DEPARTMENT OF EDUCATION, COMMUNICATION & LEARNING

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SOCIAL MEDIA AND TEACHER PROFESSIONAL DEVELOPMENT

Swedish teachers' discussion in thematic Facebook groups

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Abstract

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Purpose: To analyse ways in which Swedish teachers engage in social media informally for professional development. The focus lies on teachers joining a thematic group on Facebook in order to participate in the sharing and obtaining of practical knowledge.

Theory: The concept of Communities of Practice, which has three characteristics: the domain, the community, and the practice. The concept was originally introduced by Lave and Wenger (1991).

Method: A systematic literature review is conducted. Graph Application Programing Interface is used to collect the data. Ethnographically inspired method is used to narrow and select the data of particular interest. Thematic analysis is used to analyse the data.

Results: When a newcomer in the community initiates a post, a flow of information and tips from more experienced members towards the newcomer are mobilized in the discussions. The majority of the information is in the form of personal examples or professional advice. When a more legitimate member of the community opens up a similar topic as the newcomer, what follows is an exchange of opinions between several more experienced members of the group. There is much more emotional support and disagreement in the discussions following a post initiated by a newcomer. Individual practice and professional advice are common in both cases. The systematic research review showed that Communities of Practice is the most applied theoretical concept in the current state of research regarding teacher professional development on social media.

Foreword

This thesis is written as conclusion of the International Master's Programme in Information Technology and Learning at the University of Gothenburg. Completing it was one of the most meaningful projects I have undertaken. I would like to express my deepest gratitude to everyone who has helped me in this enterprise. Special thanks go to my supervisor, Mona Lundin, who with her valuable guidance, support, and advice has helped me find my way through the writing process of what turned into a purposeful and joyous work. I dedicate it to anyone who is interested in the results with the hope that it will be a useful referral.

Gothenburg, May 2018
Herolind Ramadani

Table of content

Introduction

Technology is proliferating in the educational context in different forms and ways. Governmental policies and reforms heavily support the inclusion of IT in schooling (Digitaliseringskommissionen, 2014; Skolverket, 2013). Institutions and stakeholders actively invest in technology in order to enhance the learning outcomes of their students. Teachers informally engage in various communities in the Internet to communicate with their colleagues. In recent years, major goals of educational movement have been attached to the need for IT use in schools. At the same time, little is known about the pedagogical efficiency of the technology in education. Institutions are struggling to balance the IT integration with teacher professional development (PD). Recent research has shown the deficiency of IT use in schools (Goodwin, 2011; Fleischer, 2012; Andersson et al., 2014). Technology as an asset is not enough to make educational practice grow (Cuban, 2001; Selwyn, 2012). Thus, for successful implementation and integration of IT in schooling practice, equal focus should be paid to teacher PD within IT (Digitaliseringskommissionen, 2014; European Commission, 2012).

Teachers have traditionally organised their teaching autonomously and seldom do they discuss their teaching practice (Hattie, 2009). The emerging use of social media by teachers signifies the new possibilities and conditions that the new portals offer for sharing teaching practice, resulting in the classroom door being opened. The aim of this study is to analyse ways in which Swedish teachers engage in social media informally for PD. Specifically, the focus lies on teachers joining a thematic group on Facebook in order to participate in the sharing and obtaining of practical knowledge. The focus of this study is a Swedish language Facebook-group of teachers focused on discussing the Flipped Classroom (FC) approach. The research involves analysing two different threads made by two different members of the FB-group and the discussions happening in their comment sections.

The major purpose of this study is to contribute to the overall educational research with a focus on IT by taking on a suitable methodology for analysing the discussions and applying an appropriate theoretical framework for analysing the results, with the aim to understand if, and if yes, how social media can contribute to teacher PD. In line with this aim, the following research questions guide this study:

- What is the current state of research concerned with teachers' use of social media for competence and professional development?
- How do teachers participating in a thematic group on Facebook share their teaching practice/experiences?
- What kind of activities do teachers engage in while participating in a thematic group on Facebook? What is mobilized when a more peripheral member makes a post as compared to when a legitimate member does the same? Do peripheral and more legitimate members use the thematic group differently?
- How do teachers contribute in maintaining, developing, and sustaining such social media communities?

The first research question is addressed by a systematic research review, which forms the backdrop for the empirical study in this thesis work. The methodology used to collect and analyse the data is offered before the findings are inspected in detail. The thesis is summarized and conclusions are drawn in the section about discussion and conclusion.

Previous research

While teacher PD is studied in its traditional form of delivery and/or as part of development programs, many teachers are now turning to social media for their personal PD. A growing body of research that studies the ways in which teachers engage on social media for PD is gaining momentum. Since the literature on this topic seems to be thin, the literature review in this section aims to find out ways in which teacher PD on social media has been studied, the ways that teachers engage on social media for PD, and the extent to which teaching practices and student learning are affected by social media for professional purposes.

