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Pedagogical Knowledge of the Pre-Service Teachers of Ilocos Sur Polytechnic State College: A Framework for Intervention Plan

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Abstract

Pre-service teachers' pedagogical knowledge determines their readiness and competence as future educators in the field. This investigation generally assessed the pedagogical knowledge of the pre-service teachers of Ilocos Sur Polytechnic State College, along with teaching approaches and strategies, the preparation of the instructional materials, the curriculum, and classroom management. This study further looked into the significant difference in pedagogical knowledge between and among campuses of the college.The strengths and weaknesses were also determined as the basis for crafting an intervention plan. A descriptive design was employed with 220 respondents, who were identified through purposive sampling. An achievement test that consists of 15 items per component for a total of 60 items was used to measure their pedagogical knowledge. This instrument obtained a 0.70 reliability index. Analysis of data necessitates the use of mean, Anova, and Scheffe test. Findings indicate that pre-service teachers manifested low knowledge of the curriculum but were fairly knowledgeable on teaching approaches and strategies, preparation of instructional materials, and classroom management; notable differences in pedagogical knowledge between and among campuses exist; each campus revealed weaknesses; and the intervention plan is feasible to carry out and implement. Based on the results, it is strongly recommended that faculty who tackle these topics strategize how students can fully acquire and master them. The pedagogical knowledge intervention plan shall be initiated immediately to address their inadequacies.

Keywords: *Pedagogical Knowledge; Pre-Service; Curriculum; Instructional Materials*

Introduction

Future educators play a crucial role in shaping the minds of the students,thus,they should manifest adequacy of pedagogical knowledge.Their specialized knowledge and pedagogical knowledge for creating effective teaching,learning environments and desirable learning outcomes for students will be applied.

The teacher education curriculum in all Higher Education Institutions(HEIs) in the Philippines include teaching internship as one of the requirements for the degrees of Bachelor of Secondary Education (BSEd) and Bachelor of Elementary Education (BEEd) and other education programs.During their internship,pre-service teachers begin to act as a classroom teacher with the guidance of the cooperating teacher.

The Higher Education Institutions(HEIs) role in preparing their students to the world of work is a crucial task and a mandate under instruction.The quality of the students' performance during their practicum is a manifestation and a reflection of the desired learning outcomes set by the institution. Whether these outcomes have been achieved or not can be evidenced by the quality of graduates produced by certain HEIs.

The key factor to students' academic success in today's classrooms solely rely on teachers' content and pedagogical knowledge(Darling-Hammond ,2000).The teacher as an individual personality is an important factor in the learning environment. They are key factors that create a favorable teaching-learning milieu that will make the instructional process easy, enthusiastically adaptable and useful (Usman, 2016).Pre-service teachers should be equipped with good understanding of all those knowledge before they come to the field.(Freeman & Johnson ,2004).

Future educators encounter numerous difficulties as a result of the complexity and breadth of education today. Therefore, it is essential for future teachers to be highly prepared and competent as they are the basis of just and efficient educational systems.

Under CHED Memorandum Order number 104 series of 2017 stipulates that internship program purposely provides students the opportunity to complement their formal learning with practical knowledge ,skills and desirable attitudes and to gain hands on experience in recognized Host Training Establishment(THE).

For the students pursuing teaching as a profession, their fourth year in college/university is spent with their teaching practicum as a part of the curriculum.They are deployed in various schools in the province where HEIs are situated to experience teaching.In fact the Teacher Education Council(TEC) of the Department of Education(DepEd) conducted the orientation of the joint CHED-DepEd Memorandum Order on the Policies and Guidelines on the deployment of Pre-Service Teachers for Field Study and Teaching Internship.This joint circular primarily aims to ensure smooth deployment of field study and practice teachers.

It is essential to understand the difference between declarative and procedural knowledge from cognitive psychology as a theoretical foundation. Teachers' pedagogical knowledge base already contains all of the cognitive knowledge required to create effective teaching and learning environments. Understanding this method is essential for providing high-quality instruction.(Guerriero,n.d).Teachers cannot give what they do not have. Therefore a call is made to examine and review teacher preparatory programmes and other support arrangements in the educational system, to adequately prepare teachers for their emerging roles(Okogbaa(2017)

The quality of the teaching workforce has to be improved in order to enhance students' achievements. But such action does not guarantee to find and keep qualified teachers. This issue may be related to the pre-service teacher's acquisition of knowledge on the different pedagogies. Problem like this affects the caliber of the teaching manpower, which is ultimately responsible for enhancing student outcomes.

