

# Online Professional Learning Networks (OPLNs) Integrated to the Community of Inquiry (CoI) Model: Basis for Professional Development for Teachers

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**Date received:** August 13, 2024

**Date revised:** August 29, 2024

**Date accepted:** September 5, 2024

**Originality:** 88%

**Grammarly Score:** 99%

**Similarity:** 12%

## Recommended citation:

Cerna, L. (2024). Online Professional Learning Networks (OPLNs) integrated to the Community of Inquiry (CoI) Model: Basis for professional development for teachers. *Journal of Interdisciplinary Perspectives*, 2(10), 163-179. <https://doi.org/10.69569/jip.2024.0411>

**Abstract.** The findings of the Programme for International Student Assessment (PISA) revealed a significant concern: where Philippine school principals agreed or strongly agreed that teachers possessed the necessary technical and pedagogical skills to integrate digital devices into education, they also reported that a shortage of teaching staff hindered the school's capacity to provide instruction. This study assessed the perceived impact of Online Professional Learning Networks (OPLNs) integrated to the Community of Inquiry (CoI) framework on teacher professional development. Using a descriptive design, the study explored the impact of demographic profiles on OPLNs and their integration into the CoI model. The findings revealed that participation in OPLNs did not differ significantly based on respondents' demographic profiles. However, participation in OPLNs significantly impacted teaching performance, particularly in the CoI elements of "Teaching Presence" and "Cognitive Presence." However, the "Social Presence" element had no significant impact following OPLN integration. The prevalence of "Strongly Agree" ratings in the OPLNs sub-categories – Motivation, Design, and Sharing and Learning – highlighted OPLNs' effectiveness in promoting continuous learning and active participation among teachers. This suggests the vitality of ongoing professional development and positions OPLNs as effective tools for addressing issues such as limited opportunity for worldwide collaboration and interdisciplinary expertise. To receive the most benefits from OPLNs, educators and administrators should prioritize improving teaching and cognitive presence by encouraging critical thinking and facilitating organized discussions. These approaches have proven essential in improving educational outcomes and experiences. Furthermore, additional research should look into novel ways to improve "social presence" in OPLNs, such as including interactive elements, encouraging collaboration, and cultivating a supportive online community to increase learning satisfaction and engagement.

**Keywords:** Cognitive presence; Community of inquiry; Online professional learning networks; Teaching presence; Teachers professional development.

## 1.0 Introduction

In the rapidly evolving education landscape, the need for continuous professional development among teachers is paramount. With the surge in online education, exploring the impact of Online Professional Learning Networks (OPLNs) becomes essential for enhancing teacher competence in delivering quality instruction. One prominent pedagogical framework that aligns with this exploration is the Community of Inquiry (CoI) model (Garrison, 2018). The CoI model, emphasizing cognitive, social, and teaching presences, offers a comprehensive lens to assess and improve the online learning experience of teachers. Despite the growing interest in online professional learning, there is a notable gap in research regarding the efficacy of OPLNs, specifically in the Community of

Inquiry model. This gap hinders a nuanced understanding of how OPLNs can effectively contribute to teacher competence and ICT sustainability engagement in instructional quality.

In the 2022 Programme for International Student Assessment (PISA), a global study by the Organization for Economic Cooperation and Development (OECD), the Philippines was positioned at the 77th spot among 81 participating countries. The findings of PISA revealed a significant concern: the Philippines exhibited the highest percentage of children attending schools where the principal agreed or strongly agreed that teachers possessed the necessary technical and pedagogical skills to integrate digital devices into education. This statistic stood at 90.3%, ranking the Philippines third out of 78 in 2018. In the same report, 43% of students in the Philippines were in schools where the principal reported that a lack of teaching staff hindered the school's capacity to provide instruction. Additionally, 19% of schools cited inadequate or poorly qualified teaching staff as hindering effective instruction (PISA 2022 Results (Volume I and II) - Country Notes: Philippines, 2023). This change underscores evolving challenges in the education system, highlighting the need to address staffing issues to ensure a conducive student learning environment.

Meanwhile, according to an EDCOM II (n.d) report, many DepEd teachers are underprepared to deliver the K-12 curriculum effectively. Dicdiquin et al. (2023) suggested that teachers must improve their teaching practices to meet the K-12 Curriculum goals effectively. Professional development for teachers in the Philippines is crucial, as Ngoho and Pañares (2023) highlighted that building professional connections significantly influences teachers' performance. However, research findings have identified a significant barrier to effective teaching in the Philippines: teachers' lack of pedagogical skills. School leaders in the Philippines recognized this skills gap, citing its impact on teaching quality (Chin et al., 2022). A hierarchical multiple regression study by Chin et al. (2022) revealed that teachers' pedagogical and information technology skills are primarily influenced by their previous professional development activities and desire to apply active learning and creative instructional techniques. Furthermore, teachers receive limited training despite the obvious need for professional development. Tribunalo and Ortizo (2023) suggested that providing technical assistance and continuous professional development (CPD) through DepEd offices could address genuine competency gaps and pertinent training needs for teachers' professional development and advancement.

Pupils' high achievement is closely tied to teachers' pedagogical knowledge, content skills, and instructional practices. Numerous efforts have been made to enhance teacher performance through diverse professional development programs (Trust et al., 2016). Teachers seek continuous learning and professional growth, moving beyond traditional development programs to embrace synchronous and asynchronous learning facilitated by technology. Professional Learning Networks (PLNs) play a significant role in keeping educators updated with educational trends, providing a platform for advice, opinions, and discussions (Trust & Prestridge, 2021). As teachers navigate the challenges of online distance learning, Online Professional Learning Networks (OPLNs) serve as valuable resources for engaging professionally with contemporary teaching tools. The study explores different OPLNs that teachers use to cope with unique teaching-learning pedagogies, aiming to enhance the quality of the public education system. Fiock (2020) emphasizes that building online communities positively impacts student learning, involvement, and motivation.

This dynamic model for an institutional approach, as proposed by Garrison (2018), shifts away from passive lectures and enhances the educational experience through collaborative thinking and learning. Educators connect across geographical boundaries through OPLNs, sharing experiences and best practices and bridging the gap between traditional and innovative teaching methods. Educators innovate around classroom instruction and strive to move educational methods from the industrial age to the knowledge age. OPLNs provide valuable insights, professional development, and platforms for implementing personalized blended learning to meet the unique needs of learners. In a time when the field is focused on changing the educational model to personalize learning for all students, blended learning emerges as a crucial lever for schools.

The earlier statement supports educators' pedagogical approaches and substantially contributes to their ongoing professional development, with the goal of improving student outcomes. It is consistent with the targets outlined in the Professional Philippines Professional Standards for School Heads (PPSSH) and Philippine Professional Standards for Teachers. Specifically, it focuses on the core tenets of PPSSH strand 4.3, which emphasizes the

development of strong professional networks; PPST strands 4.4, which emphasizes the importance of collaborative practices to improve teaching methodologies; and 4.5, which emphasizes the integration of diverse teaching and learning resources, including the use of information and communication technology. The claim, which incorporates empirical evidence from the study, illuminates how educators understand and implement the key concepts and strategies delineated within the framework and provides helpful insights into the success of these strategies in real-world educational settings. By adhering to established standards and utilizing data-driven approaches, this endeavor serves as a beacon for advancing pedagogical excellence and fostering a culture of continuous improvement in the educational landscape. Given those challenges cited, there is a clear need to look for novel approaches for teacher professional development. When integrated with the Community of Inquiry model, online professional learning networks offer a promising approach to addressing these gaps, promoting an atmosphere of collaboration, sharing of expertise, and encouragement for the continuous professional growth of teachers.

