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Informal learning through social media: exploring the experiences of teachers in virtual professional communities in Kazakhstan

Assel Sharimova [a] and Elaine Wilson [b]

aGraduate School of Education, Nazarbayev University, Nur-Sultan, Kazakhstan; bFaculty of Education, University of Cambridge, Cambridge, UK

ABSTRACT

As a source of social capital, teachers' professional networks have been linked in the research literature with professional learning. Social media platforms have increased teachers' professional networking opportunities, suggesting more space for informal learning. Capturing the experiences of 41 school teachers in Kazakhstan using thematic analysis of semi-structured interviews, the study provides evidence of teachers' use of social media within professional communities to obtain knowledge manifested in an overlapping mixture of news, information, opinion, experience and teaching resources. The study results provide a partial explanation for teachers' engagement in virtual professional communities in the context of informal learning. Highlighting the need for professional connectedness as part of a strong professional commitment to learning, the study points to the contextual factors such as the professional isolation of teachers in rural schools, the need for mentoring support, and the context of educational change. Equally, it stresses the role of teachers' self-efficacy to share knowledge, linking it with opportunities for informal learning of active and passive participants in virtual professional communities. Finally, the study's findings also point to the importance of face-to-face collaboration within and beyond schools to promote professional knowledge exchange within virtual professional communities.

Introduction

The notion of teacher professionalism has become an essential object for consideration and redefinition. Reconceptualising teacher professionalism, Hargreaves and Fullan (2012) identify social capital as an integral part of professional capital as well as human capital and decisional capital. Such amplification of teacher professionalism has been described by Shirley (2017) as a 'new professional imperative'. One of the components of this new imperative is that teachers themselves should build their social capital by leading peer-learning networks. Being reinforced internationally, professional networks have become an integral part of the current understanding of teacher professionalism; hence, the conceptual frameworks within the OECD's Teaching and Learning International Survey (2016, 2019) include peer networks and collaborative culture among teachers. The recent systematic literature review on social capital regarding teacher professional learning (Demir 2021) shows that social capital is beneficial for professional development. Underlining the findings of several studies, the review suggests that although professional development workshops

could be helpful for teachers to receive information, informal social networks promote its interpretation, sharing and contextualisation. Yet, informal professional learning is an under-researched area that must be placed in a much higher position (Evans 2019).

Informal learning

Opportunities for formal learning, provided by experts, resulting in the awarding of some form of accreditation (Knight 2002, Boud and Hager 2012), are necessary but not sufficient for teacher learning. Research has identified the importance of informal, non-formal, incidental, work-based, or spontaneous learning (Day 1999, Eraut 2000, 2004, Knight 2002). De Laat (2012, p. 10) suggests that 'non-formal' often is related to planned activities, namely 'workshops or coaching, without being certified', whereas 'informal learning' is related to the unplanned learning process. In this way, De Laat (2012) argues that informal learning suggests a bottom-up structure within a working culture of self-regulated professionals.

Since professional knowledge exchanged within teachers' networks could vary following the teachers' learning needs, such knowledge could be defined as a combination of 'public' and 'personal' knowledge related to the teaching profession (Eraut 1995, 2000, 2004). Eraut (2000) conceptualised the exchange of knowledge within networks of social workers as being informal learning, where reactive informal learning has been conceptualised as nearly spontaneous without setting aside a particular time for it, for example, 'noting facts, ideas, opinions, impressions; asking questions; observing effects of actions [and] recognition of possible future learning opportunities' (Eraut 2004, p. 250). Although the exchange of professional knowledge within professional networks of teachers could be organised in formal meetings and conferences, knowledge exchange can also happen spontaneously. Therefore, an exchange of professional knowledge within a teachers' networks could be conceptualised as part of reactive informal learning.

