The Role of Virtual Professional Learning Communities in the Self-Professional Development of Teachers

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Abstract

The study examines the role of virtual professional learning communities in improving the self-professional development of teachers in Ha'il region schools, analyzes the barriers to their effectiveness, illuminates their success factors, and proposes a vision for activating (PLCs) virtualization to improve general education teachers' self-development. A descriptive study of 241 public school instructors of all genders was conducted. Three sections comprised the survey. Respondent demographics include expertise, years of experience, and gender. The second is to assess public education instructors' virtual PLC experiences. The third field explores barriers to virtual learning communities' use to improve general education teachers' self-professional development, while the fourth examines virtual PLC success factors. According to research, virtual communities' reality is as high as possible in their average scores, but their weighted average is the lowest, indicating the need for reality development. The requirements for success and the obstacles to activating Virtual PLCs are close; work policies conflict, requiring an analysis of these needs and the organization of teacher training courses to equip them to face these challenges. Virtual PLCs groups help general education teachers improve self-professionally regardless of gender, qualification, stage of school, or experience.

Keywords: Virtual Professional Learning Communities, Self-Professional Development, Teacher's Education.

1. Introduction

In recent years, an increasing number of instructors have utilized virtual professional learning communities (VPLCs) for their professional development. These online communities let teachers talk to each other, share ideas and materials, and keep learning and thinking. VPLCs are an exciting opportunity for teachers wanting to take charge of their professional growth. By connecting with colleagues from around the world, accessing a wealth of resources, and engaging in ongoing reflection and collaboration, educators can enhance their skills and knowledge while feeling supported by a community of like-minded professionals (Bustamante & Moeller 2013; Keamy & Selkrig, 2015).

Professional Learning Communities

According to the sixth CITA accreditation criterion, a good school must have staff members that are highly trained, competent, and qualified to support student learning, complete administrative tasks, and advance the mission and objectives of the institution. Academic accreditation standards for schools in the United States vary from one state to another but all

work to achieve eleven essential components of school improvement, one of which is offering sustainable professional development for educators, administrators, and students (Al-Maliki, 2010). Thus, the value of learning communities in educational institutions is highlighted to help them improve their performance, achieve societal goals, keep up with modern demands, and face challenges. Therefore, the educational environment turns into an incubator for learning and growth for all elements of the educational process (Berkovich & Bogler, 2020). Thus, the change in professional learning communities demands a transition from individual management to participatory leadership and from teaching to learning. Collectively, this means moving away from isolation and toward discussion and cooperation, developing work teams, using communication skills to create a vision and mission, establishing shared goals and values, and continuously preparing to elevate the abilities and performance of the school community as a whole (Liu & Yin, 2023).

Building professional learning communities (PLCs) has gained popularity as an approach to school development and student progress. They made use of data from a qualitative multiple-case study, which interrogated practices of leadership, culture, teacher collaboration, professional learning, and development strategies (Hairon & et al., 2017). The results showed that the principals had a major influence on the progression of schools as PLCs. Principals were described as inspiring figures of leadership who had sparked forward progression, delegated responsibility, and fostered adherence to agreed goals. A change in leadership could potentially have a favorable impact, as indicated in the study's results. A satisfactory level of consensus was sought using participative, inclusive, democratic, and collaborative decision-making processes (Pan & Chen, 2023). Staff members mentioned that their relationships were built on mutual trust and openness and they were encouraged to voice their ideas. Students' shared responsibility, peer support, encouragement, and coteaching were all applied. Coteaching techniques were found to be a productive method of collaborative work-embedded professional learning which is connected to the core principles of professional learning communities. The establishment of schools as PLCs was hindered by structural conditions.

Self-Professional Development

The improvement of a teacher's personal qualities is comprised of, among other things, self-professional growth. That becomes everyone's obligation as a teacher. They must frequently advance their skills and knowledge because they are educators and teachers. The most important component of education at whatever level has always been teacher professional development (Liu & Yin, 2023). By taking part in workshops, seminars, conferences, writing journals, creating lesson plans in the form of modules or books, conducting research, and offering community services, teachers can build their professionalism away from classrooms. In contrast, inside classrooms, they can conduct classroom action research or lesson study (Pan & Chen, 2023). By doing these two kinds of activities, teachers are able to make a reflection on their teaching and enhance it based on the past shortcomings or difficulties encountered throughout the teaching-learning process. Moreover, they can view every single student uniquely (Turner & et al., 2018).

