

A Framework for Enhancing Professional Learning Communities Toward Sustainable and Future-Driven Education at Prince Sattam University

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Abstract: This paper aimed to develop and validate a context-sensitive framework for activating professional learning communities at a Saudi university in light of future economic and sustainability demands. A descriptive survey design was employed using a structured, expert-validated questionnaire of 47 items on a five-point scale administered to a simple random sample of 379 faculty; internal consistency was confirmed (overall Cronbach's $\alpha=0.825$), and group differences were tested with independent-samples t-tests, ANOVA, and LSD post hoc comparisons. Findings indicated that current activation of professional learning communities was moderate ($M=3.25$), perceived obstacles were high in impact ($M=3.50$; notably limited cross-disciplinary cooperation and insufficient student leadership training), and requirements were rated high ($M=4.22$; including research support, innovative pedagogy, and training for department heads). No statistically significant gender, rank, or experience differences emerged for obstacles, whereas males, professors, and those with ≥ 15 years of experience reported higher ratings for the reality and requirements dimensions. The study concluded that institutional readiness exists but is fragmented, requiring coordinated governance, capacity building, and incentives to align learning communities with national transformation agendas. It is recommended to establish a centralized unit to coordinate collaboration, fund PLC-related scholarship, and deliver leadership training.

Keywords: Cross-disciplinary Cooperation, Capacity Building, Governance, Leadership Development, Policy Implementation.

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1. Introduction

Global higher education transformations are more and more influenced by imperatives of innovation, adaptability, and sustainable development. The professional learning community (PLC) has come to stand as a strategic strategy that facilitates shared inquiry, joint reflection, and continuous improvement in institutions. Categorized as organized groups of teachers with a dedication to continuous learning and sharing of practices, PLCs are designed to enhance the quality of instruction and the attainment of students. In the face of technological and economic shifts, universities are under pressure to transform

their learning systems internally. PLCs are nowadays central in the development of future ready capabilities, strategic adaptability, and institutional durability in higher education.

Professional learning communities are at the heart of academic improvement and organizational development these days. PLCs foster corridor-to-corridor collaboration beyond departments, reflective practice, and adaptive institutional learning. In Saudi Arabia, the integration of PLCs in higher education has consistency with the vision of 2030 and other aspirations of sustainability and quality pedagogy. But efforts often face the obstacles of structure and scarcity of empirical consideration at the university level. Their implementation requires not only digital tools, as mentioned, but the creation of PLC favorable leadership, training, and institution supports.

Existing literature confirms the influence of PLCs in instruction impact as well as institutional culture. Research such as the way PLCs broker digital professional development and instruction integration in ready schools. Saudi HEIs research documents mixed sustainability practices based on the faculty stand (Alrahaili, 2023) and teachers take a positive outlook regarding PLCs although they face contextual challenges. These findings indicate a gap: there are fewer in-depth frameworks for PLC implementation in Saudi universities that are consistent with sustainability, future economics, and workforce trends. Institutional culture, leadership reinforcement, and PLC flexibility toward digital/economic transitions are consistently identified as crucial elements (Amemasor et al., 2025).

A critical gap persists in operationalizing PLCs within Saudi universities in line with projected economic and sustainability transformations. Although HEIs in Saudi Arabia are already working with UN SDGs and sustainability governance framework, the PLC structures as a part of these agendas are understudied. The same issues are potentially hampering PLC adoption at Prince Sattam bin Abdulaziz University where strict structures and poor cooperation can be noticed. In the opinion of Gonzales (2023), institutional preparedness, inclusive leadership, and resource allocation is obligatory and generally insufficient. This research seeks to create a contextual based framework that is a compilation of PLC, economic transformation to sustain educational renewal.

The central aim of the study is to formulate a framework of the activation of PLCs in Prince Sattam bin Abdulaziz University to address new challenges of emerging economic and sustainability issues. This framework aims at increasing collaborative learning and making the university one of the leaders in sustainable education transformation by examining the views of faculty, institutional preparedness, and actual barriers to change. The study has theoretical and empirical contribution in that it helps to bridge the PLC theory and sustainability foresight and institutional design. The suggested structure can be used as a reference to other Saudi higher institutions that strive to establish future ready ecosystems. Expected outcomes carry implications for educational leadership, policy makers, and faculty development in the region.

1.1. Research Problem

Professional learning community ideology prioritizes the continual development of the member in the learning family of an educational environment. PLC advocates for lifelong adaptational learning that keeps pace with contemporary advancements, maintaining professional networking. The ideology depends on the examination of settings, evaluation of working situations, and their impact on students. It gauges advancement by performance and achievements. Therefore, PLCs embody reflections, adaptability, and group progression.

Education in Saudi Arabia is threatened by the expansion of knowledge, the scientific and technological revolutions, competition in the world, and the emergence of the knowledge society. The forces precipitate the learning process as a production, diffusion, and implementation of knowledge (Moustafa et al., 2022). In Prince Sattam bin Abdulaziz University, the pace of keeping up with the fast-changing economy and technology is an imperative. Addressing these needs innovation located in the axis of sustainable education. The urgent redress is then needed.

Abo-Khalil (2024) showed that professional learning communities enrich learning by sharing and collaboration. However, their fusion with economic changes like digitalization and sustainability is yet weak. Huijboom et al. (2023) pointed out that economic innovations form adaptive learning environments. PLCs are yet central to institution development, although universities cannot integrate them constructively. Their effectiveness relies on compatibility with future needs.

Even with strengths, challenges hamper PLC implementation. They saw that technology changes demand new efforts connecting Scholarship and the Economy of Knowledge. Paños-Castro et al. (2024) documented organizational and cognitive challenges. They mentioned poor training programs. They spotted unsavory implementation and ongoing challenges. These agree that systemic frailties inhibit implementation.

Saudi Arabian research has generally focused on the public education arena, paying little heed to universities. The consequence has left the higher education environment underdeveloped. In the Prince Sattam bin Abdulaziz University, the dilemma is how to galvanize PLCs in response to future economic trends. What is needed is some form of framework that can integrate practice in education with changing economic conditions. The bottom-line inquiry persists: What can mobilize PLCs at the Prince Sattam bin Abdulaziz University?