In examining how informal learning is happening, Eraut (2004) noticed that obtaining information and asking questions beyond the network of close colleagues were essential modes of learning, and employees vary in their proactiveness in making relationships. Considering the network perspective, the position within the social structure and the quality of relationships determine the types of knowledge received (Scott 2013). The rapid development of digital technologies, particularly the rise of social media platforms, has increased opportunities for teachers' professional networking and, hence, increased opportunities for exchanging professional knowledge, suggesting more space for informal learning. While deliberating on future trends for networks of learning and recognising the demand in the growing social media space, Daly and Stoll (2018) argue that new critical awareness will be to understand how to identify and leverage the potential of technology for learning.

Social media and virtual professional communities

Social media is defined as web-based apps that allow the production and distribution of User Generated Content based on the conceptual and technological basis of Web 2.0. (Kaplan and Haenlein 2010). Many social media applications are now available, allowing users to create and share information in a virtual community, removing communication obstacles previously caused by geographic isolation (Ngai *et al.* 2015). At the same time, Van Dijck (2013) argues that the key terms used to characterise social media functions, such as 'social', 'friends' and 'collaboration', could be the reflections of early utopian view. She suggests that instead of using the term 'social media', it would be better to use 'connective media' as the meaning of the words that describe automated platforms that direct human sociality. In this way, Van Dijck (2013) articulates one of the biggest criticisms of social media by stressing that companies usually emphasise human connectedness and lessen automated connectivity. Although social media is criticised for its business model,

manipulation and reproduction of information inequality (Boyd 2014, Couldry and van Dijck 2015, Lanier 2018), the potential benefits of social media have become widely accepted because of the power to connect easily.

The recent literature reviews (Macià and García 2016, Lantz-Andersson *et al.* 2018, Greenhow *et al.* 2020) reiterate the role of social media communities and networks in teachers' professional learning. Synthesising the existing research, Macià and García (2016) point to the opportunity for reflection on teaching practice and sharing resources and experience; Lantz-Andersson *et al.* (2018) emphasise the opportunity to receive emotional and professional support as well as to share and curate new ideas; while Greenhow *et al.* (2020) mark the opportunity to address immediate individual and social needs as well as wider networks of knowledge. The growing interest in using social media for teachers' professional learning has been recently reiterated in response to the recent pandemic (Alwafi 2021, Greenhow *et al.* 2021, Ghamrawi 2022).

Overall, the research literature suggests that social media for professional learning is explored differently, mainly within the frameworks of a community (Davis 2015) or a network (Fancera 2020). This study refers to the virtual professional community of teachers in line with the definitions of *networks* and *communities* provided by Wenger *et al.* (2011), where 'the work of a community is to develop the learning partnership that creates an identity around a common agenda or area for learning', whereas 'the work of a network is to optimise the connectivity among people.' (p.12). They define a network as a collection of personal interactions, relationships, and linkages between members who have personal motives to connect. A network can form one interconnected community, generate interconnected communities within its social structure, and provide an opportunity for knowledge exchange between such communities.

Conceptual framework

The study's conceptual framework was informed by Eraut's (2004) theoretical framework of understanding learning factors for informal learning. The framework suggests a triangular relationship between confidence, challenge and support. The first concept that has been highlighted as one of utmost importance was the term 'confidence', suggesting that a high proportion of learning at work takes place through practice and proactive search for learning opportunities for which confidence is required. While confidence arises through meeting the challenges at work, the confidence to meet the challenges depends on how much learners feel encouraged in their efforts. Considering other emerging factors, this triangle was updated with additional elements, such as feedback, the value of the work and commitment (Eraut 2004). Being informed by the above-mentioned triangle of learning factors, the conceptual framework for the present inquiry involves a triangular relationship between learning factors, such as the need for professional connectedness, knowledge sharing self-efficacy, and knowledge sharing and receiving, which will be summarised in the following sections.