The study's results are expected to enrich our comprehensive understanding by shedding light on how digital devices can be harnessed and how teachers' technical and pedagogical skills can be leveraged within the teaching-learning process. This exploration specifically delves into online professional learning networks, employing the Community of Inquiry model.

## **2.0 Methodology**

### **2.1 Research Design**

Descriptive research methods were used to observe, document, and analyze the interactions in these online communities. The study used descriptive research to provide an in-depth understanding of how educators engaged, collaborated, and learned in these online environments. This method enabled the systematic collection of qualitative data, such as participant interactions, discussions, and reflections, which were vital to figuring out the dynamics of knowledge creation and sharing within OPLNs. Through detailed descriptions and analysis, the research sought to uncover patterns, themes, and insights that illuminated the effectiveness and challenges of using CoI-based frameworks in online professional development settings. The descriptive methods used in this study provided valuable insights into how digital platforms might facilitate meaningful learning experiences and promote ongoing professional development among teachers.

### **2.2 Research Participants**

The study's respondents were elementary school teachers in Basic Education who were OPLN users in the Schools Division Office of Caloocan, Malabon, Navotas, and Valenzuela in the National Capital Region of the Philippines. One hundred two public elementary school teachers were the respondents. The fishbowl method of random sampling was employed to select the respondent schools. The names of the schools were written on pieces of typewriting paper of the same size, which were then rolled uniformly. These were placed in a transparent bowl and grouped by School Division Offices (SDOs). Each school was recorded in a notebook by the SDO. Additionally, a buffer of two schools per division was included in case any issues arose with the initially selected schools.

### **2.3 Research Instrument**

The main data-gathering tool for this study was an eight (8)-page survey instrument comprising three (3) sections: Respondents Demographics, Online Professional Learning Networks (OPLNs), and Community of Inquiry by Garrison. An adapted questionnaire from Dr. Garrison was used for the Community of Inquiry section, and an email permission request was sent. After receiving consent, the researcher revised the instrument to integrate online professional learning networks and ensure that the questions were appropriate for the local context. The instrument was validated by the following three (3) experts related to this study: (1) the Curriculum Implementation Division (CID) Chief, (2) the Public Schools District Supervisor, and (3) the Principal, who were OPLN users. Having earned considerable knowledge in this field, they contributed significantly to improving the instrument used in the study. Similarly, validators were requested to utilize the instrument form's validations, where they indicated their assessments and comments as they inspected each item in the instrument. Criteria regarding relevance, clarity of language use, and correctness were also considered. The final instrument tool was developed considering all expert comments, revisions, and modifications.

To test the instrument's reliability, the questionnaires were pilot-tested with thirty (30) elementary public school teachers in SDO-Valenzuela as respondents. The Cronbach alpha for the reliability test was 0.97, interpreted as excellent. Therefore, the questionnaire's consistency and reliability were considered and satisfied.

## 2.4 Data Gathering Procedure

After obtaining the necessary permissions, the researcher administered the online survey by providing a link in Google Forms. Upon clicking the submit button within the online survey, data were automatically encoded in Excel, making the retrieval process simple and convenient. The generated data drawn were tallied, tabulated, and prepared for statistical computations and analysis.

## 2.5 Ethical Considerations

This research adhered to ethical standards, ensuring the voluntary participation of respondents who could withdraw at any time if they felt uneasy. Measures were taken to protect participants from harm – be it physical, social, psychological, or otherwise – ensuring their dignity and well-being were upheld. Confidentiality of the research data was maintained throughout the study, safeguarding respondents' rights and preserving academic integrity. Also, proper communication practices were strictly followed to prevent plagiarism or research misconduct.

## 3.0 Results and Discussion

### 3.1 Demographic Profile of the Respondents

As shown in Table 1, most respondents were between 31 and 40, accounting for 31.37%. Nineteen respondents, or 18.63%, were in the 20–30 age bracket. In contrast, 21.57% of respondents were over the age of 51, while 28.43% were between the ages of 41 and 50. Teachers are essential in promoting information and communications technology in the teaching-learning process. This aligns with the research conducted by Mahdi (2013), which investigated the impact of a teacher's age, experience, and gender on the utilization of ICT in language instruction. The study concluded that no substantial variations in the use of ICT were observed between the two categories of teachers, considering their varying experience levels or age.

**Table 1.** Distribution of the respondents according to age

| Age                | Frequency  | Percentage    |
|--------------------|------------|---------------|
| 20 to 30 years old | 19         | 18.63         |
| 31 to 40 years old | 32         | 31.37         |
| 41 to 50 years old | 29         | 28.43         |
| 51 and above       | 22         | 21.57         |
| <b>Total</b>       | <b>102</b> | <b>100.00</b> |

As shown in Table 2, out of the 102 respondents, the distribution across different School Division Offices (SDOs) was as follows: SDO-Caloocan comprised 39 respondents, representing 38.24% of the total sample. Following closely, SDO-Valenzuela accounted for 31 respondents, constituting 30.39% of the sample. SDO-Malabon contributed 21 respondents, making up 20.59% of the total, while SDO-Navotas had 11 respondents, representing 10.78% of the sample. Notably, SDO-Navotas is among the four divisions in the CAMANAVA area and is classified as one of the smaller divisions within the National Capital Region.

**Table 2.** Distribution of the respondents according to division

| Division       | Frequency  | Percentage    |
|----------------|------------|---------------|
| SDO-Caloocan   | 39         | 38.24         |
| SDO-Malabon    | 21         | 20.59         |
| SDO-Navotas    | 11         | 10.78         |
| SDO-Valenzuela | 31         | 30.39         |
| <b>Total</b>   | <b>102</b> | <b>100.00</b> |

Table 3 presents the profile of the respondents according to the grade level assignment. The combined percentage for the Key Stage 1 (KS1), which consists of Kindergarten, Grades 1, 2, and 3, was 45.09%, with kindergarten receiving 8.82%, Grade One receiving 11.76%, Grade Two receiving 6.86%, and Grade Three receiving 17.65%. While in Key Stage 2 (KS2), Grade 4 had a response rate of 22.55%, Grade 5 was 16.67%, and Grade 6 was 15.69%, totaling 54.91%. Most respondents were in KS2, garnering a total percentage of 54.91%. This demonstrates that a significant number of our teachers in KS2 are active participants in online professional learning networks (OPLN).

They find that the OPLN is an excellent spot to collaborate with other professionals in an online platform that can aid their teaching careers.

**Table 3.** Distribution of the respondents according to grade level

| <b>Grade Level</b> | <b>Frequency</b> | <b>Percentage</b> |
|--------------------|------------------|-------------------|
| Kindergarten       | 9                | 8.820             |
| Grade 1            | 12               | 11.76             |
| Grade 2            | 7                | 6.860             |
| Grade 3            | 18               | 17.65             |
| Grade 4            | 23               | 22.55             |
| Grade 5            | 17               | 16.67             |
| Grade 6            | 16               | 15.69             |
| <b>Total</b>       | <b>102</b>       | <b>100.00</b>     |

One of the profile items is the educational attainment of the respondents. Table 4 shows that the Master of Arts with units got the highest share in the group, with 44 or 43.14%. In the second spot, a bachelor's Degree garnered 23.53% or 24 of the respondents, followed by Master's Degree holders with 18 or 17.65%, respectively. The least was PhD with units and PhD Degrees, with 10 and 6 respondents, or 9.80% and 5.88%, respectively. Nowadays, it is vital to consider obtaining degrees or postgraduate programs in addition to graduating from college, as this is the current trend in education. Consequently, most of the teachers who participated in the Online Professional Learning Network are pursuing a master's degree; the knowledge they gained in both graduate school and the online professional network enabled them to carry out their daily teaching and learning activities efficiently.