1.2. Research Objectives

1. Study the prevailing position of professional learning communities' activation in the university and determine how compatible such communities are with economic dynamics on the future in other fields like digital transformation and technological innovation.
2. Determine the obstacles among the faculty elements in establishing and executing professional learning communities such as economic and technological obstacles based on future economic structures.
3. Examine the essential needs faculty members must meet in order to create fruitful professional learning communities and determine how these needs can be merged with the future economic changes to develop sustainable education.
4. Explore how academic experience and gender are relevant to the activation of professional learning communities in the university and how these variations affect the uptake of future economic innovations by the faculty members in the process of education.
5. Suggest a suitable model of mobilizing professional learning groups in Prince Sattam bin Abdulaziz University in respect to the future economic conditions.

1.3. Research Significance

The theoretical significance of this study is reflected in several aspects. First, it has scientific value since, to the best knowledge of the researcher, few studies have examined professional learning communities in higher education, particularly in Saudi universities. Second, it responds to recommendations from both local and international

conferences that emphasize adopting innovative educational approaches to transform university education. Finally, the results of this research offer valuable insights to scholars in the field of education.

The practical significance of the study is equally notable. It provides administrators, decision-makers, and leaders of Saudi universities with models of professional learning communities that can inspire educational innovation and improve teaching and learning outcomes. It also assists the administrators in the development of specific training programs in developing the faculty members in their arrangement and mobilization of PLCs in departments and colleges. Besides, it informs decision-makers on the resources that are needed to make the implementation a success. The study also adds to the general academic fraternity as it forms a basis of future studies on the topic of PLCs in Saudi universities. Finally, it introduces the faculty to the notion of PLCs, discusses the current trends associated with their development, and suggests ways of how they can be improved to be more effective.

1.4. Theoretical Framework

Professional Learning Community (PLC): PLC is a team of professionals who engage in a common purpose and constant growth, the PLCs are voluntary associations that bring together teachers, administrators, and stakeholders. The teams that are based on the concept of teamwork, trust, and continuous development, whereas they accentuates the idea of a reflective teamwork to improve. PLCs are team of faculty members working in colleges where they share practices and professional critique to improve learning. In terms of ideas, they are conceptualized as evidence-based systems that incorporate research into practice, and procedurally, they advise Saudi universities in how to organize the incorporation and maintenance of PLCs in local settings in an orderly way (Mydin, Xia, & Long, 2024).

Professional learning communities (PLCs) have become highly popular by virtue of their increasing popularity in the global education sector, not only in the United States, but also across other countries, like the United Kingdom and France, Germany, and China. PLCs first appeared in the early twenty-first century, which is why they were associated with the transformations of a knowledge-based society. They are a form of organizational model in which teachers work in a continuous manner to establish sustainable development (Ghbban, 2022). The concept of PLCs refers to organizations that physically or digitally interact and share a common vision to encourage creativity, reflection, and problem solving (Roesminingsih & Windasari, 2025). Their transparency, constant questioning, and willingness to work together are unique characteristics of them in comparison to other professional models.

PLCs could also be defined as the communities of professionals that share the same vision and mission which is translated into common goals and collaborative actions. Members take the shared responsibility, share expertise and embrace the best practices to solve challenges. Redman and Wiek (2021) also highlight PLCs because of their cycles of action research and collective inquiry aimed at enhancing student achievement. On the same note they considers them as synergistic processes of teachers collaborating with one another to ensure an improvement process to the students is continuously done. Such views affirm that PLCs is a structural and process-oriented model.

1.4.1. Foundations of PLCs

PLCs are based on three major principles: a common mission, vision, and goals;

joint commitments and collaboration; and student learning outcomes as a priority (van den Boom-Muilenburg et al., 2023). These principles guarantee consistency and lead to team learning in the enhancement of education. The members develop trust and accountability by focusing on similar values. The common vision guides the actions towards the attainment of quantifiable student achievement. These factors combined maintain the PLC effectiveness.

1.4.2. Aims of PLCs

PLCs aim to build networks on the educational issues of common concern. Also strive to increase teamwork, improve relationships between teachers and students, and attain specific learning outcomes. PLCs also encourage reflective practices and ongoing professional growth (Blonder & Vescio, 2022). They foster improved performance by promoting positive staff interaction with students. Further identify essential components such as shared leadership, collaboration, inquiry, guided practice, and supportive conditions.

1.4.3. Importance of PLCs

The Saudi National Program of School Development pointed out some of the advantages of PLCs. PLCs improve learning by piloting strategies in various environments and filling performance gaps. PLCs enhance job satisfaction, creativity, and offer assistance to new teachers. PLCs also build closer professional relationships as well as social relationships. Ultimately, PLCs stimulate innovation by coming up with as well as try out new ideas.

1.4.4. Characteristics of PLCs

PLCs are characterized by collaboration in tightly coupled, interrelated groups based on trust and respect (Chiu, 2024). Receptive to innovation, they take up new practices readily. It contains shared skills, favorable dispositions, and collaborative discussion (Olmo-Extremera, Fernández-Terol, & Domingo-Segovia, 2024). The members stress active learning, shared responsibility, and frequent reflective gatherings. The members also share experiences beyond the teams to help in decision-making (Imara & Altinay, 2021).

1.4.5. Forms of PLCs

PLCs can take multiple forms depending on context. These include academic programs, discussion forums, conferences, and seminars. Action research, also known as action studies, is a common format for collaborative inquiry. Peer coaching represents another form where teachers mentor one another. Each form contributes uniquely to professional development (Hudson, 2024).

2. Literature Review

The literature of previous studies in this part shall by critical literature review method, in which the literature shall be examined, thematically summarized, as well as critically appraised. The major methodological trends, theoretical underpinnings, areas of agreement and contradiction, and gaps in research shall be discerned in order to offer an integrative as well as insightful foundation upon which the current study shall build.