In the self-initiated professional development approach, instructors are expected or required to ask for assistance from institutions and colleagues starting from planning areas of improvement and ending with assessing whether they accomplish the intended professional improvement (Texas Education Agency, 1997). Collegial cooperation and collaboration play a key role in teachers' personal and professional development, where they gain more self-assurance and tenacity in their approach to teaching (Nurhayati, 2018). Hence, teachers usually employ self-initiated professional development in various methods such as reading a journal

article that interests them and conducting mini-classroom research. In initiating efforts to strengthen one's career, self-monitoring is another option (Zeivots & et al., 2023).

According to research, PLCs upgrade teachers' self-development. They learn and share by working together and this may inspire classroom innovations. PLCs also offer teachers continual professional development, which is vital for keeping abreast of research and best practices. PLCs encourage constant improvement (Pan & Chen, 2023). Teachers work collaboratively to identify areas for improvement and devise ways to raise student results. As a result, this collaborative approach builds trust among educators, boosting communication and collaboration (Turner & et al., 2018).

PLC implementation has its challenges. Scheduling meetings or joint tasks may also be difficult. Despite these obstacles, many educators feel that PLCs deepen students' results and teachers' self-development. So, schools and districts must promote PLCs and integrate them into larger efforts to heighten teaching quality (Nurhayati, 2018).

Virtual Learning Community

By carefully designing dynamic learning environments that foster a culture of learning, online virtual learning communities can be executed to facilitate teacher professional development. This requires an educational framework that nurtures the establishment of human relationships and trust in an environment, where people exchange learning experiences through technology. To establish an online learning environment, one must not only incorporate technology into existing professional development procedures, but also design, build, and support a scientific technical architecture. In other words, it is a process that is both purposive and fluid in nature in meeting the continuing professional development needs of educators (Dzul & et al., 2023). Learning rises when the learning materials are clear, the organization is good, and the trainer's expectations are high. Learning and teaching in the online environment occur as a result of interactions between students and teachers with peers, content, and the trainer (Keamy & Selkrig, 2013; Alghamdi, 2022). While creating online learning communities, several factors that should be considered, such as the distribution of learning among members, a high level of discourse, engagement, cooperation, and social negotiation, and sharing a goal or challenge to offer a shared focus (Bustamante & Moeller, 2015).

Online virtual learning communities allow teachers to reflect on their practices by interacting with others, which can polish their professional practices. However, the traditional practices of those societies may not be relevant to the needs of teachers in the knowledge society. That is why authors like Sari & Tedjasaputra (2013) confirm that, in order to enhance the role of virtual learning communities in improving the professional performance of teachers, they should be involved and motivated to take part in the community of practice, encourage them to think about developing their professional practices continuously, and provide them with continuous support. Nevertheless, many teachers are not prepared to deal with these modern challenges, because they have been brought up and taught in traditional ways (Zeivots & et al., 2023).

The Ministry of Education in Saudi Arabia has put forward a mechanism to rectify the performance of teachers through the sixth system within the professional growth program for teachers, under which professional growth communities are included (The sixth system, 2018). It is a way to acquire experiences that may not be found in books and references but rather in the experience of actual teachers. For the educational process (Development of Educational Services, 2014), instead of remaining isolated from other professionals, teachers should develop as researchers (Al-Nabawi, 2008). Nonetheless, many of them still strive for professional development, especially teachers in remote, rural areas, because many current practices in teacher professional development still focus on teacher-centered paths rather than collaborative approaches and often only concentrate on face-to-face interaction. Thus, it is

necessary to form virtual educational and learning communities through various means of communication (Al-Nabawi, 2008; Alghamdi, 2022).

Due to the growing acceptance of the Web by many educational institutions, plentiful teachers and learners now use electronic teaching and learning environments (Widodo & Allamnakhrah, 2020). Because of these changes, many learners' actions now take place in an online environment that isolates them from other learners. So, online educational exchanges have doubled significantly for both teachers and students. Supporting teachers and students who work together online is key to creating a virtual learning community. Educational communities are groups of people with shared aims and needs. They are sharing resources and ideas and helping each other to demonstrate this, in addition to creating a social environment to motivate both teachers and students. Because e-learning promotes the constructivist approach to education, which emphasizes student participation, leaders of these communities have noticed the benefits of e-learning for students. This in turn is strongly influenced by the social constructivist perspective of Vygotsky's theory, which represents the basic element that builds the virtual learning community via the Internet (Vygotsky, 1978). In this environment, we find that there is a correlation between social interaction and the individual in the joint construction of knowledge (Sari & Herrington, 2013).