**Table 4.** Distribution of the respondents according to educational attainment

| <b>Educational Attainment</b> | <b>Frequency</b> | <b>Percentage</b> |
|-------------------------------|------------------|-------------------|
| BS Degree                     | 24               | 23.53             |
| MA w/ units                   | 44               | 43.14             |
| MA Degree                     | 18               | 17.65             |
| PhD w/ units                  | 10               | 9.800             |
| PhD Degree                    | 6                | 5.880             |
| <b>Total</b>                  | <b>102</b>       | <b>100.00</b>     |

The frequency and percentage distribution of respondents by teaching position are displayed in Table 5. Thirty-six (36) respondents, or 35.29%, occupied a position as a Teacher I, followed by twenty-seven (27) teachers, or 26.47%, who held a Teacher III position, and eighteen (18) teachers who were in a position as a Master Teacher I. In contrast, fourteen (14) respondents came from the rank of Teacher II, and only seven (7), or 6.86%, were in the higher rank of Master Teacher II, the teaching position with the highest compensation.

**Table 5.** Distribution of the respondents according to position/teaching rank

| <b>Teaching Position</b> | <b>Frequency</b> | <b>Percentage</b> |
|--------------------------|------------------|-------------------|
| Teacher I                | 36               | 35.29             |
| Teacher II               | 14               | 13.73             |
| Teacher III              | 27               | 26.47             |
| Master Teacher I         | 18               | 17.65             |
| Master Teacher II        | 7                | 6.86              |
| Master Teacher III       | 0                | 0.00              |
| <b>Total</b>             | <b>102</b>       | <b>100.00</b>     |

Table 6 displays the distribution of respondents based on their tenure in the teaching field. 40.20% of the respondents came from the 4-10 years employment span, while 25.49% were employed for about 16 years and above. However, 21.57% of them came from the group of 3 years and below. Consequently, thirteen (13) or 12.75 percent of the respondents belong to the 11 to 15 years of service group. The data conveys that even respondents who have been in the workforce for 16 years or longer were still able to understand and improve their contemporary skills and still interact with others through online professional learning networks for the benefit of their learners to deliver high-quality instruction and continue to meet the needs of our 21st-century learners.

**Table 6.** Distribution of the respondents according to the number of years in service

| Years              | Frequency  | Percentage    |
|--------------------|------------|---------------|
| 3 years and below  | 22         | 21.57         |
| 4 – 10 years       | 41         | 40.20         |
| 11 – 15 years      | 13         | 12.75         |
| 16 years and above | 26         | 25.49         |
| <b>Total</b>       | <b>102</b> | <b>100.00</b> |

Table 7 exhibits the respondents' usage of online professional learning networks regarding frequency and percentage distribution. It reveals that most of the respondents consisting of 74.51% or seventy-six (76), use OPLN daily. This is followed by 14.71% or fifteen (15) respondents, who claim to use an online professional learning network three to four (3-4) times per week. Twice a week obtained a percentage rate of 3.92% or four (4) respondents, and only one (1) of the respondents said that she/he is not using or integrating an online professional learning network in the teaching-learning process, which earned 0.98%.

**Table 7.** Distribution of the respondents according to the frequency of using an OPLN

| OPLN Usage         | Frequency  | Percentage    |
|--------------------|------------|---------------|
| Not used at all    | 1          | 0.980         |
| Once a week        | 4          | 3.920         |
| Twice a week       | 6          | 5.880         |
| 3 – 4 times a week | 15         | 14.71         |
| Daily              | 76         | 74.51         |
| <b>Total</b>       | <b>102</b> | <b>100.00</b> |

The data in Table 8 shows that 45 respondents, or 44.12% of the sample, spent an average of 3–4 hours per day using online professional learning networks. 36 (35.29%) of the respondents utilized OPLN for an average of 1-2 hours. Following that, fourteen (14) respondents, or 13.73%, engaged in an online professional learning network (OPLN) for an average of five to six hours. Only seven (7) respondents, or 6.86%, said they made the most of their time by participating in online professional learning networks, which take an average of 7-8 hours. Prenger et al. (2021) noted that participants reported spending about eight (8) hours per month working on PLN activities. The external coach pointed out that this group's collaboration was healthy, while the teachers said the environment was welcoming and optimistic.

**Table 8.** Distribution of the respondents according to the average time spent using OPLN

| Time         | Frequency  | Percentage    |
|--------------|------------|---------------|
| 1 – 2 hours  | 36         | 35.29         |
| 3 – 4 hours  | 45         | 44.12         |
| 5 – 6 hours  | 14         | 13.73         |
| 7 – 8 hours  | 7          | 6.86          |
| <b>Total</b> | <b>102</b> | <b>100.00</b> |

### 3.2 Assessment of Online Professional Learning Networks (OPLNs) Engagement Using Community of Inquiry

#### *In terms of Teaching Presence*

Table 9 clearly shows that a significant proportion of respondents rated their teaching performance as "Strongly Agree" after integrating OPLN into the teaching-learning process, as evidenced by the grand weighted mean of 4.46. This implies that after utilizing the Online Professional Learning Network (OPLN), their teaching performance improves in the "teaching presence" variable.

Two statements under the sub-variable "Design and Organization" within the teaching presence—Statement number 3, "Communicates important dates/time frame for learning activities," and item number 1, "Communicates important topics and goals"—achieved the highest mean scores of 4.51 and 4.50, respectively, corresponding to a verbal interpretation of "strongly agree." These findings suggest that collaboration with other professionals online enhances respondents' teaching presence by providing valuable information and learning experiences that greatly assist them in facilitating the teaching-learning process in their respective classes.

**Table 9.** Descriptive statistics of the assessment of OPLNs' engagement using CoI in terms of teaching presence

| Indicators                                                                                                   | Mean        | Interpretation        |
|--------------------------------------------------------------------------------------------------------------|-------------|-----------------------|
| <b>A. Design &amp; Organization</b>                                                                          |             |                       |
| 1. Communicate important topics and goals.                                                                   | 4.50        | Strongly Agree        |
| 2. Provide clear instructions on how to participate in OPLN.                                                 | 4.46        | Strongly Agree        |
| 3. Communicates important dates/ time frames for learning activities                                         | 4.51        | Strongly Agree        |
| <b>B. Facilitation</b>                                                                                       |             |                       |
| 4. Helps identify areas of agreement and disagreement on learning topics that help one another.              | 4.40        | Strongly Agree        |
| 5. Helps in guiding others towards understanding. That way, it helps clarify thinking.                       | 4.42        | Strongly Agree        |
| 6. Helps to keep others engaged and participate in productive dialogue.                                      | 4.46        | Strongly Agree        |
| 7. Helps keep participants on task in a way that helped me to learn.                                         | 4.46        | Strongly Agree        |
| 8. Encourages others to explore new concepts of learning.                                                    | 4.46        | Strongly Agree        |
| 9. Reinforces community engagements for development, among others.                                           | 4.46        | Strongly Agree        |
| <b>C. Direct Instructions</b>                                                                                |             |                       |
| 10. Helps to focus discussion on relevant issues in a way that helps one another.                            | 4.45        | Strongly Agree        |
| 11. Provides behavioral and performance feedback to help others adjust to weaknesses and maintain strengths. | 4.46        | Strongly Agree        |
| 12. Provides feedback promptly.                                                                              | 4.43        | Strongly Agree        |
| <b>Grand Mean</b>                                                                                            | <b>4.46</b> | <b>Strongly Agree</b> |

**Legend:** "Strongly Disagree (1.00 – 1.80)", "Disagree (1.81 – 2.60)", "Neutral (2.61 – 3.40)", "Agree (3.41 – 4.20)", "Strongly Agree (4.21 – 5.00)"

These results align with Martin et al. (2022), who emphasized the importance of design in fostering effective teaching presence. Specifically, designing for open communication and trust, facilitating critical reflection and discourse, and creating and sustaining a sense of community are crucial elements in enhancing teaching presence and facilitating meaningful online learning experiences. Six (6) items were obtained from the twelve statements with the same weighted mean of 4.46, which was verbally translated as "strongly agree." These statements are "Provides clear instructions on how to participate in OPLN," "Helps to keep others engaged and participate in productive dialogue," "Helps keep participants on the task in a way that helped me to learn," "Encourages others to explore new concepts of learning," "Reinforces community engagements for development among others," and "Provides behavioral and performance feedback to help others adjust to weaknesses and maintain strengths."