2.1. Comprehensive Overview

The literature examined shows how professional learning communities (PLCs) are conceptualized, enacted, and assessed in various educational settings. Those studies

value collaboration, reflective practice, and leadership in defining successful PLCs (Davey & Harney, 2023). In methodological terms, descriptive surveys predominate, using questionnaires to survey teacher and administrator views, and in a few cases, qualitative methods like interviews or case studies are used (Zhou et al., 2023). An inferior volume of studies uses experimental designs, although these are mostly used to assess intervention studies that combine PLCs and pedagogic innovations. The populations vary, ad multitudinously, to K–12 teachers and leaders, to university faculty, and even students in certain classes. Theoretically, PLCs are invariably associated with ongoing professional development, organizational learning, and learning quality enhancement, although scope and stress differ by setting.

2.2. *Thematic Analysis*

The literature converges on three dominant themes. First, PLCs are consistently framed as vehicles for enhancing teaching quality and professional collaboration, often through structured reflection and teamwork. Second, multiple studies emphasize the obstacles to effective PLC implementation, highlighting human, organizational, and resource barriers. These barriers often reduce the sustainability of PLC practices. Third, the study determines the transformative potential of PLCs as long as they are in line with such wider reforms as digital learning, active learning environments, and sustainability agendas. Although it is true that these innovations broaden the conceptual scope of PLCs, they also show that adaptation to the context is required, especially in situations that have limited resources. All the themes, together, indicate the intricate relationship between aspirational PLC models and the reality of educational systems (Chauraya & Barmby, 2022).

2.3. *Comparative Analysis*

Throughout the research, a general consensus is that PLCs have a beneficial impact on the quality of instruction and professional cooperation. However, there exist differences when it comes to the sustainability and extent of such consequences. The results of experimental studies, e.g., they indicate a significant post-intervention change, but descriptive studies tend to record moderate or disproportionate effects because of the existence of institutional barriers (Lee & Ip, 2023). The sampling methods are also different, with a large scale survey offering generalizable patterns (whereas with a qualitative case study, a lot of specific insights are provided). The heterogeneity of measurement also contributes to complicating the comparability since some of them are based on self-report surveys, others use a checklist on observation or performance. It is these convergences and divergences that precondition the necessity of the study blending both methodological rigor and contextual sensitivity in a direct way, which is the direct response of the arguments that the given study represents.

2.4. *Advanced Integration*

The synthesis of the results implies that there is a conceptual route, in which PLCs increase the collaboration of the teachers, which, in turn, reinforces the instruction, and, by extension, changes the student achievement (Clark et al., 2023). Nonetheless, this route is regulated by the institutional resources, organizational culture, and the support of leaders (Moet & Kálmán, 2024). The existence of new pedagogic strategies (e.g. digital or cognitive apprenticeship models) is a mediator that increases the effectiveness

of PLC. However, loopholes exist in making sure that such models are applicable in various educational settings. The synthesis reveals the vulnerability and strength of the PLCs by incorporating the descriptive breadth and experimental validation. The current research builds on these findings to form a framework of frameworks that creates a context-sensitive agenda of Saudi higher learning institutions, maximizing methodological instruments and using mediators to enhance cultural and institutional applicability.

2.5. Research Gap and Current Study Objectives

Although the global exploration is extensive, not much research is done on the PLC activation in Saudi universities, especially the context of higher education (Bashayr, 2022). The present research addresses these gaps directly as it generates a suggested framework of activating the PLCs in the Saudi universities, utilizing the framework that incorporates both descriptive and experimental elements. Its objectives include institutional preparedness measurement, barriers detection, and implementation proposal of scalable strategies to integrate PLCs into the systems of higher education to support sustainability and education innovation. The literature available on the subject is mostly based on K-12 schools, so there is a gap in the knowledge of how PLCs may be adapted to meet the challenges in higher education, including structural rigidity, digital adaptations, and responsiveness to economic change. In addition, descriptive surveys make the methodological use of causation more difficult, and qualitative research offers insights that cannot be generalized.

2.6. Summary

This review highlights the relevance of PLCs in improving the quality of teaching and institutional learning and demonstrates the obstacles to successful implementation. The existence of the gaps in the context of higher education, especially Saudi universities, indicates the necessity of specific frameworks. This gap is filled in the current paper, and it is in line with previously existing findings and presents innovative, context-based solutions.

3. Methodological Procedures of the Study

3.1. Research Design

The descriptive survey technique was used because it is the most justified in this kind of research. Sepulveda-Escobar (2024) defined this by conducting a survey of the entire population or a large segment of it to explain the phenomenon of interest using descriptive terms such as its presence and magnitude but without analyzing any relationship or causality.

3.2. Study Population and Sample

The population of the study consisted of 2,033 faculty staff members at the Prince Sattam bin Abdulaziz University where the sample frame was the college. A simple random sample was selected to guarantee equal participation chances, forming the basis of the study sample. The Krejcie and Morgan formula it was applied to compute the sample size, using $p = 0.50$, $d = 0.05$, and a chi-square value of 3.841 at the 0.95 confidence level. This ensured rigorous, valid sample determination.

The calculation yielded 323 participants, which was statistically adequate to represent the faculty population. This ensured precision, coverage of variability, and alignment

with research objectives. The questionnaire was distributed electronically, yielding 379 responses, exceeding the required sample. This higher response rate enhanced reliability and represented diverse demographic and professional characteristics, detailed in the next section.

Table 1: Presents the Study Sample Distribution According to the Gender Variable.

Gender	Frequency	Percentage (%)
Male	202	53.3
Female	177	46.7
Total	379	100.0

Based on Table 1, 202 participants, which is 53.3 of the entire sample of the study, are male and this is the majority group in the sample. On the other hand, the minority of the population throughout the research is represented by 177 participants (46.7), who are women.

Table 2: Illustrates the Distribution of the Study Sample According to the Academic Rank Variable.

Academic Rank	Frequency	Percentage (%)
Professor	78	20.6
Associate Professor	117	30.9
Assistant Professor	184	48.5
Total	379	100.0

As it can be seen in Table 2, 184 respondents, which is half of the study sample, are assistant professors, and it is the highest number in the study sample. Conversely, full professors constitute 20.6 percent or 78 participants, thus, being the least numerous in the sample of the study.

Table 3 displays the study sample distribution according to the variable of years of experience.