Knowledge sharing and receiving

Research on knowledge sharing in social media space varies in its explanation of what knowledge sharing stands for (Ridings *et al.* 2002, Wang and Noe 2010). This study aligns with John's (2013) explanation of sharing. Conceptualising knowledge in virtual professional communities as a combination of 'public' and 'personal knowledge' (Eraut 2000) related to the teaching profession, knowledge sharing refers to the activities in which teachers give or request knowledge in response or on their initiative, implying active participation in virtual professional communities. Only reading others' posts could be related to the passive involvement and hence, knowledge receiving. Teachers recognise this place to provide opportunities to find answers to their questions or learn from other people's questions and responses and receive feedback and support, which have been identified by Eraut (2004) as some of the factors for informal learning.

Teachers' need for professional connectedness

As, initially, the need for 'connectedness' was a driving force in using social media (Van Dijck 2013), the need for professional connectedness has been conceptualised as one of the factors of informal learning within virtual professional communities. Existing literature suggests that teachers engage in virtual professional communities to avoid professional isolation. Teachers may be objectively isolated from colleagues who understand their practice (Hur and Brush 2009, Wesely 2013, Cho 2016) or simply because of the absence of time to talk (Hur and Brush 2009). Equally, the need for professional connectedness has been reinforced in response to the recent pandemic (OECD 2020, Ghamrawi 2022). The need to belong is associated with teachers' professional practice and linked with professional identity (Wenger 1999). The way teachers enact professional identity is an indicator and a key factor for their levels of commitment (Day 2017). Therefore, the need for professional connectedness has been conceptualised within this study as the need to be less isolated from other professionals as part of teachers' professional commitment to learning. It could be related to what Eraut (2004, p. 269) names in his theoretical framework the 'value of the work' and 'commitment.

Knowledge sharing self-efficacy

In line with Eraut's (2004) framework, confidence was also used within the present study of informal learning in virtual professional communities. Concerning confidence, Eraut (2004) suggests that the dominant meaning is related to Bandura's concept of personal self-efficacy, which refers to 'people's belief about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives' (Bandura 1986, p. 71). To this end, reviewing existing knowledge-management research, Kankanhalli *et al.* (2005) suggest that knowledge self-efficacy usually appears in the people's belief that their knowledge could be helpful to the organisation. The concept of teachers' knowledge sharing self-efficacy is gradually receiving attention (Cheung *et al.* 2013, Tseng and Kuo 2014). Along with codified public knowledge, teachers' knowledge in virtual professional communities could be codified in teaching resources, ideas and opinions based on personal teaching experience and/ or acquisition of public knowledge. In this way, teachers' knowledge sharing self-efficacy within the present conceptual framework is defined as the efficacious belief of teachers about sharing their teaching resources, opinions, ideas and experiences with other members of their virtual professional communities.

Methodology

Aiming to capture teachers' experience in virtual professional communities from the perspective of informal learning, forty-one teachers from twenty-nine schools were interviewed. Using semi-structured face-to-face interviews allowed us to obtain contextual rich insights into the needs, beliefs, and experiences of teachers who were members of virtual professional communities. The semi-structured face-to-face interviews in the study included the following parts: the first part was composed of questions related to general background information about the research participants. The second was concerned with their membership in virtual professional communities and why they started to use social media for professional networking. The third part of the interview schedule was devoted to the members of their virtual professional networks and their experiences. Over six months commencing in November 2017 and finishing in April 2018, 41 interview respondents were recruited, employing volunteer-convenience sampling in 29 schools. The schools were sampled using cluster-probability and volunteer-convenience sampling procedures in one of the regions of Kazakhstan.

The number of interview participants was represented mainly by teachers working in rural schools (31 interview participants, recruited from 23 rural schools), five teachers recruited from schools in two district centres, and five teachers from schools in the regional centre, representing five different schools. The number of female participants accounted for 85% (35 out of 41), while only 15% of participants (6 out of 41) were male. Figures 1 and 2 present the interview participants' teaching experience and teaching subject. In a sense, it could be suggested that the variation in interview participants in terms of their teaching experience and teaching subject are represented by a range of views, including five deputy school principals.