Ryan,Toohey and Hughes(1996) gave a broad overview of how the practicum has been conceptualized, implemented, and assessed in higher education. It focuses on the practicum's purpose and usefulness, as well as the practicum's relevance to a course's overall learning outcomes, and the

practicum's organization and placement within a course. The findings show that, while the practicum is largely regarded as a vital and successful component of professional education, it has a number of flaws, and that drawing definitive conclusions is difficult due to a dearth of high-quality research on the practicum.

The study of Standal et al.,(2013) aimed to know more about theory-practice relationships in physical education teacher education practicum.Results indicate that students' perceptions of theory and practice are fractured but they have a differentiated knowledge of what theory is. It came out also that University tutors play a little part in the practicum for students, and it is primarily up to the students to draw links between theory and practice.

The study of Malva et al.,(2019)on the other hand, determined how general pedagogical knowledge differs within the internship experience, level of education and work experiences. A knowledge test with 60 items was administered to 135 pre-service Estonians. Results indicate that pre-service who had not done their internship showed higher scores but a shift in pre-service teachers' knowledge when experiencing practical field.Konig et al., (2011)worked on cocluding the research gap among content knowledge(CK), pedagogical content knowledge (PCK), and general pedagogical knowledge (GPK). Results indicate that U.S. future teachers were outperformed by both the other groups. They showed a relative strength in one of the cognitive subdimensions, generating strategies to perform in the classroom, indicating that in particular they had acquired procedural GPK during teacher education.

Pinamang and Penrose(2017) investigated the pre-service teachers' content and pedagogical knowledge in teaching geometric transformation where respondents were the 82 pre-service teachers from the two Colleges of Education in the Ashanti region of Ghana.Through GTAT,the pre-service teachers' knowledge in content and pedagogical knowledge in geometric transformation. Were assesed.A high level of content knowledge but low level of pedagogical content knowledge among the pre-service teachers in geometric transformation was manifested as a result.

Xiaoting et al.,(2022)investigation of pedagogical decisions in encountering challenges in pre-service teachers' integrated-skills instruction and the factors influencing their responses to the challenges during their overseas Chinese teaching practice programme indicate students' inability to understand the target language instruction,low level of motivation and disengagement in communicative tasks, unsatisfactory performances in form-focused teaching, and classroom disciplinary issues.The findings further demonstrate that the contextual support from local schools was the main contributing factor that influenced these trainee teachers' pedagogical decisions in their integrated-skills instruction.The Pre-service teachers reported consistent use of the integrated-skills instruction in schools with enough support but the challenges remained unsolved in schools that lack a supportive environment.

The growing concern of every Higher Education Institution in producing quality teachers who bravely face the different challenges in education has to be solved. This research presents Pedagogical Knowledge intervention program as an output that will be based from the weaknesses of the pre-service teachers in the dimensions considered in this study such as knowledge of teaching approaches and strategies, preparation of instructional material, curriculum and classroom management. This part of the study has not been covered in the previous studies conducted along this topic. The gap analysis further indicates that the study concentrations were not covered in the previous studies.

Objectives

This purpose of this study generally aimed to assess the pedagogical knowledge of the pre-service teachers of Ilocos Sur Polytechnic State College. Specifically, it determined the following:

- level of pedagogical knowledge of the pre-service teachers along:
  - Knowledge of teaching approaches and strategies,
  - Knowledge on the preparation of instructional materials,

- Knowledge of the curriculum,and
- Knowledge of classroom management

- Significant difference between and among the level of pedagogical knowledge of the students of the six campuses
- Strengths and Weaknesses of the pre-service teachers on pedagogical knowledge
- Pedagogical knowledge Intervention Plan that can be proposed to enhance the pedagogical knowledge of the pre-service teachers

Literature Review

Along this study,Depaepe and König,(2018)investigated the correlation between general pedagogical knowledge (GPK), self-efficacy beliefs (SE), and reported instructional practice.It revealed that there was no evidence of a relationship between General Pedagogy Knowledge and Self-Efficacy. Furthermore, Self-Efficacy displays significant effect to all reported instructional practices that were evaluated,while GPK only predicted reported instructional practices that dealt with student assistance and structure.

The exploration of Ulla(2016) on the pre-service teacher training programs through the practicum experience revealed different standard policy of pre-service teacher training programs for BSEd, BA English and BSEd-English.Results also indicate some challenges in practicum teaching like classroom management, teaching confidence, and lack of teaching resources. Junker et al(2021) measured Professional knowledge, self-efficacy, professional vision, and performance of 206 pre-service and beginning teachers. As a result, medium to high levels of classroom management competence were found. Although self-efficacy and knowledge were partially associated with professional vision, professional vision has no bearing to performance.

