specialists who can select, arrange, and deliver content and can modify their teaching tactics based on the student's needs.

TABLE 3. Perceived Level of Teaching Competence as to Pedagogical Skills

Indicators	Mean	Qualitative Description ^a
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Give concise but clear directions for students to follow	4.67	Very Competent
Use of appropriate resources and available technologies when teaching to suit students' abilities, interests, and learning styles	4.64	Very Competent
Using up-to-date lessons during the instructional process	4.60	Very Competent
Formulate goals and measurable objectives based on a prescribed national and/or school curriculum	4.56	Very Competent
Prepare clear and effective lesson plans and learning programs based on textbooks, manuals, and other learning materials	4.49	Very Competent
Encouraging students to self-study	4.45	Very Competent
Teach lessons in a sequential and appealing manner while taking into account students' learning	4.44	Very Competent
Use an instructional medium that is appropriate for the students' understanding	4.44	Very Competent
Assess my students' learning outcomes/ performance based on the learning objectives	4.44	Very Competent
State SMART objectives of lessons and identify skills that the students need to master in relation to past and future lessons	4.42	Very Competent
Explain concepts, terms, vocabulary, and principles related to lessons clearly and provide examples when necessary	4.40	Very Competent
Instruct my students by mastering the content of my subject matter	4.40	Very Competent
Create innovative instructional strategies that are appropriate to a lesson's objectives and students' abilities, interests, and learning styles	4.36	Very Competent
Set learning objectives and outcomes that are relevant to the students' real-world situation	4.36	Very Competent
Knowing my student's abilities, interests, and learning styles	4.35	Very Competent
Figure out how my students learn and how to teach them effectively.	4.33	Very Competent

Note: a. N=55


^aScale: 5 (4.21-5.00)=very competent; 4 (3.41-4.20)=competent; 3 (2.61-3.40)=somewhat competent;

2 (1.81-2.60)=somewhat incompetent; 1 (1.00-1.80)=incompetent

Table 3 presents the perceived level of teaching competence of pre-service science teachers in terms of their pedagogical skills in a new normal learning environment. As presented, the pre-service science teachers were perceived to be very competent in all the indicators of pedagogical skills. In this study, this type of skill includes the ability of the pre-service teachers to formulate SMART objectives, construct engaging learning activities, utilize different teaching strategies to accommodate learning needs, and develop assessment tasks that are aligned with the learning outcomes. The result implies that the pre-service science teacher is well equipped with this type of skill. According to SEAMEO INNOTECH's (2010) report on Teaching Competency Standards in Southeast Asian Countries, pedagogical skills are a substantial component of teaching competency. Moreover, the pre-service science teachers perform the standards set in the Philippine Standards for Professional Teachers (PPST), particularly in Domain 1: Content Knowledge & Pedagogy.

TABLE 4. Perceived Level of Teaching Competence as to Student Performance Assessment Skills

Indicators	Mean	Qualitative Description ^a
Systematically record students' achievements	4.47	Very Competent



Provide feedback about students' performance/output and make specific recommendations for improvement	4.42	Very Competent
Check students' understanding, processes, and products by asking comprehension questions and requiring practical application of skills	4.40	Very Competent
Assess students' progress in relation to the basic learning competencies identified in the national curriculum	4.38	Very Competent
Make use of authentic assessment forms	4.38	Very Competent
Use assessment results to determine if objectives were met and or if re-teaching is necessary	4.33	Very Competent
Measure students' progress systematically using a variety of appropriate assessment methods and instruments	4.16	Competent

Note: a. N=55

^aScale: 5 (4.21-5.00)=very competent; 4 (3.41-4.20)=competent; 3 (2.61-3.40)=somewhat competent;

2 (1.81-2.60)=somewhat incompetent; 1 (1.00-1.80)=incompetent

Table 4 describes the perceived level of teaching competence of pre-service science teachers in terms of student performance assessment skills. This type of skill pertains to the ability of the pre-service teachers to assess students' progress, check their understanding of the lesson, and provide feedback. As shown, pre-service science teachers were perceived to be very competent in nearly all indicators of assessing student performance in the new normal learning environment. This means that they were able to monitor the progress of their students and provide them with immediate feedback. According to Tawafak, Romli, & Alsinani (2019), the value of student assessment feedback is a major factor in enhancing teaching methods and improving academic performance. Moreover, the result implies that the pre-service teachers make use of the information gathered from assessment to make an instructional decision that best supports student learning and can increase academic achievement.