However, statement item number 10, "Helps to focus discussion on relevant issues in a way that helps one another," received a mean score of 4.45, and statement in item number 12, "Provides feedback promptly," had a mean of 4.43, item number 5 "Helps in guiding others towards understanding that way it helps clarify thinking" mean of 4.42. Statement 4, "Helps identify areas of agreement and disagreement on learning topics that help one another," garnered a mean of 4.40; the items statement indicated are verbally described as "strongly agree."

Central to the Community of Inquiry (CoI) framework, teaching presence improves cognitive and social engagement by encouraging student discussion and active learning. Stone and Springer (2019) emphasize its importance in online student engagement, calling for better design and delivery in educational institutions. Interviews promote establishing connections in virtual environments where student engagement can be challenging. Effective teaching presence, which is critical for social and cognitive development (Tolu, 2013, as cited in Bertz, 2021), has a strong correlation with student satisfaction, perceived learning, and community sense (Akyol & Garrison, 2008; Arbaugh, 2008; Shea & Bidjerano, 2009; Tolu, 2013, as cited in Bertz, 2021). According to the framework and learning environment procedures, teaching presence creates sharing and interaction among learners and educators, resulting in effective learning outcomes.

### *In terms of Social Presence*

Table 10 shows that most of the respondents' assessment of their teaching performance after integrating Online Professional Learning Networks (OPLNs) in the teaching-learning process in the component of "Social Presence" is "strongly agree," as manifested on the grand weighted mean, which is 4.25. This implies that their teaching performance improves after engaging in OPLN, particularly in the component variable of "social presence." The subcomponent of social presence variables is "affective expression," open communication," and group cohesion."

The three most significant statements that receive high mean scores are item 21, "Online community helps leverage support in ICT-based instructions in the teaching-learning process" ( $\bar{x}=4.30$ ), item number 13, "Gets to know others in an Online Community that gives me a sense of belongingness" ( $\bar{x}=4.29$ ), and item 14 "I was able to form distinct impressions to some of the participants" ( $\bar{x}=4.28$ ), which is all verbally interpreted as "strongly agree".

The results revealed that online community helps leverage support in ICT-based instructions in the teaching-learning process. To understand the content being delivered online, collaboration between the teacher and the student in social presence is essential (Nasir, 2020).

**Table 10.** Descriptive statistics of the assessment of OPLNs' engagement using Col in terms of social presence

| Indicators                     |                                                                                                         | Mean        | Interpretation        |
|--------------------------------|---------------------------------------------------------------------------------------------------------|-------------|-----------------------|
| OPLNs in Col (Social Presence) | <b>A. Affective expression</b>                                                                          |             |                       |
|                                | 13. Get to know others in an Online Community that gives me a sense of belongingness.                   | 4.29        | Strongly Agree        |
|                                | 14. I could form distinct impressions to some of the participants.                                      | 4.28        | Strongly Agree        |
|                                | 15. I agree that online or web-based communication is an excellent medium for social interaction.       | 4.25        | Strongly Agree        |
|                                | <b>B. Open communication</b>                                                                            |             |                       |
|                                | 16. I feel comfortable conversing through online mediums.                                               | 4.23        | Strongly Agree        |
|                                | 17. I feel comfortable learning with others in online community discussions.                            | 4.26        | Strongly Agree        |
|                                | 18. I feel comfortable interacting /learning with other participants in online community discussions.   | 4.26        | Strongly Agree        |
|                                | <b>C. Group cohesion</b>                                                                                |             |                       |
|                                | 19. I feel comfortable disagreeing with other participants while still maintaining a sense of trust.    | 4.13        | Agree                 |
|                                | 20. Online discussion helps me to develop a sense of collaboration.                                     | 4.24        | Strongly Agree        |
|                                | 21. Online community helps leverage support in ICT-based instructions in the teaching-learning process. | 4.30        | Strongly Agree        |
| <b>Grand Mean</b>              |                                                                                                         | <b>4.25</b> | <b>Strongly Agree</b> |

**Legend:** "Strongly Disagree (1.00 – 1.80)", "Disagree (1.81 – 2.60)", "Neutral (2.61 – 3.40)", "Agree (3.41 – 4.20)", "Strongly Agree (4.21 – 5.00)"

It has also been noted that other statements earned high mean scores from the respondents that will support the claims of the significance of OPLN in the component of "social presence" in the three (3) subcomponents that received a verbal description interpretation of "strongly agree," with the exception on item number 19 "I feel comfortable disagreeing with other participants while still maintaining a sense of trust" ( $\bar{x}=4.13$ ), under subcomponent "group cohesion."

After participants joined the Open and Professional Learning Network (OPLN), a thorough analysis revealed that within the social presence domain, the component of Group Cohesion received the lowest mean score among the three components. However, despite this, the mean score for Group Cohesion was 4.22, which is still interpreted as "strongly agree." This suggests that, even though Group Cohesion initially had the lowest mean among the social presence components, respondents generally expressed a high level of agreement regarding the effectiveness of group cohesion after their involvement in OPLN.

Lowenthal and Dunlap (2018) highlight the closely intertwined nature of a sense of belonging and commitment to a group with group cohesion, emphasizing its connection to the development of social presence, open communication, and emotional expression. This observation implies that respondents experienced an improvement in group cohesion following their engagement with OPLN, even if it was initially perceived as the least strong component. The high mean score of 4.22 indicates a positive shift in respondents' perceptions, reflecting a strong agreement that group cohesion was effectively enhanced through their participation in the professional learning network.

Other items in the social presence component of the community of inquiry model that were evaluated after the involvement of OPLN received the following mean scores: items 17, "I feel comfortable participating in learning with others in online community discussions," 18 "I feel comfortable interacting /learning with other participants in online community discussions" ( $\bar{x}=4.26$ ), 15 "I agree that online or web-based communication is an excellent medium for social interaction" ( $\bar{x}=4.25$ ), 20 "Online discussion helps me to develop a sense of collaboration" ( $\bar{x}=4.24$ ), and 16 "I feel comfortable conversing through an online medium" ( $\bar{x}=4.23$ ), all of the statements in that items are verbally describe as "strongly agree."

Engagement in an online professional learning network can profoundly affect teaching presence within the Community of Inquiry (CoI) framework. In line with research, PLNs increase teachers' motivation, satisfaction, and self-efficacy, boosting their teaching skills and practices (Zheng et al., 2023). The CoI framework illustrates the necessity of teacher presence in online collaborative learning environments (Ohayon, 2023). Besides social and cognitive presence, teaching presence is critical for instilling positive attitudes toward long-term remote learning (Burbage et al., 2023; Sun & Yang, 2023). Thus, participating in online professional learning networks can help



strengthen teaching presence within the CoI framework, resulting in improved instructional techniques, elevated self-efficacy, and more favorable perspectives toward learning.

### *In terms of Cognitive Presence*

Table 11 reveals that most of the respondents' assessment of their teaching performance after integrating OPLN in the teaching-learning process in the variable of Cognitive Presence is "Strongly Agree" as manifested on the grand weighted mean of 4.46. This indicates that their teaching performance has enhanced after integrating Online Professional Learning Networks (OPLNs).