Collaborative Professional Learning Communities Features

In a study on the online learning community, Tu & Corry (2002) discussed the presence of four elements at the top of social learning that constitute the online learning community, which are the community of practice, the learning community (collaborative learning), networks (social presence), and technology (knowledge building). They discussed virtual professional learning communities' pros, cons, and efficacy for teacher development and student accomplishment in diverse scenarios. McConnell & et al. (2013) argued that collaborative professional learning communities (PLCs) that involved instructors in instructional inquiry over time increased instruction and student outcomes. Also, students' learning outcomes markedly improved after a rapid switch to virtual professional learning (Singh & et al., 2022). Video-conferencing software helps PLCs overcome obstacles and build community. Additionally, teachers should be part of forums, interest groups, and online professional communities to interact with peers and know how the rest of the world is doing with digital education (Singh & et al., 2022).

For teachers, schools, districts, and states, virtual teacher professional learning has many potential advantages, according to Singh & et al. (2016) and Tuli and Bekele (2020). It is a chance to alter teachers' methods, which have the biggest impact on students' academic success. A flexible approach, the ability to create a professional community, new professional standards for commitment to liability, and an improvement in teacher retention rate by encouraging teachers to continue their professional learning are potential benefits of teachers' virtual professional learning.

Collaborative Professional Learning Community Challenges

Mostly, professional development is typically provided as short-duration workshops that are ineffective in actual practice. A scarcity of shared meeting times and a dearth of instructors who share the same subject areas or common goals and interests are considered barriers to adopting PLC. The results of studies also pointed out a number of performance obstacles from teachers' point of view. The numerous teaching and administrative obligations that reduce the opportunities for cooperative work among teachers are among the most critical performance barriers associated with the personal features of the teacher. Another obstacle in this topic is that PLC receives less attention in professional development programs. As for the obstacles linked to the school setting, the primary one is the school's shortage of a

PLC-supportive instructional climate within the institution. The intensity of students' numbers in the classroom cuts down the chances of the teacher's reflection on teaching practices (Al-Otaibi, 2021; Balyer, Karatas & Alci , 2015 ; Park & So ,2014 ; Teague & Anfara, 2012).

2. Research Problem

Many nations, including Australia (Scott, 2010), Canada (Lock, 2012), the United States, and Finland (Barab, 2015), have used online virtual teaching/learning communities to support teachers' professional development. The findings of earlier studies by McConnell & et al. (2013), Tuli & Bekele (2020), and Singh & et al. (2016) exhibit that virtual learning communities are a valid way to foster engagement and provide long-term support for teachers (Scott, 2010). The online community extensively utilizes social media in developing countries like Saudi Arabia. The usage of virtual communities by teachers to advance their abilities has not yet been the subject of a thorough investigation. For their pupils to receive a high-quality education and achieve success, teachers must continuously learn new skills and develop their roles.

The objective of this research is to create a virtual learning community that will support teachers in the Kingdom of Saudi Arabia in their ongoing professional growth and to confirm the implementation's enabling and hindering aspects as well. The following key query addresses the potential for diagnosing the issue of the study: How can instructors boost their professional development with the aid of online professional learning communities?

3. Research Questions

The present study attempted to answer the following sub questions that emerge from the main question:

(1) What is the reality of virtual professional learning communities in public education schools in Ha'il?

(2) What are the obstacles that limit the activation of virtual professional learning communities to ameliorate the self-professional development of public education teachers in Ha'il?

(3) What are the requirements for the success of professional learning communities to refine the professional development of general education teachers in Ha'il?

(4) Are there differences at the level of significance (0.05) in the responses of the study sample due to some variables (gender, specialization, academic qualification, academic level, and years of experience)?

4. Methodology

In order to determine the reality and function of virtual professional learning communities, as well as the challenges limiting their effectiveness, the prerequisites, and success factors, this study adopts a quantitative approach. It also presents a suggested vision for activating professional learning communities. Ha'il's general education instructors could benefit from virtualization, according to Stedman & Adams (2012) and Creswell (2009), who both indicated that this method was suitable for such a study.

Participants

A total of 121 male and female instructors who will be working at Ha'il schools in 2022 make up the study sample. Because it is challenging to compile a list of every member of a target population before selecting a sample from it, the participants were chosen by random sampling (Ary & et al., 2010). As indicated in Table 1, the researcher considered their distribution throughout the taxonomic variables of the study, which are specialty, experience, and gender.

Table 1. Distribution of research samples to taxonomic variables.