Scopus database was used to conduct a systematic literature review. Using different established search key terms, an initial set of 101 publications was retrieved. A detailed description of this dataset is provided by using Scopus tools. A manual screening narrowed down the initial set to 22 relevant articles, of which 13 focused exactly on the topic of this review. A more detailed analysis of the 13 articles is provided.

Most of the research focused on teacher PD on Twitter and comparably less on Facebook. Nearly all of the studies used a mixed method for data collection including online surveys, interviews, and content analysis of discussion threads.

The review of previous research was guided by the following questions:

1. How has the teacher PD on social media been studied?
2. How do teachers use social media for PD?
3. How does teacher PD affect teaching and student learning?

Scopus analytical tools were used to analyse the whole dataset of the identified initial 101 documents so as to give a general description of the field. Articles that were not cited at least twice were not considered.13 articles were analysed in detail. As a result, a number of themes were identified.

General description

Using the analytical tools offered by Scopus database, different aspects of the initial publications were studied. Figure 1 shows the year distribution of the initial set of publications found (n=101) as well as the relevant publications about PD (n=22). The first document was published in 2009; there was no publication in 2010, however there were publications in each of the next consecutive years. The first year with more than 10 publications was 2012, with 12 publications. There was a slight decline in 2013 (n=11) and then a sharp increase in 2014 (n=17) followed by a peak of publications in 2016 (n=28). There is a decline in publications in 2017 (n=14). The first relevant articles with more than two citations were published in 2012 (n=4) and the next two years reflect the distribution of the initial set's distribution. There is a decline in 2015 and 2016 (n=3, n=4). Overall, relevant article distribution reflects initial set distribution.
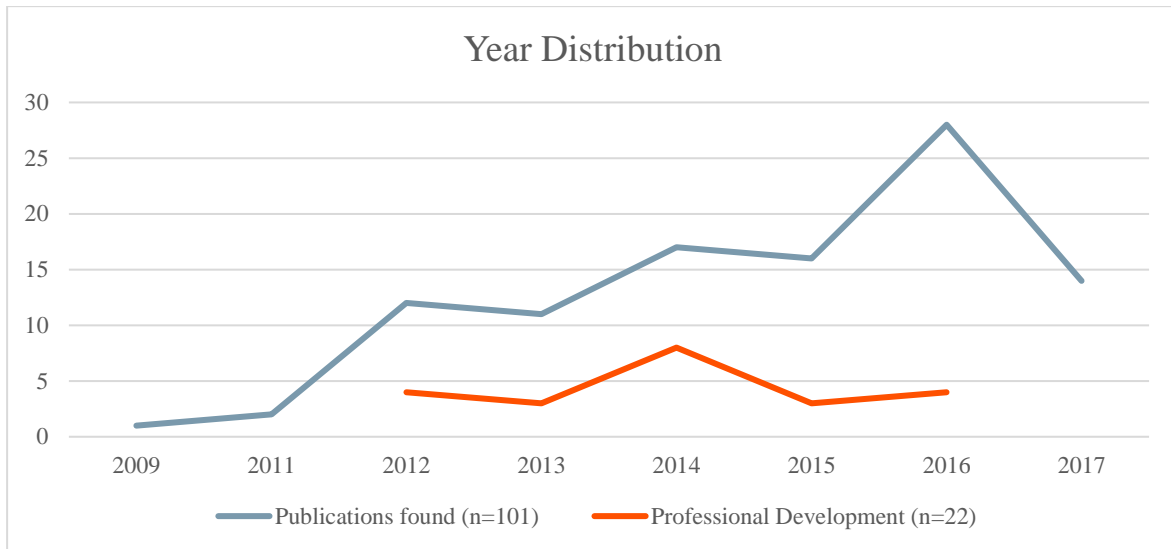
Figure 1 Year distribution of publications

The sources of publication were mostly in the fields of educational technology, computer science, and medical training. Most of the publications come from Techtrends (n=4), Australasian Journal of Educational Technology (n=3), and International Review of Research in Open and Distance Learning (n=3).

The highest number of publications for one affiliated university was 4 while the highest number of publications for one single author was 4.

25 different countries were identified with most publications coming from USA (n=40) followed by Australia (n=15), United Kingdom (n=7), and Israel (n=6).

Figure 2 shows the different types of documents found. Around half of the publications found were articles (55 articles, 54%). 20 were listed as conference papers (20%); 12 were listed as book chapters (12%). 7 were listed as reviews (7%); 2 were listed as conference review (2%); 2 were listed as article in press (2%); 1 was listed as book; 1 was listed as editorial; and 1 was listed as erratum.