**Table 11.** Descriptive statistics of the assessment of OPLNs' engagement using CoI in terms of cognitive presence

| Indicators                                                                                                                   | Mean        | Interpretation        |
|------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|
| <b>A. Triggering event</b>                                                                                                   |             |                       |
| 22. Problems posed increase my interest in OPLN issues.                                                                      | 4.39        | Strongly Agree        |
| 23. OPLN activities pique my curiosity.                                                                                      | 4.35        | Strongly Agree        |
| 24. I feel motivated to explore content-related questions.                                                                   | 4.45        | Strongly Agree        |
| <b>B. Exploration</b>                                                                                                        |             |                       |
| 25. I utilize a variety of information sources to explore problems posed in OPLN.                                            | 4.46        | Strongly Agree        |
| 26. Brainstorming and finding relevant information help me resolve content-related problems/issues.                          | 4.41        | Strongly Agree        |
| 27. Online discussions were valuable in helping me appreciate different perspectives.                                        | 4.41        | Strongly Agree        |
| <b>C. Integration</b>                                                                                                        |             |                       |
| 28. Combining new information helps me enhance my capabilities in supporting pedagogical instructions.                       | 4.57        | Strongly Agree        |
| 29. Learning activities help me construct various teaching materials that can be employed in teaching learning instructions. | 4.57        | Strongly Agree        |
| 30. Reflection on content and discussions helps me understand fundamental concepts in class interactions.                    | 4.52        | Strongly Agree        |
| <b>D. Resolution</b>                                                                                                         |             |                       |
| 31. I can demonstrate and apply this to my day-to-day teaching.                                                              | 4.48        | Strongly Agree        |
| 32. I have developed solutions to problems that can be applied in practice through OPLN.                                     | 4.44        | Strongly Agree        |
| 33. I can apply the knowledge gathered in OPLN to my day-to-day teaching /learning process.                                  | 4.43        | Strongly Agree        |
| <b>Grand Mean</b>                                                                                                            | <b>4.46</b> | <b>Strongly Agree</b> |

**Legend:** "Strongly Disagree (1.00 – 1.80)", "Disagree (1.81 – 2.60)", "Neutral (2.61 – 3.40)", "Agree (3.41 – 4.20)", "Strongly Agree (4.21 – 5.00)"

The cognitive presence has four (4) subcomponents, namely: "triggering event," "Exploration," "Integration," and "resolution." All statements under this variable received a verbal description interpretation of "strongly agree." Among the subcomponents, statements from "integration" receive a high mean response score. These statements come from item 28, "Combining new information helps me enhance my capabilities in supporting pedagogical instructions" ( $\bar{x}=4.57$ ), item 29, "Learning activities help me construct varieties of teaching materials that can be employed in teaching learning instructions" ( $\bar{x}=4.57$ ), and item 30 "Reflection on content and discussions helps me understand fundamental concepts in class interactions" ( $\bar{x}=4.52$ ). The belief that one can successfully use technology to complete a learning task is known as technological self-efficacy (Pan, 2020). Teachers frequently feel anxious when using new technical tools to teach (Larson et al., 2020). Lack of technological proficiency is one of the main personal difficulties for teachers (Herro et al., 2021).

Statements from the subcomponent "resolution" took the second rank; these are in item number 31 "I can demonstrate and apply this to my day-to-day teaching," with a mean of 4.48, item 32 "I have developed solutions to problems that can be applied in practice through OPLN" with a mean of 4.44, and item 33 "I can apply the knowledge gathered in OPLN to my day-to-day teaching /learning process" with a mean of 4.43. All three statements are verbally described as "strongly agree." According to Binder (2022), the type of eLearning media tools used can significantly affect social presence. According to Borba et al. (2018), online learning has an effect on involvement and interaction that is distinct from those in a physical environment. For instance, Lowenthal and Dunlap (2018) found that interactions and discussions in virtual educational settings enabled students to interact with fellow learners. However, some technologies and strategies were more well-liked for enhancing social presence than others.

The statements "Problems posed increase my interest in OPLN issues," "OPLN activities pique my curiosity," and "I feel motivated to explore content-related questions," each obtained a mean score of 4.39, 4.35 and 4.45, respectively, under the category "triggering event," which is verbally interpreted as "strongly agree." Additionally, the statements in the subcomponent "exploration" receive a mean of 4.46 and 4.41, in the statements "I utilize a

variety of information sources to explore problems posed in OPLN," "Brainstorming and finding relevant information help me resolve content-related problems/issues," and "Online discussions were valuable in helping me appreciate different perspectives" which was verbally interpreted as "strongly agree."

These findings show that the assessment mean result is at high levels in integration ( $\bar{x}=4.55$ ) and resolution ( $\bar{x}=4.45$ ). The same findings noted in the previous studies have been consistent with findings that student's actual cognitive presence frequently stayed at the low level of the exploration phase more than at the higher levels of integration or resolution phases (Bissessar et al., 2020; Galikyan & Admiraal, 2019; Kilis & Yildirim, 2019). On the contrary, other studies found that actual students' cognitive presence could stay at a higher level of integration and resolution; it depends on the assignment type, facilitation style, and delivery mode (Akyol & Garrison, 2008; Chen et al., 2019; Molnar & Kearney, 2017; Sadaf et al., 2020). Findings that cognitive presence could stay at higher integration and resolution phases are consistent across graduate and undergraduate students (Akyol et al., 2011; Olesova et al., 2016).

The cognitive presence variable was subdivided into four subcomponents: "triggering event," "exploration," "integration," and "resolution." Remarkably, all statements under these subcomponents received a verbal interpretation of "strongly agree." However, within these subcomponents, statements under "triggering event" received the lowest mean response, with a score of 4.39, still verbally described as "strongly agree." Noteworthy statements within this subcomponent include: "Problems posed increase my interest in OPLN issues," "OPLN activities pique my curiosity," and "I feel motivated to explore content-related questions."

This consistent "strongly agree" response across all cognitive presence subcomponents suggests high engagement and positive perception among respondents. Despite "triggering event" receiving the lowest mean score, the numerical value of 4.39 still indicates a strong agreement with the statements, emphasizing a strong positive response to elements related to generating interest, curiosity, and motivation in the context of OPLN issues. The statements within the "triggering event" subcomponent imply that respondents find challenges or problems posed within OPLN activities stimulating and motivating. This positive engagement is crucial for fostering a dynamic and active cognitive presence where participants are receptive and enthusiastic about exploring and resolving issues within the professional learning network.

Moore and Miller (2022) summarized the research, concentrating on strategies teachers can employ to foster students' cognitive presence. Reaching higher cognitive presence phases, such as integration and resolution, was uncommon, but Moore and Miller (2022) found it was still ideal. They confirmed that teachers must match their instructional goals with the learning outcomes at the proper levels of cognitive presence phase to encourage higher levels of cognitive presence phases. It should be noted that any instruction does not necessarily aim to raise cognitive presence levels; rather, the question is which learning goals, such as exploration or integration, will promote those levels of cognitive presence. Furthermore, to promote the growth of cognitive presence, Moore and Miller (2022) also suggested making clear involvement guidelines, identifying various methods to incorporate technology, and creating structured discussion forums.