Years of Experience	Frequency	Percentage (%)
Less than 10 years	50	13.2
From 10 to less than 15 years	154	40.6
15 years or more	175	46.2
Total	379	100.0

As it is observed in Table 3 above, 175 participants, which form 46.2 percent of the study sample, have 15 or more years of experience and this makes the largest percentage of the study sample. On the other hand, a group of 50 participants (13.2 percent) has less than 10 years of experience; thus, form the smallest group in the study sample.

3.4. Study Instrument

The survey adopted a structured questionnaire as the main data collection instrument. Based on an analysis of related studies as well as an examination of frameworks, the first draft was set to capture the needed data. The questionnaire adopted the closed format, whereby statements that were of relevance had set responses. Clarity, accuracy, and avoidance of confusion were the main concerns in preparing the items. The statement was framed to convey a single evident idea consistent with study dimension.

The questionnaire was separated into two sections: demographic and professional variables of respondents, and a series of tools assessing research variables. The second part included 47 questions spread over three dimensions. The first dimension, with 17 items, was used to assess the implementation of professional learning communities at Prince Sattam bin Abdulaziz University. The second dimension, with 14 items, was used to know barriers that inhibit PLC formation at the university. The third dimension, with 16 items, was aimed at identifying needs in order to construct professional learning communities.

All the items were made in the form of a five-point Likert scale. The response categories included strongly agreed, agree, neutral, disagree, and strongly disagree. The form helped in accurate measurement of attitudes and perceptions of the participants. It also provided consistency in response over the questionnaire's dimension. Therefore, the tool offered both brightness and analytical rigor for university PLC measurement.

4. Instrument Validity

Second, internal consistency validity was tried out. Pearson correlation coefficients were attained for all the items in relation to their respective dimension as well as the overall questionnaire. This step checked the consistency of the questionnaire's items in their scales. The findings proved internal consistency of the research instrument. The detailed findings are given in Table 4.

Table 4: Correlation Coefficients of Study Items with Their Respective Dimensions.

M	Questionnaire Items	Correlation Coefficient with Dimension
First Dimension		
1	Implementing a university strategic plan that supports learning communities	0.610**
2	Promoting a culture of teamwork among faculty members	0.494**
3	Training university faculty members to participate in collaborative work	0.526**
4	Addressing deficiencies in faculty members' competencies	0.445**
5	Supporting networking meetings among different university disciplines	0.478**
6	Organizing joint seminars among various university departments	0.802**
7	Training faculty members to exercise leadership in various positions	0.419**
8	Enhancing community engagement to advance different institutions	0.758**
9	Enhancing faculty members' abilities for critical and creative thinking	0.719**
10	Implementing innovative teaching strategies in course units	0.879**
11	Diversifying and innovating academic programs offered	0.692**
12	Recognizing the importance of scientific research outcomes at the university	0.570**
13	Providing interactive programs among diverse university disciplines	0.495**
14	Developing annual plans supporting partnerships between faculty members within the university and with other universities	0.793**
15	Enhancing the skills of a cohesive group of faculty members	0.784**
16	Activating the principle of cooperation among academic departments within the same college	0.548**
17	Providing financial support for quality initiatives in teaching and learning processes	0.813**
Second Dimension		
M	Questionnaire Items	Correlation Coefficient with Dimension
1	Lack of cooperation among faculty members across various disciplines	0.623**
2	Absence of modern development mechanisms in the university's educational process	0.570**
3	Application of traditional teaching methods in university instruction	0.426**
4	Lack of a reflective practice culture in the educational process	0.574**
5	University's failure to implement mechanisms for improving members and addressing their diverse interests	0.649**
6	Weak encouragement of innovation and creativity in educational processes	0.866**
7	Absence of a teamwork culture in university education	0.755**

M	Questionnaire Items	Correlation Coefficient with Dimension
8	Traditionalism of university courses offered across various disciplines	0.497**
9	Weak activation of sustainable professional development principles	0.677**
10	Lack of innovation in the study programs offered	0.772**
11	Absence of leadership skills training programs for university faculty members	0.686**
12	Insufficient training of university students in leadership skills	0.715**
13	Limited activation of technology skills in university education	0.669**
14	Weak actual activation of diverse partnerships with related institutions	0.684**
Third Dimension		
M	Questionnaire Items	Correlation Coefficient with Dimension
1	Developing a university strategy that supports academic collaboration within the university	0.512**
2	Effective coordination between university colleges and department heads to enhance the concepts of professional learning communities among faculty members	0.564**
3	Aligning the objectives of forming professional learning communities with Saudi Arabia's Vision 2030	0.507**
4	Preparing training programs tailored for faculty members for each learning program	0.750**
5	Monitoring and developing the performance of each learning community annually	0.533**
6	Qualifying new department heads on mechanisms of engagement with professional learning communities	0.486**
7	Preparing a collaborative environment within individual departments	0.694**
8	Training on ethics of integrity, transparency, and acknowledgment of facts	0.695**
9	Providing support for research and working papers related to the mechanisms of forming professional learning communities	0.957**
10	Supporting internal and external networking meetings among university faculty members	0.451**
11	Supporting innovation and creativity in various teaching strategies	0.469**
12	Organizing seminars on the procedural development of strategic plans to establish professional learning communities	0.915**
13	Supporting the development of positive relationships within the university campus	0.855**
14	Adopting selected international experiences in forming professional learning communities	0.780**
15	Developing academic programs offered by the university	0.527**
16	Studying and improving the university courses offered	0.534**

significant at the 0.01 level or below.

Based on the former Table 4, we can learn that all the statements are statistically significant at the 0.01 level, and some of them are significantly significant at the 0.05 level. This means that any of the items that make up the questionnaire have high levels of validity thus making them practical in the field.

4.1. Reliability of the Questionnaire

In order to check the dependability of the dimensions of the study, Cronbach alpha coefficient was used and the findings were tabulated as shown in the Table 5 below.

Table 5: Cronbach's Alpha Reliability Coefficients.

Study Dimensions	Number of Items	Cronbach's Alpha Coefficient
Dimension One	17	0.906
Dimension Two	14	0.827
Dimension Three	16	0.805
Overall Scale	47	0.825

Based on Table 5, it is evident that the study dimensions had high levels of reliability since the alpha coefficients of the Cronbachs of all dimensions of the study were within the range of 0.805 and 0.906. In addition the overall reliability coefficient was 0.825 indicating a high degree of reliability and this supports the appropriateness of the study instrument to be used in the field.