Thematic analysis was identified as a method for qualitative data analysis (Braun and Clarke 2006). It should be noted that all interviews were recorded and transcribed in the original languages by the researcher during the data collection process, which provided the opportunity to reach the saturation point with emerging findings. The analysis of transcribed interviews was conducted in the corresponding languages (Kazakh and Russian) with only codes, themes and selected quotes from the participants being translated into the English language to avoid 'the early "domestication" of research into English' (Temple and Young 2004, p. 174).

Findings

Overall, it seems to be the case that the virtual professional community was a widespread phenomenon among teacher respondents. Interview respondents were asked to list the three most used platforms within their virtual professional communities. While teachers use various platforms (WhatsApp – 40 respondents, Telegram – 5 respondents, Mail.ru – 4 respondents, Vkontakte – 3 respondents, and Facebook – 2 respondents), WhatsApp was the most widely used messenger platform for virtual professional communities among teachers. On the other hand, the use of WhatsApp messenger by the research participants of this study could partially be explained by the form of sociality under investigation, particularly the online exchange of knowledge: instant messaging applications allow sharing experiences and situations, while asynchronous applications allow less interactive communication (Lantz-Andersson *et al.* 2018). Equally, teachers may prefer to use more private spaces to mitigate the risks of 'context collapse' (Carpenter and Harvey 2019). Finally, the choice of the platform reflects the domination of the 'assemblage of networked platforms' (Van Dijck *et.al.* 2018). At the same time, the ubiquitous use of WhatsApp messenger could also be explained by the available technical conditions, such as Internet coverage. In other words, teachers may use WhatsApp messenger due to the speed and coverage of the Internet, as there are still areas which do not have access to a high-speed Internet, and this is still a problem in rural areas, which was scheduled to be solved (Priminister.kz 2019).
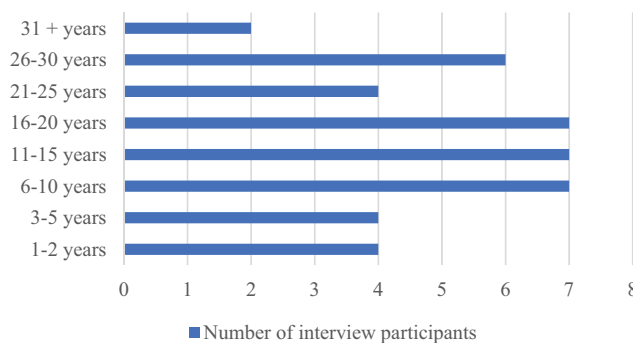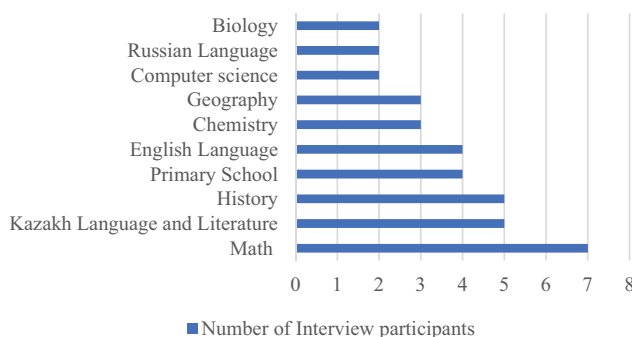

Figure 1. Teaching experience of interview participants.

Figure 2. Teaching subject of interview participants.

Knowledge sharing and receiving

The most common shared knowledge within virtual professional communities of teachers was in the form of news, information, opinions, experience, and teaching resources. It was associated with teaching practice and school organisational processes. Teachers identified links to and membership in virtual professional communities as being a vital and immediate source of up-to-date news:

> In other groups, it is interesting for me to exchange information with other colleagues and get something new. For example, we have a group concerning the updated curriculum where members are teachers I was trained with. In this group, we also have our trainer. She shares all the news, for example, about various events, conferences, and contests, and this is the quickest way because sometimes such information does not reach our school.