TABLE 5. Perceived Level of Teaching Competence as to Classroom Management Skills

Indicators	Mean	Qualitative Description ^a
Communicate clearly, correctly, and coherently	4.49	Very Competent
Demonstrate respect and consideration for all students	4.45	Very Competent
Support learning using group work and investigation	4.35	Very Competent
Communicate using a variety of languages	4.33	Very Competent
Promptly begin instruction and complete non-instructional duties with minimal loss of instruction time	4.31	Very Competent
Maintain an environment conducive to learning	4.29	Very Competent
Infuse in students the value of respect and honesty	4.29	Very Competent
Encourage students to be creative	4.29	Very Competent
Encourage less-able students to participate in class	4.27	Very Competent
Encourage student interaction	4.25	Very Competent
Encourage active and ensure equitable student participation by varying roles in the instructional process	4.24	Very Competent
Efficiently manage student behavior by ensuring that students cooperatively obey classroom rules and procedures	4.22	Very Competent
Establish and maintain a timeline for task completion	4.22	Very Competent

Demonstrate problem-solving, time management, 4.18 Competent
presentation, information-seeking, and basic
computing skills

Note: a. N=55

^aScale: 5 (4.21-5.00)=very competent; 4 (3.41-4.20)=competent; 3 (2.61-3.40)=somewhat competent;

2 (1.81-2.60)=somewhat incompetent; 1 (1.00-1.80)=incompetent

Table 5 depicts the perceived level of teaching competence of pre-service science teachers in terms of classroom management skills. Classroom management is used by teachers to describe the process of ensuring that classroom lessons run smoothly despite disruptive behavior (SEAMEO INNOTECH, 2010). In this study, it refers to the ability of the pre-service teachers to efficiently manage student behavior, encourage student interaction, and maintain an online environment that is conducive to learning during the pandemic. As shown, the pre-service science teachers were perceived to be very competent in nearly all indicators of classroom management skills. This means that the pre-service teachers were able to effectively manage and organize their classrooms in a way that it promotes a positive online learning environment. The finding is align with the standards set by the Philippine Professional Standards for Teachers (PPST), where the beginning teachers are expected to provide a fair learning environment, support for learner participation, promote purposive learning and manage learner behavior (DepED-TEC, 2017). Similarly, SEAMEO INNOTECH (2010) states that teachers must possess the ability to teach expectations, the ability to get and keep students on task, the ability to maintain a high rate of positive teacher-to-pupil interactions, the ability to maintain a high rate of risk-free student response opportunities, and the ability to address behavior problems that students have in the learning environment.

CORRELATION BETWEEN TEACHING INTERNSHIP PERFORMANCE AND TEACHING COMPETENCE

TABLE 6. Correlations for Study Variables

Variables Correlated with Teaching Internship Performance	r	Analysis	Significant	Decision
Pedagogical Skills	0.361**	Weak	.001	H0 not Accepted
Student Performance	0.268	Weak	.057	H0 Accepted
Assessment Skills				
Classroom Management Skills	0.151	Negligible	.272	H0 Accepted

**Correlation is Significant at the 0.01 level (2-tailed)

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

Table 6 shows that pedagogical skills and student performance assessment skills have a weak relationship with teaching internship performance while a negligible relationship is shown between classroom management skills and teaching internship performance. However, data showed that there is a significant relationship between the pedagogical skills of the pre-service science teachers and their teaching internship performance. This result is consistent with the findings of Lyonga, Moluayonge, and Nkeng (2021) although their study is more focused on techno-pedagogical skills and in-service teachers, but the similarity lies in the belief that pedagogical skills can influence teaching performance. Also, it should be noted that prior to the pandemic, the pre-service science teacher was already exposed to different strategies in teaching including technology integration and blended learning.