Cenberci(2022)determined the knowledge of preservice teachers on material preparation process for mathematics lesson and their opinions on the points to consider in developing material. Results revealed that pre-service teachers focused mostly on *content/design* of the material among these sub-themes. It was found that priority order for the subthemes *material use* and *student* varied when looked both at knowledge on material preparation process and points that should be considered on material development. Differences in the priorities of the use on material preparation were observed.

The investigation of Quileste(2020)on pedagogical content knowledge of pre-service teachers in test construction,showed a fair pedagogical knowledge and need to improve in writing instructional objectives and constructing table of specifications.The respondents obtained good pedagogical knowledge in the majority of the objective-type tests, except in the construction of completion and multiple-choice test items.Konig(2016)determined the relationship between teachers' GPK and the quality of their instruction. As a result, teachers' GPK positively correlates with students' perceptions of effective classroom management, generic teaching methods/teacher clarity and teacher-student relationships. GPK is a significant predictor for instructional quality.

Napanoy et al.,(2021)determined the extent of difficulties encountered by the pre-service teachers and the degree of acceptability of the identified probable strategies that can be applied to address such difficulties.As a result, the pre-service teachers encounter slight difficulties in the seven support areas such as administrative support, cooperating teachers, student supervisors, peers, students, related tasks, and learning environment.Problems encountered by pre-service teachers vary from each field of specialization and the identified strategies are moderately acceptable to be used to address the difficulties of pre-service teachers.

One of the challenges that the student-teachers faced in their practicum teaching was classroom management. Since they were just practicing teachers, they did not have enough knowledge on how to manage a number of students in the class. This is the same result found by Gan (2013); Coskun (2013); and Yusof et.al (2014)who indicate that controlling the students' noise, dealing with misbehaviors, and the likes are just few of the problems experienced during their actual teaching. Some student-teachers found it difficult to start, to motivate and to prepare their students for the day's lesson since their students were not enthusiastic upon seeing them in the classroom.

Methodology

Research Design

This study is a quantitative research employing descriptive.Descriptive research,according to Calderon(2006) is an intentional process of collecting, evaluating, classifying, and tabulating information on current circumstances, practices, trends, and cause-and-effect linkages, and then providing a sufficient and correct interpretation of that information with or without, or occasionally with only a limited amount of assistance from statistical tools.

Research Setting

The study was conducted at Ilocos Sur Polytechnic State College particularly on the six campuses. These campuses offer teacher education courses and deploy pre-service teachers to various public schools in the 2nd district of Ilocos Sur.

Sampling

Total population sampling which is a type of purposive sampling where the whole population is of interest as they share the same characteristics.

Population and Locale of the Study

The 220 students who are officially enrolled in the BSED,BEED,BTBTED, BTLED and BPED programs served as the respondents of this investigation. These students are from the six campuses of the college.

Table 1.Population of the Study

CAMPUS	Number of Pre-service Teachers	TOTAL SAMPLING
Sta.Maria	67	67
Narvacan	10	10
Santiago	15	15
Tagudin	82	82
Cervantes	36	36
Candon	10	10
TOTAL	**220**	**220**

Data Gathering Procedure & Instrumentation

Data were obtained with the use of a pedagogical knowledge achievement test.The Achievement Test that consists of 60 items was used to measure the respondents' pedagogical knowledge on the four

dimensions. Each dimension consisted of 15 items. For the contents of the achievement test, the researcher constructed the items and adopted some of the items from Ibanez (2012). It was validated by five(5) experts and it was pilot tested and obtained a .70 reliability index.

The pedagogical knowledge achievement test was administered to the respondents and their scores were tallied. The respondents were given one (1) hour to finish the achievement test. The respondents took their achievement test inside their assigned classrooms.

Statistical Treatment of data

Mean was used to determine the level of pedagogical knowledge of the Pre-service teachers..It was also used to determine their strengths and weaknesses. ***Anova (Analysis of variance)*** was used to determine the significant differences of the pedagogical knowledge of the respondents between and among campuses. ***Scheffe test*** to determine which among the campuses had a significant difference.

Data Categorization

Knowledge of Teaching Approaches and Strategies, preparation of instructional materials, Curriculum, and Classroom Management.