Social media links formed an essential route for exchanging information and opinion. As a result of access to this knowledge, teachers were able to organise their work more rapidly and efficiently: '*Sometimes our head of school methodological unit shares with us a common task, so when it is urgent, we discuss it there or if it is not urgent then we discuss the best time for us to meet for a discussion*'. In some cases, teachers used the space of virtual professional communities to exchange opinions and engage in discussions, including how to interpret and implement the new curriculum changes being made within the country: '*For instance, now in relation to the updated content of the education, we shared our opinions about mid- and short-term planning, discussed how everyone is doing it*'.

Teachers from different schools were able to rapidly exchange teaching ideas and resources as they developed their curriculum and assessment systems in response to the large-scale country-wide reforms:

> Mostly I share resources, something that I find and think could be very helpful for other teachers as well . . . In general, we discuss everything and share links to various websites with useful and necessary resources for the updated curriculum.

Some teachers pointed out opportunities to hear and learn about school practice in different districts as well to exchange experiences related to the current changes in the secondary education system:

> Here we have questions related to teaching instruction and the updated curriculum, or sometimes we have technical questions about how to install or fix some programmes or, for example, questions that arise when we fill in an e-journal or national automated database.

Findings of the study suggest that a high proportion of teachers' time when participating in virtual professional communities was devoted to knowledge receiving rather than knowledge sharing: '*I am looking through every day, but comment – no, not every day, 'I am mostly reading*'. Finally, on the one hand, teachers exercised knowledge sharing in virtual professional communities because of the

opportunity to save time: *'Speed, instant exchange'; on* the other hand, time was identified as one of the forces that hindered knowledge sharing practice: *'Of course, I read everything, look through from time to time, because nowadays there is a huge amount of information and, therefore, I try at least to be able to read and filter in order not be left behind'*.

The need for professional connectedness

Teachers' engagement within virtual professional communities was partially associated with teachers' need for professional connectedness as part of the professional identity and commitment to learning. Teachers pointed out that their virtual professional network engagement was driven by the need to be less isolated from other colleagues: *'You are not boiling in your own bowl', sharing your impressions or thoughts and learning something new'*. Being connected within virtual professional communities provided teachers with opportunities for professional discussions with other colleagues: *'exchange of opinions with colleagues around the country, for example, I have colleagues in cities like XXX and XXX, but with the help of virtual networks, we are communicating*, and professional updates by other colleagues: *'well, you are always up-to-date, always aware of latest changes, know how other people work'*. At the same time, the thematic analysis of the interview transcripts reveals three themes, suggesting potential contextual drivers to be connected in virtual professional communities, such as the need for mentoring support, the educational changes, and the context of rural schools.

Mentoring

Beginning teachers used their virtual professional communities to obtain mentoring support: *'. . . because this is my first year of teaching'; 'mostly young teachers ask'*. On the one hand, the study could suggest that these teachers are isolated since most respondents were teaching in rural schools and might have been the only teachers of the subject in their schools. Hence, novice teachers in rural schools could still need subject-specific knowledge despite being assigned to a mentor. On the other hand, regardless of the school location, it could be a sign of insufficient mentoring support provided in their schools, which has been partially addressed recently in the adoption of the Law on Teacher Status on the 27 December 2019, which stipulates the payment for teachers appointed to be mentors for novice teachers.

At the same time, while formal mentoring programmes usually suggest that a beginner teacher should be assigned to a more experienced teacher, current research in this field indicates that novice teachers receive support from social connectedness through networking within and beyond the schools (Baker-Doyle 2012, Le Cornu 2013, Fox and Author 2015, Struyve *et al.* 2016). In this regard, along with the understanding of the need for a supportive culture of the relationship of trust, Fox and Author (2015) suggest that beginning teachers should be proactive in obtaining support for their professional development through networking, being aware that their behaviour and attitudes are associated with the resources they access. In this way, the pattern identified in the findings of this study provides an example of the proactive behaviour of beginning teachers in obtaining professional support through virtual professional communities.