4.2. Correction of the Search Tool.

To make the interpretation of the results easy, the researcher used the following method to indicate the level of response to the items of the instrument. The appropriate response alternatives were weighted as indicated in Table 6 below to enable further statistical process as follows:

Table 6: Scoring of the Study Instrument.

Level of Agreement	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

Then the responses were then grouped into five equal intervals using the following formula:
 Category Length = (Maximum Value – Minimum Value) ÷ Number of Response Options
 = (5 – 1) ÷ 5 = 0.80 (see Table 6) Accordingly, the classification was obtained as follows:

Table 7: Classification of Categories According to the Scale Used in the Research Instrument.

Description	Range of Means
Strongly Agree	4.21 – 5.00
Agree	3.41 – < 4.21
Neutral	2.61 – < 3.41
Disagree	1.81 – < 2.61
Strongly Disagree	1.00 – < 1.81

4.3. Data Analysis Methods

Several statistical techniques were applied to describe participant characteristics, test the instrument’s validity and reliability, and answer the research questions. Frequencies and percentages were used to present demographic features of the sample. The mean was calculated to evaluate the level of responses for each item and dimension, while the standard deviation measured the degree of variability; lower values reflected higher consistency, and this measure was also used to rank items with similar mean scores.

Reliability was examined through Cronbach’s alpha coefficient, and internal validity was assessed using Pearson’s correlation between items, their dimensions, and the total score. For group comparisons, an Independent Samples t-test was applied to dichotomous variables, while One-Way ANOVA was used for variables with more than two categories. In cases where the ANOVA results showed that there were significant differences, the Least Significant Difference (LSD) test was used to find the direction and the significance of these changes.

5. Results

5.1. Response to Question One: Professional Learning Community Activation at Prince Sattam bin Abdulaziz University

In order to analyze the level of professional learning community (PLC) activation at the Prince Sattam bin Abdulaziz University through the lens of the faculty members, a number of descriptive statistical indicators was used. In particular, frequencies and

percentages were computed to obtain the overall distribution of responses. The number of means was calculated to ascertain the degree of the agreement with each item, the standard deviations were calculated to ascertain the variability of the responses, hence suggesting the degree of consensus between the faculty. The results of these calculations provide a comprehensive picture of how faculty members perceive the current status of PLC activation within the university. Table 8 presents the detailed findings related to this dimension.

Table 8: Assessing Professional Learning Community Activation at Prince Sattam bin Abdulaziz University.

No.	Item Description	Mean	Standard Deviation	Level of Practice	Rank
1	Activation of a university strategic plan supporting learning communities	4.11	0.571	High	1
2	Implementation of innovative teaching strategies to deliver course units	3.89	0.991	High	2
3	Enhancing community engagement to advance various institutions	3.78	0.627	High	3
4	Promoting cooperation between scientific departments within the same college	3.67	0.666	High	4
5	Strengthening faculty members' critical and creative thinking abilities	3.55	0.835	High	5
6	Training faculty members on joining collaborative work	3.45	0.835	High	6
7	Recognition of the importance of scientific research results presented at the university	3.43	1.068	High	7
8	Addressing deficiencies in faculty members' performance	3.33	0.820	Moderate	8
9	Training faculty members in leadership for various positions	3.25	0.917	Moderate	9
10	Providing financial support for worthy initiatives in teaching and learning	3.23	1.230	Moderate	10
11	Activating a culture of teamwork among faculty members	3.22	0.630	Moderate	11
12	Diversification and innovation in offered study programs	3.21	0.910	Moderate	12
13	Developing annual plans supporting partnerships between university faculty and other universities	3.09	1.200	Moderate	13
14	Enhancing skills of a homogeneous group of faculty members	2.87	0.993	Moderate	14
15	Providing interactive programs across different university disciplines	2.55	1.066	Low	15
16	Holding joint seminars between various university departments	2.32	0.938	Low	16
17	Supporting introductory meetings between different university disciplines	2.32	1.052	Low	17
Overall Mean		3.25	0.583	Moderate	

*The mean score is based on a scale of 5.00.

Table 8 indicates that activation of professional learning communities at Prince Sattam bin Abdulaziz University was moderate, with a mean of 3.25, at 5.00. The score was in the neutral scale interval. The means differed in the ranges between 2.32 and 4.11, spanning disagree, neutral, and agree. The faculty's responses captured divergent opinions of activation. On the whole, activation of items was at the moderate level.

The question item "Activation of a university strategic plan in favour of learning communities" received the score 4.11, reflecting very high practice. This underlines the pivotal role played by the plan in directing implementation. The second, "Application of innovative pedagogic strategies in course units," received a mean of 3.89, also very high. These simplified instruction and improved outcomes. Strategic as well as pedagogic support was made evident as crucial.

The third, "Enhancing community participation to develop institutions," got 3.78, also very high. This shows the value in participation in development. Clark et al. (2023) stressed teamwork and cooperation. The utilization by teacher dialogues was stressed by Elobaid et al. (2024). McKie (2024) also showed agreement in learning community aspects in his validated organizational and human resource preparedness for learning communities in the learning communities in the 学校 in Jeddah, Saudi Arabia. These confirm previous literature and enhance study credibility. The first research inquiry

investigated challenges in creating learning communities in Prince Sattam University. Analysis was done using frequencies, percentages, means, and standard deviations. The result is in Table 9.

Table 9: Faculty Views on Obstacles to Establishing Professional Learning Communities at Prince Sattam University.