Range of Scores	**Descriptive Rating**
13-15	Very High Knowledge (VHK)
10-12	High Knowledge(HK)
7-9	Fair Knowledge(FK)
4-6	Low Knowledge(LK)
1-3	No Knowledge(NK)

Range of Scores	**Descriptive Rating**
48-60	Excellent(E)
36-47	Good (G)
25-35	Average(A)
13-24	Poor(P)
1-12	Very Poor(VP)

Statistical limit for Strengths and Weaknesses

8-15 Strength
1-7 Weakness

Results ans Discussion

Table 2 shows the mean of the scores obtained by the pre-service teachers in Sta.Maria campus.

Table 2. The level of pedagogical knowledge of the pre-service teachers in Sta. Maria Campus along:

	Pedagogical Knowledge	Mean	Ddescriptive Rating
a.	Knowledge of teaching approaches and strategies	7.46	Fair Kknowledge
b.	Knowledge of the preparation of instructional materials	6.69	Fair Knowledge
c.	Knowledge of the curriculum	4.58	Low Knowledge
d.	Knowledge of classroom management	6.07	Low Knowledge
	OVERALL RATING	**24.80**	**Average**

As a result, the respondents obtained a mean of 7.46 on *knowledge of teaching approaches and strategies* described as *Fair Knowledge* while the lowest mean 4.58 was obtained by *knowledge of the curriculum with a* described as *Low Knowledge*.Over all,pre-service teachers of Sta.Maria campus obtained a mean rating of 24.80 described as *average*.This result implies that the expected competencies acquired by the pre-service teachers from their professional subjects are fairly met only.Pre-service teachers are supposed to have shown mastery on pedagogical knowledge when undergoing internship.Relative to this result,the study of Campbell et al. (2001) indicate that student-teachers who have developed deep (constructivist) approaches to learning are more likely to recognize the potential of constructivist teaching strategies for meaningful learning than those student-teachers with traditional learning approach (Surface approach),who tend to focus on the transmissive aspects of teaching and reproductive aspects of learning.Halamish(2018),suggests that pre-service and in-service teachers often have a poor understanding of the effectiveness of these strategies. It is recommended that explicit instruction about the benefits of empirically supported learning strategies should be included in teacher training programs and continuing professional development programs in order to encourage teachers to incorporate them into their teaching and promote them to their students.

Table 3. Table The level of pedagogical knowledge of the teachers in Narvacan Campus along:

	Pedagogical Knowledge	Mean	Descriptive Rating
a.	Knowledge of teaching approaches and strategies	4.80	Low Knowledge
b.	Knowledge of the preparation of instructional materials	4.30	Low Knowledge
c.	Knowledge of the curriculum	3.40	No Knowledge
d.	Knowledge of classroom management	3.90	Low Knowledge
	OVERALL RATING	**16.40**	**Poor**

The table shows the pedagogical knowledge of the pre-service teachers of Narvacan campus which indicates that on *Knowledge of teaching approaches and strategies*, they received a mean of 4.80. Their *Knowledge of the curriculum* described as *No Knowledge* obtained the lowest mean of 3,40. This result gives an immediate impression that the pre-service teachers of this campus do not manifest adequacy of knowledge on these pedagogies that it registered a *Poor* description for their overall performance.

Curriculum knowledge as knowledge aimed at teacher's reaching teaching materials and curriculum and using these resources most effectively (Shulman,1987) Furthermore, curriculum knowledge is addressed under two subcategories, knowledge aimed at students' purposes and targets which are required to be reached and knowledge aimed at concepts and materials included in the

curriculum, peculiar to the subjects to be taught (Baştürk and Dönmez, 2011). In other words, it can be stated that curriculum knowledge is an important kind of knowledge with respect to the teaching profession. Transformation of competence (knowledge, skill, and attitude) is another characteristic of current teaching practice. Learners are involved in realistic activities to develop their competence. Ample time and opportunities are given to develop their potentialities and interest and to achieve learning objectives(Mufidah,2019).