Educational change

Teachers reported engagement in virtual professional communities to make sense of educational changes. Specifically, as discussed above, the respondents pointed to the opportunity within social media to share their opinions, resources and experience in the context of the updated curriculum: *'During our course, we considered criteria-based assessment, and now we share the experience'*. Therefore, it could be stated that the contextual need for professional connectedness was related to the updated State Compulsory Education Standards (SCES), the new curriculum and the assessment system, which was introduced in 2016. In September 2017, the updated curriculum was delivered to 42% of pupils (1,2,5 and 7th grades) (Information Analytic Center (IAC) 2018). On

the one hand, it could be suggested that teachers valued the benefit of working together, preferring the exchange of knowledge to have informed professional judgements (Veugelers and O'Hair 2005) and to overcome the constraints of time and distance, they had become members of virtual professional communities. Hence, the reported content related to the educational change reflected their current interest.

At the same time, it could be suggested that teachers were using social media to overcome the uncertainty of educational change and the constraints of time and distance. Summarising the empirical literature on social and personal psychology, Baumeister and Leary (1995) conclude that people seem widely and strongly inclined to form social relationships, and external threats increase the tendency to form strong bonds. Equally, creating and sustaining relationships within virtual professional communities could also be explained by theories of modern economics, in which one of the assumptions regarding human nature, summarised by Fukuyama (2018), is that people tend to cooperate because they believe that doing so would better suit their self-interest than acting alone.

Rural schools

Finally, the analysis of teachers' responses illustrated that teachers who participated within virtual professional communities did reduce their professional isolation due to the distance between rural schools and the distance between rural schools and the district and regional centres. While some teachers reported the need for connection with rural schools from other districts: '*We even sometimes solve general questions here, in the regional group, as it is interesting for us to learn how it is in other districts*', others reported the benefit of having virtual professional connections with teachers from urban schools: '*We have teachers of different subjects and many deputy heads of schools, who are working in urban schools and they somehow get information quicker than we do*'. Teachers may be objectively isolated since they may be the only subject specialist in their schools, coupled with the distance between rural schools and the distance between rural schools from the district and regional centres due to the large geographical area of the country and the policy of universal and compulsory access to schooling. Simultaneously, while some teachers reported the need for connection with rural schools from other districts, others said they benefit from virtual professional relationships with teachers from urban schools.

Although the findings of this study could imply a commitment to the professional learning of teachers working in rural schools, it could also indicate that these teachers were trying to bridge the existing disparity between rural and urban schools in terms of access to information and resources. In this way, this study reinforces the long-standing agenda for secondary school system improvement related to the disparity between rural and urban schools, as there is still a gap between urban and rural schools according to national and international assessment systems, as well as allocation of school resources and (Information Analytic Center (IAC) 2018; OECD 2015). Therefore, although the number of interview participants was limited, it could be suggested that teachers in rural areas were using social media platforms to be less isolated from other professionals, including colleagues in urban schools.

Knowledge sharing self-efficacy

The study suggests that knowledge sharing within virtual professional communities could be partially associated with teachers' knowledge sharing self-efficacy. Perceived knowledge sharing self-efficacy could be related to teachers' comparing themselves with other professionals, mainly those considered more qualified, experienced or knowledgeable: '*I haven't shared anything yet, mostly I receive from people because I have only three years of experience. Mostly I get information from highly qualified teachers. I am afraid to share as it may not be correct*'. In line with social cognitive theory, comparing themselves with other professionals in virtual professional communities could be considered a source of teachers' knowledge sharing self-efficacy and might be

connected to what Bandura (1997) refers to as vicarious experiences, which affect efficacy beliefs through the transfer of skills and comparison with the accomplishments of others because absolute criteria of adequacy do not exist for many activities.