S	Taxonomic variables		N.	Percentage	Total
1	Specialization	Theoretical	143	59.3%	241
		Scientific	98	40.66%	
2	Experience	Less than 5 years	26	10.78%	241
		5 to 10 years	71	29.46%	
		More than 10 years	144	59.75%	
3	Qualification	Bachelor's degree	155	64.3%	241
		Educational diploma	77	31.9%	
		Master's degree	7	2.9%	
		PhD	2	0.82%	
4	Gender	Male	87	36.09%	241
		Female	154	63.9%	
	Total		**241**		

Data Collection

To achieve the research's objectives, the researcher created a questionnaire, which was based on earlier research and the literature on online professional networks and teacher self-development. There were three sections in the questionnaire. The first is the respondents' demographic data, which covers their gender, years of experience, and areas of specialty. The second one, which consists of twenty statements, gauges the reality of online professional learning communities among teachers in public schools. The third field, which consists of sixteen statements, discusses barriers to the activation of virtual learning communities for general education teachers to reinforce self-professional development. The fourth field explains the conditions for the success of virtual professional learning communities. Fifteen expressions were done to enhance general education instructors' self-development. On a scale from one (strongly agree) to five, there are fifteen 5-point Likert scale statements in this section (strongly disagree).

Validity

Internal consistency was performed for the questionnaire of the study by calculating the Pearson correlation between the subscales. The results are depicted in Table 2.

Table 2. Descriptive indices of subscales suggest the proposed scenarios.

	The reality of virtual professional learning communities	**Obstacles that limit the activation**	**Requirements for the success of professional learning communities**
The reality of virtual professional learning communities	1		
Obstacles that limit the activation	.78**	1	
Requirements for the success of professional learning communities	.89**	.69**	1

The correlation coefficients were moderate and high, meaning the scale has good internal consistency.

5. Results

The range of 5-1 = 4 was calculated and divided by the scale's number of cells in order to accomplish the study's goals, examine the data that had been gathered, and ascertain the length of the lowest and upper limits of the five-scale cells. This amount was added to the lowest value on the scale to achieve the correct cell length, which is 5/4 = 0.80, and for you to choose the top limit for this cell. Therefore, the cell lengths were 1.01 to 1.80 (strongly disagree), 1.81 to 2.60 (disagree), 2.61 to 3.40 (neutral), 3.41 to 4.20 (agree), and 4.21 to 5.00 (agree) (strongly agree).

To answer the first question, frequencies and averages were calculated, and the percentage of each statement was also measured. The degree of validation was determined in light of the five-point Likert score, as illustrated in Table 3.

Table 3. Frequencies and percentages for Virtual Professional Learning Communities in Ha'il schools.

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
1	The professional field of virtual professional learning communities is predefined and clear to teachers.	6 2.5%	30 12.4%	63 26.1	86 35.7%	56 23.2%	2.63	Neutral
2	The educational objectives of the virtual professional learning communities are clearly containing cognitive and affective performance.	7 2.9%	19 7.9%	91 37.8%	75 31.1%	49 20.3%	3.55	Agree
3	Virtual professional learning communities contribute to the organization of professional development programs and activities for all teachers of all professional levels and scientific specializations.	3 1.2%	13 5.4%	57 23.7%	108 44.8%	60 24.9%	3.85	Agree
4	I can interact with my colleagues through discussion and inquiries about the virtual professional learning community within my field of specialization.	5 2.1%	15 6.2%	57 23.7%	99 41.1%	65 27%	2.83	Neutral
5	It helps the teacher to be aware of current updates in his/her field of specialization in terms of strategies and methods of	3 1.2%	14 5.8%	48 19.9%	95 39.4%	81 33.6%	2.97	Neutral

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
	evaluation that are commensurate with current technical developments.							
6	It contributes to increasing my ability to convert theoretical knowledge into practical application, as it allows for exchanging visits and attending applied lessons with experienced teachers.	3 1.2%	20 8.3%	54 22.4%	92 38.2%	72 29.9%	3.84	Agree
7	Many teachers lack the skills to use knowledge banks.	4 1.7%	17 7.1%	38 15.8%	96 39.8%	86 35.7%	4	Agree
8	Some teachers suffer from a lack of experience in dealing with computers and modern digital information technology.	-	10 4.1%	44 18.3%	120 49.8%	67 27.8%	4.01	Agree
9	The virtual professional learning community requires all members to participate in various activities and practices within the domain.	6 2.5%	26 10.8%	64 26.6%	84 34.9%	61 25.3%	3.69	Agree
10	Many teachers lack the skills to use knowledge banks.	3 1.2%	16 6.6%	44 18.3%	115 47.7%	63 26.1%	3.89	Agree
11	Profiles and application links sent through the virtual professional learning community are performance improvements in synchronous teaching.	6 2.5%	49 20.3%	70 29%	72 29.9%	44 18.3%	3.40	Neutral
12	Teachers have the technological competencies that enable them to design and manage learning resources.	-	24 10%	58 24.1%	101 41.9%	58 24.1%	3.78	Agree
13	Teachers are willing to participate in virtual professional learning communities.	-	18 7.5%	47 19.5%	103 42.7%	73 30.3%	3.94	Agree
14	Virtual professional learning communities blur boundaries between schools as teachers	-	11 4.6%	40 16.6%	120 49.8%	70 29%	4.02	Agree