CONCLUSION

The findings revealed that pre-service teachers have a high level of perceived teaching competence. Furthermore, pre-service teachers were rated as excellent in their teaching internships. In the new normal, regardless of their teaching and learning modality or environment, the skills that are expected of a beginning teacher were acquired, observed, and evaluated during their internship period. Finally, the findings revealed that only pedagogical skills have a significant relationship with teaching internship performance as rated during the internship period and final teaching demonstration in a new normal learning environment.

REFERENCES

- [1] Bai, X. (2022). Preservice Teachers' Evolving View of the Impact of the COVID-19 Pandemic on Online Learning. *International Journal of Emerging Technologies in Learning (iJET)*, 17(04), pp. 212-224. <https://doi.org/10.3991/ijet.v17i04.25923>
- [2] Chang, C. and Fang, M. (2020). E-Learning and Online Instructions of Higher Education during the 2019 Novel Coronavirus (COVID-19) Epidemic. *J.Phys.: Conf. Ser.* 1574 012166. DOI 10.1088/1742-6598/1574/1/012166.
- [3] Department of Education - Teacher Education Council (2017). *Philippine Professional Standards for Teachers*. Retrieved from https://www.deped.gov.ph/wp-content/uploads/2017/08/DO_s2017_042-1.pdf
- [4] Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, 118(17), e2022376118. <https://doi.org/10.1073/pnas.2022376118>
- [5] Hill, J. B. (2021). Pre-Service Teacher Experiences during COVID 19: Exploring the Uncertainties between Clinical Practice and Distance Learning. *Journal of Practical Studies in Education*, 2(2), 1-13 DOI: <https://doi.org/10.46809/jpse.v2i2.18>
- [6] Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning.
- [7] Lyonga, N. A. N., Moluayonge, G. E., & Nkeng, A. J. (2021). A Study of Techno-Pedagogical Skills and Teachers' Performance in HTTTC Kumba, Cameroon. *European Journal of Education and Pedagogy*, 2(1), 46-50. <https://doi.org/10.24018/ejedu.2021.2.1.31>
- [8] Minor, L. C., Onwuegbuzie, A. J., Witcher, A. E., & James, T. L. (2002). Preservice teachers' educational beliefs and their perceptions of characteristics of effective teachers. *The Journal of Educational Research*, 96(2), 116-127.
- [9] Naila, I., & Sadida, Q. (2020). The Effects of Online Learning on Pre-Service Teachers' Social Facilitation during Covid-19 Pandemic. *PROCEEDING UMSURABAYA*.
- [10] Padagas, R. C. (2019). Pre-Service Teachers' Competencies in a Work-Based Learning Environment. *African Educational Research Journal*, 7(3), 130-142.
- [11] Rotas, E., & Cahapay, M. (2020). Difficulties in Remote Learning: Voices of Philippine University Students in the Wake of COVID-19 Crisis. *Asian Journal of Distance Education*, 15(2), 2020. <https://files.eric.ed.gov/fulltext/EJ1285295.pdf>
- [12] SEAMEO INNOTECH (2010). Teaching Competency Standards in Southeast Asian Countries: Eleven Country Audit, SEAMEO INNOTECH Regional Education Project (SIREP), Retrieved from <https://www.scribd.com/document/107124225/TeachingCompetency-Standards-in-Southeast-AsianCountries?cv=1>.
- [13] Tawafak, R. M., Romli, A. M., & Alsinani, M. J. (2019). Student assessment feedback effectiveness model for enhancing teaching method and developing academic performance. *International Journal of Information and Communication Technology Education (IJICTE)*, 15(3), 75-88.