Bandura (1997) cautions that social comparison can manifest in various forms, with positive and negative effects. Modelling is most significant when perceived inefficacy represents a skill gap rather than a misunderstanding of existing abilities: in this way, it guides and promotes self-development (Bandura 1997). Within this mindset, people regard their capability at a particular time as being at a temporary level in their development process as opposed to a sign of 'basic capability' (Bandura 1997). Therefore, on the one hand, it could be suggested that teachers use personally selected virtual professional communities to model their professional development as their responses about current self-appraisal could be interpreted as being transitional level: '*I don't have such confidence yet*'. On the other hand, perceived inefficacy because of comparing themselves with other colleagues could reflect a misappraisal of the skills they possess, reducing teachers' knowledge sharing self-efficacy and preventing them from sharing knowledge.

Equally, teachers' knowledge sharing self-efficacy could be associated with their affective state within groups, particularly the sense of professional connectedness with colleagues. Teachers tended to exchange knowledge with people to whom they felt connected: '*How can you not share if we all know each other; in our district, we all like one family. I think we should work together*'. Not all groups reported to have this sense of professional connectedness: '*In general we mostly socialise in our district group and, as for our regional group, we mostly receive information as there are so many people whom I don't know, whereas in the district group we all know each other*'. The sense of professional connectedness was primarily associated by participants with prior professional relationships, as teachers reported their confidence about sharing knowledge with colleagues whom they had previously met face-to-face, suggesting that knowledge sharing self-efficacy was associated with the level of relations: '*I think when you know a person in real life, it is easier to communicate virtually in comparison with those whom you don't know*'. Such association between knowledge sharing self-efficacy and a sense of professional connectedness could partially be explained by self-determination theory (SDT).

Deci and Ryan (1985) identified four types of extrinsic motivation, namely, external, introjected, identified and integrated forms of regulation, based on internalisation and suggest that internalisation is promoted by social context. On the one hand, there is the need for belongingness and connectedness; on the other hand, people are more willing to participate in important activities in social groups when they believe in their efficacy in such tasks (Deci and Ryan 1985). In this way, the association between social context and self-efficacy could suggest that one of the contextual factors associated with self-efficacy to share knowledge is the sense of professional connectedness, which is not static and could be increased. In the context of social media space, this research suggests that one of the ways to promote teachers' sense of professional connectedness is to increase opportunities for face-to-face meetings.

Discussion

Presenting insights on teachers' experiences of participating in virtual professional communities, this study suggests that it provides the opportunity to access new knowledge (news/information, opinions, experience, teaching resources) whenever required. In this way, informal learning in virtual professional communities becomes part of the professional duties of a practising teacher, which could be part of what Hargreaves and O'Connor (2018) call 'collaborative professionalism'. Simultaneously, although teachers acknowledge the opportunity to connect with other professionals, regardless of time, location or distance, they identify time as one of the constraints for active engagement in virtual professional communities.

The study results suggest that a high proportion of respondents' time when participating in such communities was devoted to knowledge receiving rather than sharing. This finding aligns with the existing research on social media use among educators (Seo and Han 2013, Robson 2018). The existing research suggests that not only active participants but also passive participants receive knowledge in virtual professional communities (Kelly and Antonio 2016, Robson 2018). To this end, Robson (2018) argues that although most users are passively engaged within such spaces, this could positively impact their perceptions of themselves as professionals; therefore, active participation may be seen as agentic and performative, whereas passive engagement can be seen as constructive. It could be suggested that the study's findings are in line with the argument of Robson (2018) regarding the need for a rethinking of professional identity in the digital era. Bringing attention to the complicated and messy social realities of online social spaces and participation, Robson (2018) put forward a conceptual model of professional identity that suggests conceptualisation in 'both performative and constructive terms' with respect to active and passive forms of participation, unlike scholars' interchangeable use of these terms when discussing teachers' professional identity.