### **3.3 Perceived Impact of Online Professional Learning Networks (OPLNs) Engagement**

#### ***In terms of Motivation***

Table 12 reveals that a computed grand weighted mean of 4.23 indicates that a considerable majority of respondents strongly agree that participation with Online Professional Learning Networks (OPLNs) positively improves the teaching-learning process in terms of "Motivation." The results indicate that teachers successfully apply OPLN-acquired knowledge in practice and see positive changes across teaching, social, and cognitive presences in their professional roles. Items 3 and 4, "I practiced what I learned from OPLNs and received a favorable rating from my Classroom Observation Tool (COT)" and "Following my participation with OPLNs, the three distinctive presences in my teaching profession changed," both earned a mean score of 4.24, categorized as "Strongly Agree."

**Table 12.** Descriptive statistics of the impact of OPLNs' engagement on the teaching-learning process in terms of motivation

| Indicators                                                                                                         | Mean        | Interpretation        |
|--------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|
| <b>A. Motivation</b>                                                                                               |             |                       |
| <b>Online Professional Learning Networks</b>                                                                       |             |                       |
| 1. I found online professional support that aids my daily teaching practices.                                      | 4.27        | Strongly Agree        |
| 2. My perspectives on the teaching strategy have changed due to OPLNs.                                             | 4.17        | Agree                 |
| 3. I practiced what I learned from OPLNs and received a favorable rating from my Classroom Observation Tool (COT). | 4.24        | Strongly Agree        |
| 4. Following my participation with OPLNs, the three distinctive presences in my teaching profession changed.       | 4.24        | Strongly Agree        |
| 5. Besides the knowledge I have gained through OPLNs, they have helped me advance professionally.                  | 4.25        | Strongly Agree        |
| <b>Grand Mean</b>                                                                                                  | <b>4.23</b> | <b>Strongly Agree</b> |

**Legend:** "Strongly Disagree (1.00 – 1.80)", "Disagree (1.81 – 2.60)", "Neutral (2.61 – 3.40)", "Agree (3.41 – 4.20)", "Strongly Agree (4.21 – 5.00)"

Item number 1, "I found online professional support that aids in my day-to-day teaching practices," had a mean score of 4.27 out of the items evaluated, indicating an overwhelming consensus among teachers regarding the importance of OPLNs in supporting their teaching roles. This indicates that teachers find Online Professional Learning Networks (OPLNs) valuable tools they may use to improve their teaching methods. Item number 5, "In addition to the knowledge I have gained through OPLNs, they have helped me advance professionally," received a mean score of 4.25, also classified as "Strongly Agree." This suggests that OPLNs are essential to career development and growth beyond simple knowledge acquisition and contribute significantly to teachers' professional advancement. Item number 2, 'My perspectives on teaching strategy have changed due to OPLNs,' received the lowest mean of 4.17 among the items in the variable under 'motivation,' suggesting a generally agreed-upon response. This indicates that OPLNs influence teaching strategies, although the extent of perspective change may vary depending on specific teaching situations and past experiences.

Ultimately, the high ratings for these categories show that OPLNs strongly impact teachers' motivation. The findings indicate how highly valued they are in offering helpful assistance, influencing instructional practices, encouraging professional growth, and having an advantageous impact on several areas of teachers' careers. These results demonstrate the transforming impact of OPLNs in inspiring and enabling teachers to achieve professional growth and excellence in their teaching practices.

Participating in Online Professional Learning Networks (OPLNs) significantly impacts the teaching and learning process, particularly regarding motivation. Studies conducted during the COVID-19 pandemic discovered that online learning faced challenges such as decreased student motivation due to unreliable Internet access and changes in teaching methods (Riyadi & Sudiyatno, 2023; Chouinard et al., 2022). Despite these challenges, online learning has been shown to increase student motivation, improve learning processes, and improve learning outcomes over time, demonstrating its long-term motivational benefits (Apoko & Sya'ban, 2022). Previous research has highlighted the critical role of motivation in online learning success, particularly in social sciences and vocational subjects, emphasizing its importance in promoting effective learning (Utami et al., 2023).

### *In terms of Design*

Table 13 shows that, with a computed weighted mean of 4.21, most respondents strongly agree that using Online Professional Learning Networks (OPLNs) has a favorable impact on the teaching-learning process in terms of "Design."

**Table 13.** Descriptive statistics of the impact of OPLNs' engagement on the teaching-learning process in terms of design

| Indicators                                                                                                                    | Mean        | Interpretation        |
|-------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|
| <b>B. Design</b>                                                                                                              |             |                       |
| <b>Online Professional Learning</b>                                                                                           |             |                       |
| 6. I gathered various classroom technological strategies after engaging with OPLN.                                            | 4.29        | Strongly Agree        |
| 7. When integrating technological platforms, I have learned from OPLNs that my pupils are eager to learn from the discussion. | 4.22        | Strongly Agree        |
| 8. I received awards and recognition as a result of integration into the teaching-learning process.                           | 4.13        | Agree                 |
| <b>Grand Mean</b>                                                                                                             | <b>4.21</b> | <b>Strongly Agree</b> |

**Legend:** "Strongly Disagree (1.00 – 1.80)", "Disagree (1.81 – 2.60)", "Neutral (2.61 – 3.40)", "Agree (3.41 – 4.20)", "Strongly Agree (4.21 – 5.00)"

The item with the highest mean score, "I gathered various classroom technological strategies after engaging with OPLNs" (item number 6), showed that teachers perceived OPLNs as helpful resources for learning and implementing new technological strategies. With a mean score of 4.22, item 7, "When I integrate technological platforms, I have learned from OPLNs, my pupils are eager to learn from the discussion," demonstrates how these tools actively engage students and improve instructional strategies. Item number 8, "I received awards and recognition as a result of integration into the teaching-learning process," had a mean score of 4.13, or "Agree," indicating that although a large number of teachers gain from online professional learning networks, there is a lack of The high overall results show that respondents generally agree that OPLNs have a positive design impact, especially when it comes to learning new digital skills and involving pupils. However, the lower agreement on awards and recognition emphasizes how important it is for educational institutions to properly support and value the efforts made by instructors to improve the teaching-learning process.

Table 13 highlights the essential part OPLNs play in providing teachers with useful technology tools and creating a stimulating learning environment. It also points out the possibility of increased institutional recognition and support for OPLNs. Online Professional Learning Networks (OPLNs) improve teaching-learning by encouraging active participation and collaborative design (Shively & Geesa, 2023). These networks provide teachers with ongoing and adaptable tools to create effective online learning environments that promote creativity, integrate arts, and foster active teaching practices (Anderson et al., 2022). Participating in design thinking exercises within these networks allows teachers to pinpoint challenges, generate solutions, and receive peer feedback, ultimately improving their skills in digital teaching and learning (Shively & Geesa, 2023). Furthermore, OPLNs use networked learning approaches to transform experiences, foster peer relationships, encourage innovative experimentation, and enable educator collaboration, resulting in more dynamic, self-reflective, and creative online learning environments (Vallis et al., 2022). This collaborative and novel strategy addresses challenges in online teaching and improves the overall effectiveness of creating online professional learning environments (Vallis et al., 2022).