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
	connect with others in other locations.							
15	Teachers invest in information and communication technology to support group learning practices in virtual professional communities through various websites.	19 7.9%	53 22%	66 27.4%	73 30.3%	30 12.4%	3.15	Neutral
16	A strong communication network helps teachers benefit from each other digitally.	1 4%	22 9.1%	50 20.7%	111 46.1%	57 23.7%	3.81	Agree
17	By joining the virtual professional learning community, I acquired the skills and methods of providing students with immediate feedback during synchronous teaching.	3 1.2%	5 2.1%	60 24.9%	102 42.3%	71 29.5%	3.95	Agree
18	The virtual professional development community contributes to the acquisition of self-learning skills by looking at links and electronic files.	6 2.5%	9 3.7%	60 24.9%	116 48.1%	50 20.7%	3.80	Agree
19	Practices within the virtual professional learning community range in difficulty.	3 1.2%	8 3.3%	49 20.3%	118 49%	63 26.1%	3.94	Agree
20	Joining the virtual professional learning community contributed to the development of my skills in group and collaborative learning by exchanging experiences with colleagues.	3 1.2%	4 1.7%	46 19.1%	121 50.2%	67 27.8%	4	Agree

According to Table 3, with a mean score of 2.63, statement (1), but the response of agree has more percent than neutral 35.7%. “The professional field of virtual professional learning communities is predefined and clear to teachers,” indicates that the study sample agrees that the concept of virtual professional learning communities is not clear to teachers. This result might relate to an inadequacy of understanding of the significant idea of professional learning communities for teachers.

The phrase “I can interact with my colleagues through discussion and inquiries about the virtual professional learning community within my field of specialization” which was the

average (2.63) explores the agreement of the study sample on their need clusters of teachers having sound knowledge of technology. The response goes with the study done by Djatmiko (2011) and Singh & et al. (2022) who stated that "collaboratively planned individual development is appropriate for the teacher who is moving toward autonomy but still needs some assistance from staff developers or colleagues in planning and implementing his or her professional development."

The study sample agrees that "some teachers suffer from a lack of experience in dealing with computers and modern digital information technology," which pinpoints poor technical skills among teachers enabling them to participate in exchanging educational ideas about the teaching and learning processes with their colleagues. They also form groups and create professional work teams in learning societies at the level of different subjects and disciplines, as well as expanding the scope of their training and professional development experiences during service. The previous results are in line with those of Zainab (2016), Al-Otaibi (2021), and Al-Mutairi (2018).

To answer the second question, frequencies and averages were calculated, and the percentage of each statement was also measured. The degree of validation was determined as shown in Table 4.

Table 4 Frequencies and percentages for the obstacles that limit the activation of Virtual Professional Learning Community items.

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
21	Some teachers' limited command of the English language weakens their communication with other colleagues in different nations to learn about new updates in the field of teaching and learning.	1 4%	10 4.1%	33 13.7%	78 32.4%	119 49.4%	4.24	Agree
22	A paucity of self-professional development programs for contemporary global experiences.	1 4%	7 2.9%	48 19.9%	112 46.5%	73 30.3%	4.02	Agree
23	Poor planning of the training programs offered to teachers considering the actual training needs of teachers.	-	15 6.2%	39 16.2%	115 47.7%	72 29.9%	4	Agree
24	Scarcity of professional learning communities in schools that address school-specific issues.	1 4%	13 5.4%	51 21.2%	106 44%	70 29%	3.94	Agree
25	Weakness of the teacher's ability to employ the Internet in virtual professional learning communities.	7 2.9%	17 7.1%	61 25.3%	103 42.7%	53 21.9%	3.72	Agree
26	The weak motivation of teachers to participate in	2 8%	10 4.1%	47 19.5%	95 39.4%	87 36.1%	4.05	Agree