No.	Statement	Mean	Standard Deviation	Impact Level	Rank
1	Lack of cooperation among faculty members across various disciplines	4.01	0.466	High	1
12	Inadequate training of university students in leadership skills	4.00	0.663	High	2
7	Absence of a culture of teamwork in university education	3.79	0.615	High	3
10	Lack of innovation in the academic programs offered	3.77	1.040	High	4
14	Weak actual activation of partnerships with relevant institutions	3.75	0.632	High	5
8	Traditional nature of university courses offered across different specializations	3.67	1.166	High	6
4	Absence of reflective practice culture in the educational process	3.66	0.673	High	7
3	Use of traditional teaching methods in university instruction	3.55	0.965	High	8
2	Lack of modern development mechanisms in the university's educational process	3.44	0.838	High	9
9	Weak activation of sustainable professional development principles	3.43	0.961	High	10
5	University's lack of mechanisms for enhancing faculty members and addressing their needs	3.34	1.057	Moderate	11
13	Limited utilization of technology skills in university education	3.23	0.785	Moderate	12
11	Absence of training programs for university faculty on leadership skills	2.78	0.921	Moderate	13
6	Weak encouragement of innovation and creativity in teaching practices	2.55	1.066	Low	14
Overall Mean		3.50	0.483	High	

*The mean score is based on a 5.00-point scale.

As shown in Table 10, the faculty indicators suggested significant challenges facing the formation of a professional learning community at Prince Sattam bin Abdulaziz University, with a total mean of 3.50. The value relates to the fourth grade of the five-point scale, indicating agreement. Indicated means varied between 2.55 and 4.01, encompassing disagree, neutral, and agree levels. The existence of such variation indicates disparities in the faculty's vision of challenges. Generally, the findings display wide recognition of challenges.

The first, "Lack of cooperation among faculty across disciplines," had a score of 4.01, reflecting strong impact. Inadequate collaboration decreases the chances of exchanging ideas and making learning communities productive. The second, "Students lacking leadership training," also had a high score, indicating poor quality instruction. The result points to the imperative of revamping leadership training programs. The both barriers mirror crucial institutional holes.

The third, "Non-existent teamwork culture in university learning," had a mean of 3.79, also with high impact. The absence of teamwork defeats teamwork, communication, as well as sharing of ideas. Dai (2022) also documented the inadequacy of means to good learning communities. Long et al. (2024) pointed out barriers like big classes and heavy lecturing. These are in agreement with the current study.

Further support comes from Salo, Francisco and Olin Almquist (2024), who noted strong perceptions of barriers to community adoption. also found agreement on obstacles to critical thinking in digital learning communities. They identified excessive teacher-student ratios and limited training as additional barriers. Collectively, these studies confirm the persistence of significant challenges. They stress the need to address structural and instructional constraints.

Response to the third question: What are the needs of building a professional learning community at Prince Sattam bin Abdulaziz University as viewed by the faculty members?

To determine the needs to establish a professional learning community in Prince Sattam bin Abdulaziz University considering the views of the faculty members, frequencies, percentages, means, and standard deviations of the items in the requirements axis were calculated. The findings are as shown in Table 10.

Table 10: Obstacles to Establishing a Professional Learning Community at Prince Sattam bin Abdulaziz University.

No.	Statement	Mean	Standard Deviation	Importance Level	Rank
9	Providing support for research and papers related to mechanisms for forming professional learning communities	4.45	0.498	Very High	1
11	Supporting innovation and creativity in various teaching strategies	4.44	0.497	Very High	2
6	Training new department heads on interaction mechanisms with professional learning communities	4.36	0.474	Very High	3
12	Organizing seminars on the methodology for developing strategic plans to establish professional learning communities	4.34	0.474	Very High	4
10	Supporting internal and external introductory meetings among university faculty	4.33	0.471	Very High	5
13	Supporting the building of positive relationships on campus	4.28	0.625	Very High	6
7	Preparing a collective environment within each department	4.26	0.419	Very High	7
1	Developing a university strategy that supports collaboration within the institution	4.25	0.418	Very High	8
3	Aligning the objectives of forming professional learning communities with Saudi Arabia's Vision 2030	4.22	0.415	Very High	9
4	Preparing training programs tailored for faculty members for each learning program	4.20	0.418	High	10
8	Training on ethics of integrity, transparency, and acknowledgment of facts	4.12	0.564	High	11
2	Effective coordination between university colleges and department heads to enhance professional learning community concepts among faculty	4.11	0.571	High	12
14	Adopting some global best practices in forming professional learning communities	4.07	0.661	High	13
5	Monitoring and developing the performance of each learning community annually	4.05	0.477	High	14
15	Developing academic programs offered by the university	4.02	0.835	High	15
16	Reviewing and developing the university courses offered	4.00	0.825	High	16
Overall Mean		4.22	0.280	Very High	

*The mean score is based on a 5.00-point scale.

Table 10 indicates that it is very important to establish a professional learning community in Prince Sattam bin Abdulaziz University, as an average of 4.22/5.00. This is in the "Strongly Agree" agreement, indicating agreement among participants. The means were in the ranges of 4.00 to 4.45, which fall under "Agree" and "Strongly Agree." These outcomes suggest strong acknowledgment of necessity by the faculty members. Generally, the findings indicate good support for institution of such communities.

Ranked first was statement number (9), "Support in research and papers concerning mechanisms for the creation of professional learning communities," with a mean of 4.45. This points up the central place of research and scholarship in preserving communities. Ranked second was the statement, "Supporting innovation and creativity in the use of instruction," with a mean of 4.44. It points up the adopting of practices appropriate to the diversity of students. In combination, research support and innovation are central foundations.

Statement (6), "Training new department heads on interaction with professional learning communities," was in the third place with 4.36. This points out the value of leader preparation in planned training and technology integration. Preparing leaders in such ways strengthens active engagement and productive leadership. The strained

planning, clubs, and safe settings. These programs enhance faculty development and institution-building, which indicated agreement in the value of professional learning communities. These communities enhance academic achievement in a positive way. In the similar way, Ng, Chan and Lit (2022) established robust support in the integration of critical thinking in sustainable digital learning communities. Collectively, these studies emphasize sustainable frameworks for long-term development. They verify the worth of the community-based programs in development.

Question Four tested whether gender, rank, and experience provided statistically significant differences in mobilizing professional learning communities. This aspect of the study established demographic distinctions in participation. The examination of these differences identifies the factors in participation. The findings direct inclusive practices for broadening participation. The findings ensure that all the faculty member has equal opportunities to participate.