1. **Table 4.The level of pedagogical knowledge of the teachers in Santiago Campus along:**

	Pedagogical Knowledge	Mean	Descriptive Rating
a.	Knowledge of teaching approaches and strategies	5.73	Low Knowledge
b.	Knowledge of the preparation of instructional materials	4.80	Low Knowledge
c.	Knowledge of the curriculum	4.53	Low Knowledge
d.	Knowledge of classroom management	4.27	Low Knowledge
	OVERALL RATING	**19.33**	**Poor**

The result indicates that the respondents obtained a rating of 5.73 described as *Low Knowledge* on their *Knowledge of teaching approaches and strategies* while their lowest rating is on *Knowledge of Classroom Management* with a mean of 4.27. They also obtained a *low knowledge* on the other dimensions *Knowledge on the preparation of instructional materials* and *Knowledge of the curriculum* with means of 4.80 and 4.53 respectively. All these ratings lead to an overall rating of 19.33 described as *Poor.*

The findings indicate that the respondents manifest pedagogical knowledge inadequacy in all the dimensions. Strikingly, they show weakness on classroom management. This finding negates the result obtained in the study of Junker et al.,(2021)whose study assessed which classroom management aspects do pre-service and beginning teachers have struggle with and how they are associated with each other.The respondents revealed a medium to high levels of classroom management competence.

Further, result obtained in this study reconciles with Poznanski et al., (2018) who indicates that aalthough classroom management plays a major role in central teaching outcomes, studies show that pre-service and beginning teachers lack knowledge on classroom management. Classroom management includes all actions taken by teachers to maintain smooth and productive classroom settings, so as to maximize learning time (Doyle, 1986; Gettinger & Kholer,2018).

Table 5. The level of pedagogical knowledge of the teachers in Tagudin Campus along:

	Pedagogical Knowledge	Mean	Descriptive Rating
a.	Knowledge of teaching approaches and strategies	7.79	Fair Knowledge
b.	Knowledge of the preparation of instructional materials	7.89	Fair Knowledge
c.	Knowledge of the curriculum	4.89	Low Knowledge
d.	Knowledge of classroom management	6.46	Low Knowledge
	OVERALL RATING	**27.03**	**Average**

The table manifests that on their *Knowledge of the preparation of instructional materials*, the respondents are *Fairly Knowledgeable* with a mean of 7.89 while the lowest mean registered on their *Knowledge of the Curriculum* with 4.89. Over-all,the respondents show an *average* competence on pedagogical knowledge with 27.03 as a mean. Strikingly, result manifests that the respondents have inadequate knowledge of the curriculum.The result of the present study corroborates with the result obtained in the study of Sahin and Soylu (2017)who determined the Curriculum Knowledge developments of prospective teachers regarding algebra. It was observed that knowledge levels of the prospective teachers in terms of curriculum knowledge developed as directly proportional depending on the class level. The result also shows that the knowledge of prospective teachers in terms of curriculum knowledge was not at the desired level.

Students who adopt deep approach to learning have more systematic organization of ideas and are able to recall and apply easily the ideas or knowledge they have acquired into practice (Abedin et al.,2013).Student-teachers who have developed deep (constructivist) approaches to learning are more likely to recognize the potential of constructivist teaching strategies for meaningful learning than are student-teachers with traditional learning approach (Surface approach), who tend to focus on the transmissive aspects of teaching and reproductive aspects of learning (Campbell et al.,2001).

Table 6. The level of pedagogical knowledge of the teachers in Cervantes Campus along:

	Pedagogical Knowledge	Mean	Descriptive Rating
a.	Knowledge of teaching approaches and strategies	7.92	Much Knowledge
b.	Knowledge of the preparation of instructional materials	6.81	Fair Knowledge
c.	Knowledge of the curriculum	5.56	Low Knowledge
d.	Knowledge of classroom management	7.00	Fair Knowledge
	OVERALL RATING	**27.29**	**Average**

The result indicates that the respondents obtained a mean of 7.92 on *Knowledge of teaching approaches and strategies* being the highest described as *Much Knowledgeable* while the lowest was registered on their *Knowledge of the Curriculum* with a mean of 5.56 described as *Fairly Knowledgeable*. Thus,the respondents received an average level of pedagogical knowledge. Relative to the concept of teaching approaches and strategies, Borko and Livingston (1989) reported that in their study of mathematics teachers, expert teachers were able to use student responses and questions as springboards for further discussion and keep the lesson on track at the same time. They were able to maintain a balance between student-centeredness and content-centeredness. They were also able to generate on-the-spot examples and mathematical problems for illustration and clarification of concepts.