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
	self-professional development programs.							
27	Difficulty in attending all activities and events implemented in the virtual professional learning community.	-	8 3.3%	58 24.1%	106 44%	69 28.6%	3.97	Agree
28	Carrying out some events in the evening is an additional burden that hinders regular attendance.	-	4 1.7%	39 16.2%	79 32.8%	119 49.4%	4.29	Agree
29	Weak cooperation between teachers in activating virtual professional learning communities.	-	21 8.7%	68 28.2%	104 43.2%	48 19.9%	3.74	Agree
30	A paucity of availability of appropriate equipment for learning resources and self-development for the teacher.	-	6 2.5%	38 15.8%	60 24.9%	137 56.8%	4.36	Agree
31	Not linking the results of teachers' performance evaluation with self-professional development programs.	8 3.3%	24 10%	49 20.3%	95 39.4%	65 27%	3.80	Agree
32	The weak motivation of the teacher to develop himself/herself professionally.	15 6.2%	41 17%	61 25.3%	70 29%	54 22.4%	3.45	Agree
33	A dearth of support and funding for self-professional development programs.	1 4%	7 2.9%	35 14.5%	89 36.9%	109 45.2%	4.26	Agree
34	The large number of teaching and administrative burdens assigned to the teacher impedes attendance at all events in the virtual professional learning community.	1 4%	-	37 15.4%	59 24.5%	144 59.8%	4.42	Agree
35	Teacher time constraints do not allow for self-development and full use of virtual professional learning communities.	3 1.2%	4 1.7%	43 17.8%	59 24.5%	132 54.8%	4.28	Agree
36	My participation in the activities of the virtual professional learning community is hampered	-	32 13.3%	36 14.9%	83 34.4%	90 37.3%	3.95	Agree

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
	by the high cost of an Internet subscription.							

Despite the efforts exerted in educational reform in the KSA, the activation of professional learning communities faces many challenges. This is confirmed by the study sample's opinions, encompassing professional development programs and school material aspects which cleared in acceptance of Likert response mean. These challenges facing professional learning communities can be classified into three areas: those related to teachers, which are linked to the personal aspects of the teacher, incorporating many teaching and administrative burdens that reduce the opportunities for joint work between teachers, followed by the professional development programs' neglect of the concept and significance of professional learning communities. Then, there is the absence of a common vision among teachers towards advancing their professional performance, as well as their lack of English language skills possession as one of the practices of the professional learning community. Also, they lack clear goals for professional learning communities, management, and work systems and procedures. The previous table exposes that most of the survey sample concurred with the statement that "some teachers' deficit of English language abilities limits their communication with other colleagues in different nations to learn about new updates in the field of teaching and learning" (4.24).

To benefit from other teachers' experiences in adapting to changes brought on by globalization and informatics and resolving the crises that education faces, both on a traditional education level and education level, it is difficult for most school teachers to interact with other colleagues abroad due to their poor English language skills. This is especially true considering global transformations.

Likewise, a high percentage of the sample mentioned that a "lack of availability of appropriate equipment for learning resources and self-improvement for the teacher" prevented them from any procedure that involved development and modernization.

The outcomes of this study Concorde with those of Al-Boushi (2105), Al-Suwaidan (2016), and Ibrahim & et al. (2018) that there were a set of obstacles facing the professional development of teachers in Al-Ula Governorate in the Kingdom of Saudi Arabia. The most important of them are the shortage of material and moral incentives for distinguished teachers, increasing the teaching burden, such as amplifying the quorum of classes, and the scarcity of Internet service with its weak speed at the school.

To answer the third question, frequencies and averages were calculated. The degree of validation was determined as illustrated in Table 5.

Table 5. Frequencies and percentages for requirements for the success of the Self-Professional Learning Community's items.

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
37	Determining the overall vision and objectives of the self-professional development program provided through the virtual learning environment and	-	8 3.3%	47 19.5%	97 40.2%	89 36.9%	4.10	Agree