5.1. First: Differences According to the Gender Variable

The researcher used Independent Samples T-Test to calculate the results of whether there is a statistically significant difference in the activation of the concept of the professional learning community in the university due to gender. The results are covered in Table 11 below:

Table 11: Independent Samples T-Test for Differences in the Opinions of the Study Sample by Gender.

Study Axis	Gender	N	Mean	Standard Deviation	t-value	Degrees of Freedom	Significance Level Statistical Significance
Reality of activating the professional learning community at Prince Sattam University	Male	202	3.3774	0.68372	4.666	377	0.000 Significant*
	Female	177	3.1047	0.39536			
Obstacles to forming the professional learning community	Male	202	3.5286	0.55472	1.300	377	0.195 Not significant
	Female	177	3.4641	0.38368			
Requirements for forming the professional learning community	Male	202	4.3233	0.26840	9.920	377	0.000 Significant*
	Female	177	4.0685	0.22600			

*Significant at $p < 0.05$

Based on the above Table 11, it can be concluded that there are no statistically significant differences in the responses of study participants regarding the obstacles to establishing a professional learning community at Prince Sattam bin Abdulaziz University in terms of the gender variable. The significance level was recorded at 0.195, which exceeds the threshold of 0.05, thereby indicating the absence of significant differences. This result demonstrates that gender does not play a meaningful role in shaping perceptions of barriers to establishing such communities within the university. Accordingly, faculty members, regardless of gender, appear to share similar views on the challenges involved. This outcome suggests that gender neutrality is evident in the evaluation of obstacles related to professional learning communities.

Table 11 also reveals that at the level of ($\alpha \leq 0.05$), significant differences exist in participants' responses concerning the axes of reality and conditions of establishing a professional learning community, according to the gender variable. The results indicate that male participants held the advantage in their assessments compared to their female counterparts. This finding may be attributed to male faculty members

being more familiar and better informed about the requirements and realities of professional learning within the university context. Such awareness could influence their evaluation of the structural and contextual conditions affecting the process. Consequently, gender appears relevant when assessing the underlying realities and conditions rather than the general obstacles.

5.2. Second: Differences According to Academic Rank

The researcher utilized the One-Way Analysis of Variance (One-Way ANOVA) to test the hypothesis of statistically significant differences in the concept of the professional learning community implementation at the university which could be attributed to academic rank variable. Table 12 below shows the following findings:

Table 12: Gives the Findings of the One-Way ANOVA Test, and Displays the Variations of the Responses of the Study Participants According to the Academic Rank Variable.

Study Dimension	Source of Variance	Sum of Squares	df	Mean Square	F Value	Sig. Significance
Implementation of the Professional Learning Community at Prince Sattam University	Between Groups	6.314	2	3.157	9.715	0.00* Significant
	Within Groups	122.175	376	0.325		
	Total	128.489	378			
Obstacles to Forming the Professional Learning Community at Prince Sattam University	Between Groups	0.032	2	0.016	0.203	0.816 Not Significant
	Within Groups	29.564	376	0.079		
	Total	29.596	378			
Requirements for Forming the Professional Learning Community at Prince Sattam University	Between Groups	31.616	2	15.808	15.133	0.00* Significant
	Within Groups	56.536	376	0.150		
	Total	88.152	378			

Significant at the level of ($\alpha \leq 0.05$).

In the findings of the above Table 12, it is observed that participant responses regarding barriers to establishing a professional learning community at Prince Sattam bin Abdulaziz University did not show statistically significant results based on academic rank. The attained significance level was 0.816, which is greater than 0.05, and therefore not statistically significant. This indicates that the academic rank variable had no effect on the perceived barriers to forming such a community. Accordingly, differences among academic ranks did not influence perceptions of obstacles. Thus, academic rank was not a determining factor in assessing barriers.

Table 13: Results of the LSD Test for Differences in Study Participants' Responses According to Academic Rank.

Study Dimension	Academic Rank	n	Mean	Professor	Associate Professor	Assistant Professor
Implementation of the Professional Learning Community at Prince Sattam University	Professor	78	3.5000	—	*	*
	Associate Professor	117	3.2157		—	
	Assistant Professor	184	3.1659			—
Requirements for Forming the Professional Learning Community at Prince Sattam University	Professor	78	4.4188	—	*	*
	Associate Professor	117	4.1083		—	
	Assistant Professor	184	4.0957			—

*Significant differences at the 0.05 level or below.

Table 13 also reveals statistically significant differences at the level of ($\alpha \leq 0.05$)

in participant responses regarding the reality and requirements of establishing a professional learning community, explained by academic rank. To determine specific differences among the categories of academic ranks, the researcher applied the Least Significant Difference (LSD) post hoc test. This analysis allowed for precise identification of where differences existed between groups. The findings clarified how academic rank impacted evaluations of requirements. The results are summarized in Table 13 below.

The findings in above Table 13 indicate that, there are statistically significant differences exists between professors and assistant professors, as also exists between professors and associate professors; concerning the reality and requirement of forming professional learning community within the university. Such disparities are in favor of the professors that can be explained by their higher awareness and awareness of the current state and the conditions of successful working with the professional learning community as compared to their colleagues of assistant and associate professors.

5.3. Third: Differences According to Years of Experience

The researcher used the One-Way Analysis of Variance (One-Way ANOVA) to determine the presence of statistically significant differences in the implementation of the concept of the professional learning community in the university based on the variable of years of experience. As it's showed in Table 14.

Table 14: Results of One-Way ANOVA for Differences in Study Participants' Responses According to Years of Experience.