### *In terms of Sharing and Learning*

**Table 14.** Descriptive statistics of the impact of OPLNs' engagement on the teaching-learning process in terms of sharing and learning

| Indicators                                    |                                                                                                                                   | Mean        | Interpretation        |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|
| <b>C. Sharing and Learning</b>                |                                                                                                                                   |             |                       |
| Online Professional Learning Networks (OPLNs) | 9. After joining one of the OPLNs, I learned most of the essential information that can be integrated into my teaching practices. | 4.30        | Strongly Agree        |
|                                               | 10. OPLNs influence my teaching strategies.                                                                                       | 4.19        | Agree                 |
|                                               | 11. OPLNs aid in the delivery of quality instruction during the teaching-learning process.                                        | 4.23        | Strongly Agree        |
|                                               | 12. Pupils' participation and achievement rate increase after involvement from OPLNs.                                             | 4.28        | Strongly Agree        |
|                                               | 13. OPLNs enhance my teaching, social, and cognitive presence as a teacher.                                                       | 4.24        | Strongly Agree        |
| <b>Grand Mean</b>                             |                                                                                                                                   | <b>4.25</b> | <b>Strongly Agree</b> |

**Legend:** "Strongly Disagree (1.00 – 1.80)", "Disagree (1.81 – 2.60)", "Neutral (2.61 – 3.40)", "Agree (3.41 – 4.20)", "Strongly Agree (4.21 – 5.00)"

Table 14 reveals a computed grand weighted mean of 4.25, which indicates a high degree of agreement among respondents that participation in Online Professional Learning Networks (OPLNs) significantly impacts the teaching-learning process in terms of "Sharing and Learning." Table 15 clearly shows that the majority of respondents strongly agree on this point. Four of the five statements assessed were rated as "Strongly Agree." The respondents' perceived benefits are reflected in the statements ranked based on their mean weighted averages. "I learned most of the essential information that can be integrated into my teaching practices after joining one of the OPLNs" was the highest-rated statement (item number 9), with a mean score of 4.30. This implies that OPLNs are an important source of pertinent and useful knowledge for educators.

Item number 12, "Pupils' participation and achievement rate increase after involvement from OPLNs," emphasizes the perceived beneficial impact on respondents' engagement and performance, with a mean score of 4.28. This implies that the advantages of OPLNs extend beyond the educators to their pupils, improving learning results all around. With means of 4.24 and 4.23, respectively, items number 13 ("OPLNs enhance my teaching, social and cognitive presence as a teacher") and number 11 ("OPLNs aid in the delivery of quality instruction during the

teaching-learning process") reveal that OPLNs are thought to improve teaching, social and cognitive presence, and assist in providing quality instruction. These responses highlight how OPLNs play a multifarious role in enhancing teachers' professional capacities and the efficacy of their instructional practices. The results of item number 10, "My teaching strategies are influenced by OPLNs," on the other hand, indicate that although OPLNs have a large influence, other factors or resources may also have a significant impact. This item received a slightly lower mean of 4.19 and was verbally responded to as "Agree."

The data strongly supports Online Professional Learning Networks (OPLNs) as effective professional development and instructional improvement tools. High scores on various indicators indicate widespread recognition of their role in improving learner outcomes and instructional methods. OPLNs are effective professional interaction platforms that provide educators with essential information for classroom instruction. Participants highlight benefits such as improved teaching strategies, increased awareness of current trends, and opportunities for cross-cultural collaboration, especially beneficial to new teachers. However, access to high-quality professional development opportunities remains a concern, with many lacking relevance, authority, or timeliness. OPLNs enable collaboration and idea exchange regardless of time or location, promoting global connections and interdisciplinary learning. Increasing the teacher's networking awareness could help them create Personal Learning Networks (PLNs), fostering diverse and extensive professional connections (Van Waes et al., 2018; Alwafi, 2021).

According to Brown and Poortman (2018) and Doan and Adams (2018), professional learning networks (PLNs) are any group that participates in collaborative learning with other people outside of their constant community of practice to enhance teaching and learning that were linked to enhancements in the technique of instruction. A promising strategy for achieving continuous school improvement is using professional learning networks (PLNs) for educators. According to Portman (2022), Networked learning environments and PLCs rest on comparable assumptions concerning how teachers acquire knowledge and modify their practice.

This Online Professional Learning Network (OPLN) will constitute a "teacher-driven" worldwide community that will provide assistance that reduces distance and fosters independence. Through motivation, design, and sharing and learning, online professional learning networks (OPLNs) significantly impact teaching performance. OPLNs, which offer virtual spaces for teachers to interact, share resources, and have discussions, have the highest mean score (4.25) for sharing and learning, followed by motivation (4.23) and design (4.21). This promotes creativity, expands knowledge, and improves instructional strategies. While well-designed platforms enable productive interactions, motivation fosters ongoing development. Enhancing teaching abilities and overall performance through the utilization of pooled expertise within OPLNs fosters an engaging professional learning community.

### **3.4 Significant Difference of Respondents' Demographic Profile and Online Professional Learning Networks (OPLNs) Engagement**

Table 15 shows the significant difference in the respondents' demographics after experiencing Online Professional Learning Networks (OPLNs). It shows that all of the respondents' demographics are insignificant, as manifested by its computed p-values greater than the set level of significance at 0.05, which led to the acceptance of null hypotheses. This indicates that respondents' profiles have nothing to do with their teaching performance after experiencing Online Professional Learning Networks (OPLNs). The p-values for the age (0.442), division (0.690), educational attainment (0.411), grade level (0.851), teaching position (0.975), years in the teaching profession (0.233), and frequency of using OPLN (0.919) in the eight demographic profiles of the respondents are all greater than the predetermined level of significance at 0.05. As a result, the null hypothesis is accepted, and comments are deemed to be insignificant.

According to the findings, the respondents' demographics are not significant. However, gathering demographic data can aid in filling these critical informational gaps, improving awareness and fairness during action, and better organizing training resources so that decisions concerning programs, dissemination, and funding can be made efficiently. People's demographic information is crucial for determining current trends and conducting precise and targeted learning opportunities. Demographic information about users of online professional learning networks is considered to gain a deeper understanding, find prospective collaborations, and create efficient long-term strategies.

**Table 15.** Analysis of the difference in the respondents' OPLNs engagement when grouped according to demographic profile

| Demographic Profile              | Categories         | Mean | p-values | Decision  | Remarks         |
|----------------------------------|--------------------|------|----------|-----------|-----------------|
| Age                              | 20 to 30 years old | 4.62 | 0.442    | Accept Ho | Not Significant |
|                                  | 31 to 40 years old | 4.33 |          |           |                 |
|                                  | 41 to 50 years old | 4.43 |          |           |                 |
|                                  | 51 and above       | 4.22 |          |           |                 |
| Division                         | SDO - Caloocan     | 4.31 | 0.690    | Accept Ho | Not Significant |
|                                  | SDO - Malabon      | 4.39 |          |           |                 |
|                                  | SDO - Navotas      | 4.26 |          |           |                 |
|                                  | SDO - Valenzuela   | 4.52 |          |           |                 |
|                                  | Bachelor's Degree  | 4.46 |          |           |                 |
| Educational Attainment           | MA with units      | 4.46 | 0.411    | Accept Ho | Not Significant |
|                                  | MA Degree          | 4.07 |          |           |                 |
|                                  | Ph.D. with units   | 4.30 |          |           |                 |
|                                  | Ph.D. Degree       | 4.65 |          |           |                 |
|                                  | Kindergarten       | 4.36 |          |           |                 |
| Grade Level                      | Grade 1            | 4.40 | 0.851    | Accept Ho | Not Significant |
|                                  | Grade 2            | 4.29 |          |           |                 |
|                                  | Grade 3            | 4.35 |          |           |                 |
|                                  | Grade 4            | 4.22 |          |           |                 |
|                                  | Grade 5            | 4.60 |          |           |                 |
|                                  | Grade 6            | 4.50 |          |           |                 |
| Teaching Position                | Teacher I          | 4.40 | 0.975    | Accept Ho | Not Significant |
|                                  | Teacher II         | 4.44 |          |           |                 |
|                                  | Teacher III        | 4.38 |          |           |                 |
|                                  | Master Teacher I   | 4.29 |          |           |                 |
|                                  | Master Teacher II  | 4.50 |          |           |                 |
| Years in the Teaching Profession | 3 years and below  | 4.49 | 0.233    | Accept Ho | Not Significant |
|                                  | 4 - 10 years       | 4.45 |          |           |                 |
|                                  | 11- 15 years       | 4.57 |          |           |                 |
|                                  | 16 years and above | 4.11 |          |           |                 |
|                                  | Not used at all    | 3.88 |          |           |                 |
| Frequency of Using Websites      | Once a week        | 4.57 | 0.919    | Accept Ho | Not Significant |
|                                  | Twice a week       | 4.32 |          |           |                 |
|                                  | 3 - 4 times a week | 4.28 |          |           |                 |
|                                  | Daily              | 4.41 |          |           |                 |
| Average time in using OPLN       | 1 - 2 hours        | 4.26 | 0.451    | Accept Ho | Not Significant |
|                                  | 3 - 4 hours        | 4.40 |          |           |                 |
|                                  | 5 - 6 hours        | 4.50 |          |           |                 |
|                                  | 7 - 8 hours        | 4.76 |          |           |                 |