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
	making it clear to teachers.							
38	Developing a clear and public policy and strategy for the self-professional development program in the virtual learning environment.	-	20 8.3%	43 17.8%	98 40.7%	80 33.2%	3.97	Agree
39	Teacher who can give respond clearly to the requirements and needs of teachers and lead the group discussion.	-	5 2.1%	36 14.9%	115 47.7%	85 35.3%	4.15	Agree
40	Determining the activities and methods of interaction used and the times of their use.	-	9 3.7%	43 17.8%	115 47.7%	74 30.7%	4.04	Agree
41	The virtual learning environment should be interactive that stimulates and encourages the practice of learning.	3 1.2%	7 2.9%	38 15.8%	107 44.4%	86 35.7%	4.09	Agree
42	Building a common educational knowledge base.	-	6 2.5%	45 18.7%	100 41.5%	90 37.3%	4.13	Agree
43	School teachers are keen on constantly updating and developing their knowledge base.	-	16 6.6%	36 14.9%	112 46.5%	77 32%	4.03	Agree
44	Continuous evaluation of the self-professional development program with all its components and addressing its weaknesses.	-	15 6.2%	43 17.8%	105 43.6%	78 32.4%	4.01	Agree
45	Searching for knowledge from a variety of different sources.	-	3 1.2%	27 11.2%	133 55.2%	78 32.4%	4.18	Agree
46	Familiarity with digital technologies that help in the teacher's self-professional development.	-	7 2.9%	37 15.4%	126 52.3%	71 29.5%	4.07	Agree
47	Using search strategies efficiently to find information.	-	-	40 16.6%	132 54.8%	69 28.6%	4.11	Agree
48	The ability to employ the information network (the Internet)	-	3 1.2%	39 16.2%	115 47.7%	84 34.9%	4.15	Agree

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Degree of verification
	in the teacher's self-development.							
49	The ability to use electronic learning resources.	-	3 1.2%	38 15.8%	126 52.3%	74 30.7%	4.11	Agree
50	The ability to use educational forums and blogs on the Internet.	3 1.2%	8 3.3%	62 25.7%	100 41.5%	68 28.2%	3.92	Agree
51	The ability to use the social network for self-professional development.	3 1.2%	1 4%	52 21.6%	115 47.7%	70 29%	4.03	Agree

Table 5 displays that most of the study sample feel that "teachers are keen on regularly updating and enhancing the knowledge base" which is necessary for the success of virtual learning communities (4.18). On average, people agreed with the statement "the capacity to utilize the information network in the teacher's self-development" (4.15). The expression "choosing a teacher who can respond clearly to the requirements and demands of teachers and who can lead the group discussion" is also used to describe it. Teachers need to be supported by leaders who create and manage virtual professional learning communities to be successful in any educational environment. The teams that make up virtual professional learning communities will be directly impacted by this improvement in teachers' abilities and students' learning (Kociuruba, 2017).

The researcher summarizes the requirements for the success of the elements of the professional learning community from the study samples' point of view in the following elements: the pursuit of knowledge, the teacher's capability of responding to the requirements and needs of others and leading the group discussion, the use of the information network for his/her self-development, building a common educational knowledge base, and formulating the vision.

The results showed that the teacher is the basis for enhancing the educational process and achieving professional learning societies by directing energies according to the needs of the learner, besides his role in transforming the school into a professional learning community and building a culture of learning and work. Where teachers share authority and responsibility. Decision-making and student learning development. To have an effective role in transforming schools into professional communities. This is consistent with other studies' results, which aimed to identify the main factors for the development of effective professional learning communities. Four main factors were worked out: supportive participatory leadership, a common vision, group cooperation, and common practices (Chen & et al., 2016; Kociuruba, 2017).

To answer the fourth question, use multiple analysis of variance (MANOVA) tests to identify the influence of demographic variables (gender, specialization, academic qualification, academic level, and years of experience) as portrayed in Tables 6 and 7. The statistically significant level is .05 as comparisons.

Table 6. The effects of demographic variables (gender, qualification, stage of school, and experience) on virtual professional learning groups in the self-professional development of general education teachers.

Source	Type III sum of squares	Df	Mean square	F	Sig.
Corrected model	35016.52	26	1346.78	3.646	000
Intercept	1257382.62	1	1257382.62	3403.914	000
Gender	265.90	1	265.90	.720	397
Qualification	892.75	3	297.58	806	492
Stage of school	381.64	2	190.82	517	597
Experience	108.31	2	54.15	147	864
Error	79050.13	214	369.39		
Total	9955104	241			
Corrected total	114066.65	240			

The results presented that the role of virtual professional learning groups in the self-professional development of general education teachers is not effective because of gender, qualifications, stage of school and the number of years of experience for teachers.

Table 7. The influence of demographic variables "specialization."

Factors	VAR00001	N.	Mean	Std. deviation	*T*-value	Df	Sig.
virtual professional learning communities	Theoretical	143	77.27	12.09	1.53	239	127 Not sig.
	Scientific	98	74.91	11.24			
the obstacles that limit the activation	Theoretical	143	63.06	9.52	3.27	239	0.001 Sig.
	Scientific	98	66.64	6.20			
requirements for the success	Theoretical	143	60.79	9.19	93	239	355 Not sig.
	Scientific	98	61.88	8.77			
Overall score	Theoretical	143	201.13	23.94	81	239	419 Not sig.