Table 7. The level of Pedagogical Knowledge of the Teachers in Candon Campus along:

	Pedagogical Knowledge	Mean	Descriptive Rating
a.	Knowledge of teaching approaches and strategies	6.60	Fair Knowledge
b.	Knowledge of the preparation of instructional materials	7.80	Fair Knowledge
c.	Knowledge of the curriculum	3.80	Low Knowledge
d.	Knowledge of classroom management	7.30	Fair Knowledge
	OVERALL RATING	**25.50**	**Average**

The table reflects that *knowledge of the preparation of instructional materials* received the highest mean of 7.80 described as f*air knowledge* while the lowest mean 3.80 is on their *Knowledge of the curriculum* described as *Low knowledge*. The overall result indicates an *average* performance of the

pre-service teachers on their pedagogical knowledge. The result implies that students of Candon campus manifest adequacy of knowledge on instructional materials preparation. Scholars like Okwelle and Allagoa (2014) emphasized that instructional materials provides teachers several advantages in teaching. Some of the advantages they mentioned are that they motivate learners for learning, enable teachers to deal with physical challenges, encourage learners to participate in lessons actively. The importance of teachers' being competent for selecting materials carefully, developing and using them skillfully. Only this way, they can benefit from better teaching and faster learning offered by instructional materials.Adelodun and Asiru (2015)revealed that the teachers are encouraged to always make use of instructional resources like audio, visual and audio-visual materials while imparting knowledge and students must as well pay attention in the class whenever instructional resources are being used for them in order to maximize their performance in English Language.

Table 8. The level of pedagogical knowledge of the pre-service teachers in all Campuses along:

	Pedagogical Knowledge	Mean	Descriptive Rating
a.	Knowledge of teaching approaches and strategies	7.17	Fair Knowledge
b.	Knowledge of the preparation of instructional materials	6.75	Fair Knowledge
c.	Knowledge of the curriculum	4.62	Low Knowledge
d.	Knowledge of classroom management	5.92	Fair Knowledgeable
	OVERALL RATING	**24.46**	**Average**

Table 8 presents the general pedagogical knowledge of the pre-service teachers campus wide.It appears that the respondents were rated to have *Fair knowledge* on their *knowledge of the teaching approaches and strategies* with a mean of 7.17 followed by *knowledge on the preparation of instructional materials* with mean of 6.75 described as *fair knowledge* also. The respondents performed lowly on their *knowledge of the curriculum* with a mean of 4.62 leading to an overall performance of *average.* Result implies a more constraint performance of the pre-service teachers rather than an excellent performance. It is expected that after their deployment,pre-service teachers were able to strengthen their knowledge in pedagogy through practice of the theories.Several studies stress the importance of the knowledge teachers hold, highlighting that in addition to assimilating academic knowledge, student teachers also need to integrate knowledge gained from experiential and practical experiences in the classroom.Relative to this result,Nesari & Heidari, (2014) emphasized the importance of learning materials in teaching, learning activities and in the attainment of increased student success. This was further strengthened by Shulman (1986) who recognized the importance of quaified teachers' creation and application of the most effective learning techniques in order to ensure that the concepts are understood by students.

Significant difference between and among the level of pedagogical knowledge of the students of the six campuses

Table 9 a.Analysis of Variance (ANOVA) on Significant Differences between and among Campuses

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	**1730.904**	**5**	**346.181**	**13.892**	**.000****
Within Groups	**5332.823**	**214**	**2.920**		
Total	**7063.727**	**219**			

****Highly Significant**

Table 9a indicates the analysis of variance(Anova) on significant differences between and among campuses.The results manifest a highly significant differences between groups.The result implies that the pedagogical knowledge obtained by pre-service teachers enrolled from the six campuses of the college vary.The result can be attributed to the fact that pre-service teachers possess varying backgrounds and exposures when it comes to their pedagogical knowledge acquisition.Pre-service teachers are under different professors who at the same time possess different teaching competencies. Learning environment can be a contributing factor as this is a provider of different learning experiences.

Table 9b.Multiple Comparison on Significant Differences between and among Campuses

Campus	Mean Difference	Significance
1-2	8.40597*	Significant
1-3	5.47264*	Significant
1-4	-2.23062	No significant difference
1-5	-2.47181	No significant difference
1-6	-69403	No significant difference
2-3	-2.93333	No significant difference
2-4	-10.63659*	Significant
2-5	-10.87778*	Significant
2-6	-9.10000*	Significant
3-4	-7.70325*	Significant
3-5	-7.94444*	Significant
3-6	-6.16667	No significant difference
4-5	-.24119	No significant difference
4-6	1.53659	No significant difference
5-6	1.77778	No significant difference

***The mean difference is significant at the .05 level**

Legend:

1 – Sta. Maria 2 - Narvacan 3 – Santiago4-Tagudin 5-Cervantes 6-Candon

Tables 9a and 9b display the multiple comparison on significant differences between and among campuses on the pedagogical knowledge of the pres-service teachers currently enrolled for the second semester of Academic Year 2023-2024.The results indicate that Sta.Maria Campus, Narvacan campus and Santiago campus performance on pedagogical knowledge have significant difference with a mean difference of 8.40597 and 5.47264 respectively. The pre-service teachers pedagogical knowledge is higher than the two campuses, Narvacan and Santiago. The latter,poor pedagogical knowledge. Findings also indicate significant differences between and among Narvacan Campus, Tagudin, Cervantes and Candon with means of 10.63659*,-10.87778* and -9.10000*.Narvacan campus obtained the lowest rating as compared the ratings obtained by Tagudin and Cervantes campus. Santiago displays significant differences on their pedagogical knowledge with Tagudin and Cervantes Campus. Of the three, Santiago campus obtained the lowest rating as compared to scores obtained by pre-service teachers enrolled in Tagudin and Cervantes campus. Results further manifests a no significant differences between and among Sta. Maria. these three campuses obtained an overall average performance. There exists no significant difference between Narvacan and Santiago campus. These two campuses obtained the lowest ratings described a poor performance. The results is an implication of varying performance of the pre-service teachers of their pedagogical knowledge. This could be attributed to the exposure of the pre-service teachers. School factors like learning environment, faculty competencies and resources can be a contributory to these results. Student factors like preparedness, ability to apply their learning among others can be contributory to this results.

Predictors of teacher quality have typically included factors such as class size, certification, type of qualification, degrees earned, or years of experience. Another, less studied, indicator of teacher quality is the pedagogical knowledge of teachers. Pedagogical knowledge refers to the specialized knowledge of teachers for creating effective teaching and learning environments for all students. This project focuses on the pedagogical knowledge base of teachers and the knowledge dynamics in the teaching profession in order to examine their implications for the instructional process and to derive evidence-based suggestions for educational policy(policyhttps://www.oecd.org/education/ceri/Background_document_to_Symposium_ITEL-FINAL.pdf).

Table 10. Strengths and Weaknesses of the pre-service teachers on pedagogical knowledge

Campus	Pedagogical Knowledge	Mean	Descriptive Rating
Sta.Maria Campus			
	Knowledge of teaching approaches and strategies	7.46	**Strength**
	Knowledge of the preparation of instructional materials	6.69	**Weakness**
	Knowledge of the curriculum	4.58	**Weakness**
	Knowledge of classroom management	6.07	**Weakness**
Narvacan Campus			
	Knowledge of teaching approaches and strategies	4.80	**Weakness**
	Knowledge of the preparation of instructional materials	4.30	**Weakness**
	Knowledge of the curriculum	3.40	**Weakness**
	Knowledge of classroom management	3.90	**Weakness**
Santiago Campus	Knowledge of teaching approaches and strategies	5.73	**Weakness**
	Knowledge of the preparation of instructional materials	4.80	**Weakness**
	Knowledge of the curriculum	4.53	**Weakness**
	Knowledge of classroom management	4.27	**Weakness**
Tagudin Campus			
	Knowledge of teaching approaches and strategies	7.79	**Strength**
	Knowledge of the preparation of instructional materials	7.89	**Strength**
	Knowledge of the curriculum	4.89	**Weakness**
	Knowledge of classroom management	6.46	**Weakness**
Cervantes Campus			

Knowledge of teaching approaches and strategies	7.92	**Strength**
Knowledge of the preparation of instructional materials	6.81	**Weakness**
Knowledge of the curriculum	5.56	**Weakness**
Knowledge of classroom management	7.00	**Weakness**
Candon Campus		
Knowledge of teaching approaches and strategies	6.60	**Weakness**
Knowledge of the preparation of instructional materials	7.80	**Strength**
Knowledge of the curriculum	3.80	**Weakness**
Knowledge of classroom management	7.30	**Strength**

Table 10 discloses the strengths and weaknesses of the pre-service teachers on their knowledge of pedagogy. The results indicate that almost all campuses display weaknesses on teaching approaches and strategies, preparation of instructional materials, curriculum and classroom management. Only Sta.Maria,Tagudin, Cervantes and Candon obtained a strength.Sta. Maria Campus obtained strength on teaching approaches and strategies, Tagudin displays strength on teaching approaches and strategies and preparation of instructional material, Cervantes obtained strength on the teaching approaches and strategies while Candon campus displays strength on the preparation of instructional materials and classroom management.