**Note:** If p value is less than or equal to the level of significance (0.05) reject Ho, otherwise failed to reject Ho.

### 3.5 Significant Difference of Respondents Between Online Professional Learning Networks (OPLNs) Engagement and Community of Inquiry (CoI)

Based on Table 16, it was evident that the respondents' experiences with Online Professional Learning Networks (OPLNs) and Community of Inquiry (CoI) showed significance, indicated by computed p-values exceeding the set significance level of 0.05. This resulted in rejecting null hypotheses, except for the connection between Community of Inquiry in the elements of Social Presence in OPLNs variables (Motivation, Design, and Sharing and Learning), which was found to be insignificant. The respondents registered the teaching and cognitive presence as significant out of the three presences, while the social presence was insignificant in the three OPLN variables; thus, the hypothesis failed to be rejected.

The three components of CoI, "teaching presence" (0.0004), "social presence" (0.4992), and "cognitive presence" (0.0010), showed significant findings in the p-values between OPLNs (Motivation) and these aspects. The hypotheses were rejected for teaching and cognitive presence but not for social presence. Comparably, in OPLNs (Design), social presence did not achieve significance (0.2560), while significant p-values were found for "teaching presence" (0.0001) and "cognitive presence" (0.0002). Similar p-values were discovered for "teaching presence" (0.0016) and "cognitive presence" (0.0015) in OPLNs (Sharing and Learning), but social presence (0.4806) showed no significance. Social presence showed a continuous failure to reject the hypothesis across various variables,

suggesting its insignificance with respect to the CoI framework in OPLNs. The calculated p-values in these results surpass the predetermined significance level of 0.05.

**Table 16.** Analysis of the difference between OPLNs engagement and community of inquiry

| Online Professional Learning Networks (OPLNs) | Community of Inquiry (CoI) | p-values | Decision            | Remarks         |
|-----------------------------------------------|----------------------------|----------|---------------------|-----------------|
| Motivation                                    | Teaching Presence          | 0.0004   | Reject Ho           | Significant     |
|                                               | Social Presence            | 0.4992   | Failed to Reject Ho | Not Significant |
|                                               | Cognitive Presence         | 0.0010   | Reject Ho           | Significant     |
| Design                                        | Teaching Presence          | 0.0001   | Reject Ho           | Significant     |
|                                               | Social Presence            | 0.2560   | Failed to Reject Ho | Not Significant |
|                                               | Cognitive Presence         | 0.0002   | Reject Ho           | Significant     |
| Sharing and Learning                          | Teaching Presence          | 0.0016   | Reject Ho           | Significant     |
|                                               | Social Presence            | 0.4806   | Failed to Reject Ho | Not Significant |
|                                               | Cognitive Presence         | 0.0015   | Reject Ho           | Significant     |

**Note:** If the p-value is less than or equal to the significance level (0.05), reject Ho; otherwise, fail to reject Ho.

Online professional learning networks play a crucial role in fostering motivation, sharing, and learning within a community of inquiry framework, particularly emphasizing teaching and cognitive presence (Lambrev, 2023; Zheng et al., 2023; Kavoura, 2022; Sadaf et al., 2022, and Dell et al. 2022). These networks provide a platform for educators to engage in reflective practices, collaborative knowledge construction, and the development of metacognitive skills such as self-regulation and co-regulation. By leveraging teaching presence to facilitate meaningful discussions and cognitive presence to promote critical thinking and problem-solving, online professional learning networks create spaces for practitioners to share experiences, seek feedback, and collectively advance their understanding and application of knowledge. The integration of motivation-enhancing strategies and a focus on building a supportive learning community further enriches the online professional learning experience, ultimately contributing to educators' continuous growth and development within a digital environment.

Online Professional Learning Networks (OPLNs) influence on the Community of Inquiry (CoI) framework—focusing on teaching, social, and cognitive presence—has been thoroughly investigated. According to research, teaching presence indirectly improves perceived progress via co-regulation (Zheng et al., 2023). Positive emotional states influence the relationship between self-regulated learning and online learning satisfaction (Zhang et al., 2023). Cultural differences shape perceptions of social and teaching presence among German and Thai students. Furthermore, increased teaching and social presence in remote learning is associated with increased self-efficacy and positive attitudes toward future remote learning (Grothaus, 2022). These findings highlight the importance of teaching, social, and cognitive presence for promoting online learning outcomes and student satisfaction. By fostering a strong sense of presence within their OPLNs, educators can significantly improve students' online learning experiences and outcomes.

Even though social presence was insignificant in any of the three OPLN variables (Motivation, Design, and Sharing and Learning) in this study, social presence theory is still essential to appreciating how people present themselves genuinely online, especially in learning environments. The significance of emotional expression, reciprocal interactions, and a sense of community is highlighted by Garrison et al. (2000), who classify social presence into affective, open communication, and group cohesion indicators.

Notwithstanding the study's conclusions, other research emphasizes social presence in learning environments. According to McCool (2023), social presence in online contexts has a favorable impact on knowledge transfer, student satisfaction, and team cohesion. He (2022) also mentioned the importance of social presence in building and growing online learning communities, influencing individual perceptual learning and satisfaction, and comprehending online learning behavior. Furthermore, Zhang et al. (2023) emphasized that the CoI paradigm strongly emphasizes the value of instructional, social, and cognitive presence in enhancing student satisfaction with online learning. Emotional states and self-regulated learning influence this improvement, demonstrating how these variables are interdependent in determining how students experience and perform in virtual professional learning development set-ups.

## 4.0 Conclusion

The study concluded that most respondents were aged 31-50, with the highest representation from SDO-Caloocan and the predominant grade level being Key Stage 2. Most held a Master of Arts with units and were in the Teacher I position, with 4-10 years of service. Respondents actively engaged with Online Professional Learning Networks (OPLNs), dedicating 3-4 hours daily, primarily for collaboration and assistance, resulting in substantial improvements in Teaching Presence, Social Presence, and Cognitive Presence. OPLNs effectively enhanced teaching performance, particularly in fostering critical thinking and problem-solving. While OPLNs significantly impacted motivation, design, sharing, and learning, they did not influence respondents' demographic characteristics. Teaching and Cognitive Presence were critical for OPLN effectiveness, but Social Presence showed little impact, highlighting the need for further research to integrate it for comprehensive educational benefits better.

## 5.0 Contributions of Authors

The sole author made all contributions to each part of this work.

## 6.0 Funding

No particular funding agency has supported this work.

## 7.0 Conflict of Interests

The authors found no conflicts of interest regarding this research's publication.

## 8.0 Acknowledgment

The researcher gratefully acknowledges Dr. Maria Charlene P. Melegrito, his dissertation adviser, for her unwavering support, the panelists and evaluators for their insightful feedback, and the statistician for their crucial assistance. Heartfelt thanks are also extended to his family for their encouragement and to Almighty God for the strength to navigate this challenging yet rewarding journey.

## 8.0 References

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