Study Dimension	Source of Variance	Sum of Squares	df	Mean Square	F Value	Sig. Significance
Implementation of the Professional Learning Community at Prince Sattam University	Between Groups	10.203	2	5.101	16.216	0.000* Significant
	Within Groups	118.286	376	0.315		
	Total	128.489	378			
Obstacles to Forming the Professional Learning Community at Prince Sattam University	Between Groups	5.105	2	2.552	0.184	0.558 Not Significant
	Within Groups	24.491	376	0.065		
	Total	29.596	378			
Requirements for Forming the Professional Learning Community at Prince Sattam University	Between Groups	17.182	2	8.591	45.515	0.000* Significant
	Within Groups	70.970	376	0.189		
	Total	88.152	378			

At the significance level of $\alpha \leq 0.05$, no statistically significant differences were observed. As shown in the preceding Table 14, the responses of the study participants regarding the barriers to establishing a professional learning community at Prince Sattam Bin Abdulaziz University did not differ significantly according to years of experience. The significance value was 0.816, which exceeds the threshold of 0.05, indicating that the experience variable had no meaningful effect on perceived barriers to establishing such communities. In contrast, the results presented in Table 14 indicated that participants' responses concerning the current reality and the requirements for creating a professional learning community were statistically significant at $\alpha \leq 0.05$ when examined by years of experience. To identify the direction of these differences across the categories of experience, the researcher employed the Least Significant Difference (LSD) test, and the findings are reported in Table 15.

Table 15: Results of the LSD Test for Differences in the Participants' Responses According to the Variable of Years of Experience.

Study Dimensions	Years of Experience	N	Mean	Less than 10 years	10 to less than 15 years	15 years or more
Reality of Activating the Professional Learning Community at Prince Sattam bin Abdulaziz University	Less than 10 years	50	2.9271	-		*
	10 to less than 15 years	154	3.1788		-	
Requirements for Forming the Professional Learning Community at Prince Sattam bin Abdulaziz University	Less than 10 years	50	4.0213	-		*
	10 to less than 15 years	154	4.1274		-	
	15 years or more	175	4.3243			-

*Statistically significant differences were observed at the significance level of 0.05 or less.

Table 15 shows there was a big variance in the responses of the participants with less than 10 years of experience, as well as those who had 15 or more years of experience, concerning the reality and needs of professional learning communities. The experienced participants' responses were statistically significant at $p < 0.05$. This reemphasizes the influence of experience in determining the way practices for activation are seen. Also, that of conditions for prolific development. Therefore, experience has to come into consideration when designing such communities in the higher education sectors. Research Question Five investigated the activation model of professional learning communities in Saudi universities. The model was constructed by reviewing past studies and reviewing their current status in Prince Sattam bin Abdulaziz University. Faculties' barriers and requirements for the institution were acknowledged. Questionnaires' examination contributed empirical findings confirming the model. Fieldwork findings directed the constructed, structured form of interrelated elements.

The framework hierarchy begins with its philosophy and meaning, followed by defined objectives. It incorporates rationales supporting its design and specific plans for application. Conditions required for successful implementation are identified. Anticipated challenges are paired with strategies to address them. Authorities responsible for supervising implementation are also specified. It is based on the philosophy of Islamic values that form the Saudi higher education. It emphasizes the importance of cooperation, altruism and good knowledge sharing. Knowledge exchange and collaboration are associated with academic excellence. This increases the interaction between stakeholders concerning university education. The end goal is training the citizens to embrace change and support national development.

The importance of the framework lies on three aspects. To start with, professional learning communities play a critical role in sharing of knowledge in academia and in the society. Second, they fuel the scientific advancement with constant refreshing of skills according to the modern tendencies. Third, they are consistent with the UNESCO goals of promoting inclusive, equitable, and lifelong learning. These objectives are connected to the priorities of Sustainable Development Goals and Vision 2030 in terms of reformation in higher education.

6. Conclusion

This paper charted the activation, barriers and requirements of professional learning communities (PLCs) in Prince Sattam bin Abdulaziz University. The activation of PLC was

moderate (mean = 3.25), obstacles were high (3.50), and requirements very high (4.22), with the leading priorities in the research support, innovative pedagogy and leadership preparation. No obstacles based on gender and rank or experience were found to be significantly different, but male faculty, professors, and those with 15 years or more year's experience reported greater perceptions of current reality and needs. Such trends highlight the key role of the institutional preparedness, leadership potential, and focused resourcing.

Based on these results, the research paper adds a contextual sensitive framework that aligns PLCs to economic and sustainability concerns regarding Vision 2030. It has its value in actionable hierarchy where philosophy, goals, reasons, processes, facilitating conditions, countermeasures and governance transform evidence to action. Adoption can strengthen collaboration, instructional quality, and resilience. Future work should pilot the framework, evaluate outcomes longitudinally, and calibrate supports across ranks and experience levels.

6.1. Recommendations

Create a centralized PLC Governance Unit under the Vice President for Academic Affairs to implement plans of action, establish KPIs, and administer quarterly leadership bootcamps for new department heads with required completion and competency tests. Offer competitive micro-grants and seed funding for research on PLC mechanisms, accompanied by a university seminar series and yearly colloquium, to share findings and convert evidence into department-level implementation guides and checklists. Make protected PLC meeting time at least 90 minutes every other week an integral part of the definition of the term in teachers' loads, mandate cross-disciplinary teams to submit semester plans and partner MOUs, and assess progress by rubric-based reviews tied to promotion, incentives, and resource distribution. Ingrain student leadership training and innovative pedagogy into curricula by faculty development cycles, recasting of courses in redesign sprints, and peer observation tracked by equity-based dashboard surveillance across gender, rank, and experience cohorts.

6.2. Study Limitations

Study Limitations: The time-limited data collection and descriptive survey design restrict causal inference and the potential to monitor change over time. The generalizability is restricted by the single-institution focus in Saudi higher education and regional scope of the collected evidence. The result depends on self-reported responses based on the Likert-scale, which has the potential to incorporate measurement and social desirability biases in the given absence of observational or performance-based triangulation.

6.3. Study Implications and Future Directions

Study Conclusions and Future Work: The findings warrant the institutionalization of PLC governance, leader preparation, and evidence-based innovation, with safeguarded collaboration time and alignment with Vision 2030, to enhance instruction quality and organizational learning. Methodologically, vetted measures and comparative tests (t-tests/ANOVA/LSD) offer a replicable readout for readiness, challenges, and needs, guiding program structure and resource investment. In practice, universities can adopt micro-grants, leadership bootcamps, cross-course PLCs, and dashboard monitoring to convert evidence into enduring practice. Future studies must pilot the framework in multiple colleges, employ mixed-methods and longitudinal study designs

to evaluate effectiveness, investigate equity by gender/rank/experience, and correlate PLC activation to learning by students and institution performance outcomes.

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