The study suggests that, although not sufficient on its' own, knowledge sharing self-efficacy is one of the prerequisites for teachers' active participation. The identified association is consistent with the results of previous studies (Cheung *et al.* 2013, Tseng and Kuo 2014). An emerging theme from the analysis of interview transcripts was that perceived knowledge sharing self-efficacy could be partially associated with teachers' sense of professional connectedness. The respondents tended to have higher knowledge sharing self-efficacy within virtual professional communities set up to support existing relationships. In a sense, the study reiterates the findings of Siciliano *et al.* (2017), who suggest that formal and informal structures within organisations affect the patterns of interaction as teachers tend to consult with those whom they trust. The study results indicate that a sense of professional connectedness could partially be associated with the level of relationships, particularly the beneficial effect of a previous face-to-face meeting. In this way, the study corroborates prior research suggesting that in comparison with entirely virtual communities, mixed communities, characterised by both offline and online interaction, were associated with greater sociability due to a more significant level of trust and less 'free riding' (Matzat 2010), and open groups with many people tend to have a disconnected and fragmented nature of interactions; therefore, smaller groups of participants could be an option to overcome this issue (Goodyear *et al.* 2019).

This study echoes existing research literature, suggesting that teachers' engagement in virtual professional communities reduces professional isolation (Wesely 2013, Cho 2016, Yildirim 2019). Simultaneously, the study offers some of the contextual drivers associated with the need for professional connectedness, such as mentoring support, educational change, and working conditions in rural schools. Identified needs could indicate what type of resources, information, experiences, and insights are required or interesting for teachers. At the same time, the study suggests that social media technologies provide rural school teachers with more opportunities for informal learning. Moreover, as Coker (2021) reiterated, the professional use of technology in a rural setting to facilitate the flow of professional capital may give access to new knowledge on an equal basis.

Finally, an increased need for professional connectedness and the identified role of knowledge sharing self-efficacy in virtual professional communities highlight the role of facilitators in virtual professional communities. Along with bringing new knowledge and expertise within the contextual needs for professional learning, facilitators could also be the ones who pay attention to teachers' knowledge sharing self-efficacy. For example, appreciate teachers' participation and encourage further engagement, as experience is a source of members' self-efficacy perceptions (Bandura 1997) and considering opportunities for face-to-face meetings.

Conclusion

Overall, capturing the experiences of school teachers in Kazakhstan within their virtual professional communities, the research findings demonstrate the use of social media to obtain professional knowledge, which could be described as a mixture of news, information, opinions, experience, and teaching resources. Based on a thematic analysis of semi-structured interviews, the research suggests a partial explanation for teachers' engagement in virtual professional communities in the context of informal learning. Raising the importance of informal learning, the study points to the need for professional connectedness as part of a strong professional commitment to learning and the contextual factors such as the professional isolation of teachers in rural schools, the need for mentoring support, and educational change. Equally, the findings of this study reiterate the role of teachers' knowledge sharing self-efficacy, linking it with opportunities for informal learning of both active and passive participants in virtual professional communities and the importance of face-to-face collaboration.

Although the research is limited to volunteer-convenience sampling, suggesting a potential for self-selection bias (Olsen 2011), the study promotes professional communities in social media as a valuable tool for informal learning and that teachers' commitment to learning and knowledge sharing self-efficacy contribute to informal learning in virtual professional communities. Finally, the needs identified for professional connectedness using social media platforms have been reinforced considering the recent pandemic, suggesting educators pay more attention to creating conditions for informal learning in virtual professional communities. Overall, the study could be instructional for educators interested in promoting informal learning in virtual professional communities.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Assel Sharimova http://orcid.org/0000-0002-3359-7515
Elaine Wilson http://orcid.org/0000-0002-6914-7321

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