Consequently, this confirms the weakness of the practice of professional learning communities and might relate to teachers in Ha'il using the same practices regardless of their academic standing, gender, or experience. As a result, the sample's responses to the study tool were statistically insignificant when compared to the other study variables. This outcome may also be related to some professional specialties' tiny sample sizes. The findings of this study agreed with those of Al-Boushi (2105), Al-Suwaidan (2016), and Ibrahim & et al. (2018).

6. Discussion

This study aimed to identify the reality of virtual professional learning communities in public education schools in Ha'il, by exploring the obstacles that limit the activation of virtual professional learning communities to upgrade the self-professional development of general education teachers in Ha'il region. Then, it examines the requirements for the success of professional learning communities, proving if there are any statistically significant differences at the level of significance (0.05) in the responses of the study sample due to some variables (gender, specialization, academic qualification, academic level, and years of experience). Finally, it renders a proposal for activating virtual professional learning communities.

Virtual professional communities offer several advantages over traditional in-person communities. Firstly, they allow professionals to connect and collaborate with others worldwide, breaking down geographical barriers and enabling a more diverse range of perspectives and experiences to be shared. Secondly, virtual communities can be accessed at any time, making it easier for busy professionals to participate in discussions and share their knowledge without having to attend physical meetings or events. Thirdly, virtual communities can be more inclusive, providing a platform for those who may not have access to traditional professional networks due to location or disability. Finally, virtual communities can be more cost-effective than traditional in-person communities, as no travel or accommodation expenses are involved. Overall, virtual professional communities offer a convenient and accessible way for professionals to connect with others in their field and share knowledge and ideas.

7. Limitations

This research had three specific limitations, as follows. The study was conducted on a relatively small sample (241) of general education teachers in Ha'il region, KSA, during the academic year 2022/2023. While disseminating the results, these constraints must be considered.

8. Conclusion and Suggestions

From the above findings, it can be surmised that professional learning communities have emerged as an important tool for promoting teacher self-development in the education sector.

By providing opportunities for collaboration and ongoing professional development, PLCs can help teachers in staying current with the latest research and best practices while also promoting a culture of continuous improvement. Although there are some challenges associated with implementing PLCs effectively, many educators believe that they are an essential component of efforts to raise teaching quality and students' outcomes.

These results also agree with previous research on the importance of professional learning communities as one of the main tools employed by teachers to ameliorate their skills and develop their teaching methods. For instance, knowledge participation in professional learning communities is updated, making room for access to the latest research and sharing ideas. Skills development: this type of community provides opportunities to master new skills and develop personal and social capabilities. Exchange of experiences: this type of society constitutes an appropriate environment for the exchange of experiences between the participants, where each participant can benefit from the experiences of his/her colleague. Finally, achieving change: this makes positive progress in the behavior of the teacher, as each participant in these communities can add to the repertoire of his/her colleagues' experiences.

However, the strength of this study lies in submitting a proposed vision to activate virtual learning communities for general education teachers in Ha'il, depending on the need for the teacher to possess the digital competencies necessary for the success of virtual societies and to play his/her role, the absence of professional societies in schools, and thus the absence of virtual professional learning communities.

9. Future Research Could Address the Field of Virtual Professional Development for Teachers

Future research could investigate the effectiveness of different virtual professional development models and their impact on teacher learning outcomes, how to design the role of technology in facilitating virtual professional development, and how it can be used to enhance teacher learning experiences. Furthermore, future studies need to examine the impact of cultural differences on teacher participation and engagement in virtual professional

development programs, investigate strategies for designing and delivering personalized teacher attitudes towards technology integration in the classroom, and interrogate others for evaluating the effectiveness of virtual professional development programs, enclosing measures of teacher learning outcomes, program satisfaction, and impact on classroom practice.
This study can be replicated with a large sample size.

- **Conflicts of Interest**
  The authors declare that they have no conflicts of interest. The funders played no role in the study's design, data collection, analysis, interpretation, manuscript writing, or decision to publish the findings.
- **The Informed Consent to Participate:** An informed verbal consent to participate was obtained from all the study participants.
- No animal trials were used in this study, which focused on teachers (therefore, we did not need committee approval).
- **Ethical Approval**: All techniques implemented in the study adhered to the 1964 Helsinki declaration and its later amendments and the institutional research committee of the Deanship of Scientific Research at the XXX.
- **Data Availability Statement**: The raw data supporting the conclusion of this article will be available upon request to the corresponding author.

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