Teaching is unpredictable and contextualized as every class is a unique community on its own wherein both teacher and students having their personal preferences in teaching and learning respectively (Barnett & Hodson, 2001). An experience that is reflected upon is of value to teachers to improve their practice. To reflect, teachers have to question themselves on what they were doing, to monitor, to seek alternatives, to solve problems, to evaluate, to identify their weaknesses and strengths and make necessary adjustments for future teaching. Scholars believe that only teachers who do reflection over their own teaching are able to make changes to their teaching, thus improving their practice(Berliner,1987).

Pedagogical Knowledge Intervention Plan

Rationale

The general objective of this investigation is to determine the pedagogical knowledge of the pre-service teachers of Ilocos Sur Polytechnic State College on the four dimensions that were assessed in this study.

Ilocos Sur Polytechnic State College is one among the Higher Education Institutions (HEIs) in the province of Ilocos Sur that offer education courses. As apart of the curriculum, pre-service teachers are being deployed for the purpose of experiencing the real classroom teaching. It is expected, therefore, that during this deployment period, pre-service teachers are able to execute their pedagogical knowledge effectively and excellently.

Pre-service teacher education programs aim to prepare graduates to become quality teachers equipped with pedagogical practices that will serve to meet the increasing demands associated with the

teaching profession (Bransford, Darling-Hammond, & LePage, 2005). As indicated in the study of Meutia et.al (2018) microteaching have contributed positive impact on pre-service teachers‟ performance in field experience (real classroom setting). Besides, it requires improvement of all aspects pertaining teaching and learning curriculum, media, teaching approaches and techniques. Shulman (1987)on the other hand, argued that a teacher needed to have seven knowledge bases in order to teach effectively and successfully. The seven knowledge bases are content knowledge; general pedagogical knowledge; curriculum knowledge; pedagogical content knowledge; knowledge of learners and their characteristics; knowledge of educational contexts; and knowledge of educational ends, purposes, and values.

The weaknesses of the respondents on the dimensions considered in this investigation were the bases in formulating the intervention plan.It aims to enhance and reinforce their knowledge.

PEDAGOGICAL KNOWLEDGE INTERVENTION PLAN

Table 11.Proposed Pedagogical Knowledge Intervention Plan

Key Result Areas(KRA)	Objectives	Strategies	Persons Involved	Budgetary Requirement	Time Frame	Success Indicator
Knowledge on Teaching Approaches and Strategies	To deepen the pre-service teachers' understanding and appreciation of the teaching approaches and strategies	Conduct a Peer Mentoring Program Initiate a seminar workshop **Topics:** The Application of Teaching Strategies and Approaches in the field of teaching The Mastery of the teaching approaches and strategies through knowledge sharing	Pre-Service Teachers Faculty Speakers and facilitators	3,000	June	Mentored students
Knowledge on the preparation of instructional materials	To fortify their knowledge on the importance of instructional materials in the attainment of effective teaching	Guide the pre-service teachers to make a compilation of the instructional materials used during their micro teaching through portfolio **Topic:** The Importance of Instructional Materials in the Attainment of Lessons' Objectives	Pre-Service Teachers and Prof. Educ teachers & speakers	4,000	June	Enhanced Knowledge on the preparation of instructio nal materials
Knowledge of the curriculum	To strengthen and instill a deeper understanding of the curriculum	Initiate a lecture on the curriculum **Topic:** The Pre-service teachers and the curriculum	Pre-Service Teachers, Professors and speakers	5000	June	Strengthened knowledge on curriculum

Knowledge on classroom management	To characterize the dynamics of classroom management	To reenact the pre-service classroom management they applied during their deployment **Topic:** Light Camera Action: Classroom Management Strategies	Pre-Service Teacher participants Faculty,facilitators	5000	June	Effective Classroom managers

Conclusion and Recommendations

The results of this investigation revealed that the pre-service teachers demonstrated limited knowledge of the curriculum but were reasonably informed about teaching approaches and strategies, preparation of instructional materials, and classroom management. Notable differences in pedagogical knowledge between and among campuses exist. Pre-service teachers manifested deficiencies in their pedagogical knowledge of teaching approaches and strategies, preparation of instructional materials, curriculum and classroom management. These weaknesses served as bases in the crafting of a Pedagogical knowledge intervention plan. that is feasible to carry out and implement. With these results, pre-service teachers constraints shall be addressed immediately. The faculty handling subjects that tackle this pedagogical knowledge shall strategize how students can fully acquire and master them. The Pedagogical Knowledge Intervention Plan shall be implemented immediately to address their inadequacies.

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