Figure 2 Document type

Publications were related to 15 different subject areas. This indicates that technology is used in different fields for training and development. A major number of publications came from the field of social sciences (72 publications, 71%); followed by the area of computer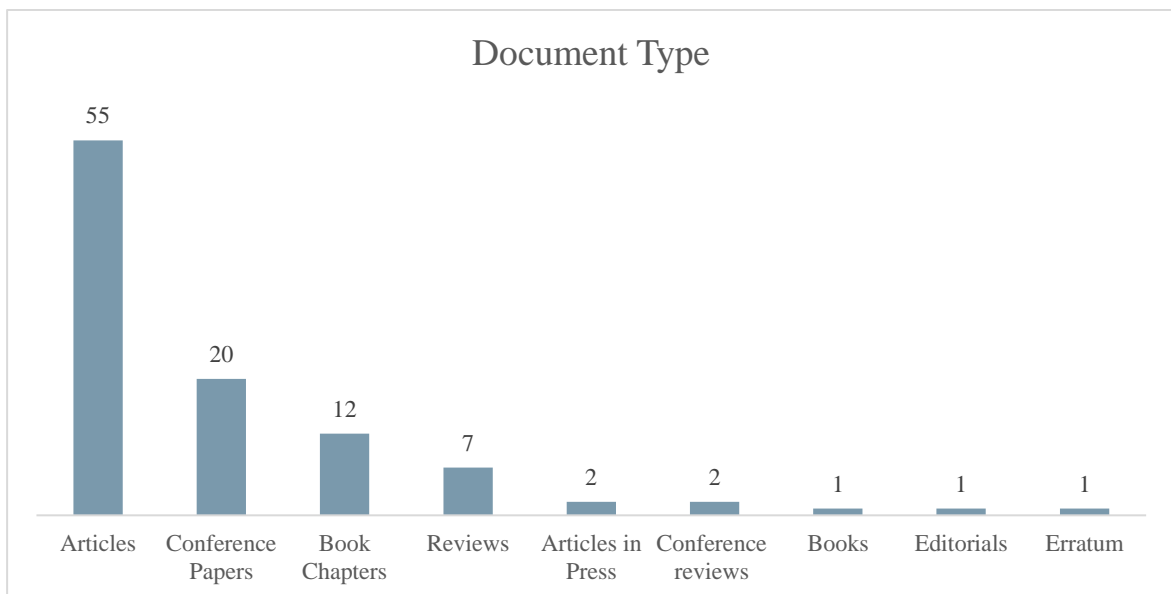 science (38 publications, 38%) and medicine (13 publications, 13%). A smaller part belongs to other subject areas such as arts and humanities (7 publications, 7%); business, management and accounting (6 publications, 6%); engineering (6 publications, 6%); health professions (4 publications, 4%); economics, econometrics and finance (3 publications, 3%); mathematics (3 publications, 3%); nursing (2 publications, 2%); and other (7 publications, 7%). A single document belongs to more than one subject area. Thus, adding up all subject areas gives more than 100% of publications found. Even the largest fields, those of social sciences and computer science together make up more than 101 documents found.

Research context

Out of 22 relevant articles, 13 of them specifically study teacher PD on social media (9 of them consider Twitter and 4 consider Facebook). Out of these, 2 study K-16 teachers, 1 studies K-12 teachers, and 1 studies language teachers around the world in higher education. 3 of them consider faculty development in professional educational institutions.

The rest of the articles consider slightly different contexts. 3 of them study faculty development in general. 1 considers teacher peer support in social networks (Kelly & Antonio, 2016), 1 considers K-12 teachers' Facebook use habits and activity (Sumuer, Esfer, & Yildirim, 2014), 1 considers teachers' use of Personal Learning Networks (PLNs) (Trust, 2012), and 1 considers the reflective practices of student teachers in online modes (Farr & Riordan, 2015). 1 studies Trinidadian teacher's participation on Facebook (Bissessar, 2014), 1 studies pre-service teachers using Facebook as online teacher portfolio (OTP) (Kabilan, 2016), 1 studies the social capital present in conversations among teachers on Twitter (Rehm & Notten, 2016), and 1 is a case study on teachers who gathered around #EdChat topic on Twitter (Britt & Paulus, 2016),

Profession wise, 1 paper studies physical educators (Centeio, Erwin & Castelli, 2014), 1 studies music teachers (Pellegrino, Sweet & Derges Kastner, 2014), and 1 studies student teachers (Farr & Riordan, 2015). The paper that studies physical educators, considers social media's place in physical educators' PD only as a secondary aspect of the paper's main purpose, which is a Comprehensive School Physical Activity Program (Centeio, Erwin, & Castelli, 2014). Other papers did not distinguish between professions.

The diversity of teacher roles discussed by these articles suggests that social networks hold a huge potential for enhancing teaching practice in various fields that teachers come from. Except for Twitter and Facebook being the central platforms for teacher PD for 13 papers, there are other platforms and programs being central to the research of other papers. These papers consider PD potential as the main outcome of using these platforms, such as the following: mobile learning's potential for faster and cheaper PD in higher education (Kukulska-Hulme, 2012); PD as an identified theme derived after studying a specific development program for enhancing physical educators' practice (Centeio, Erwin, & Castelli, 2014).

Skimming through the 101 initial documents, a few articles were relevant to this review's purpose, however they were not analysed as they were not cited at least twice, which was a condition. Considering the fact that the search term 'professional development' is highly established, the small number of articles cited more than twice that specifically study teacher PD on social media, might be an indicator that the field is relatively new and slowly growing.

Mixed methods as dominant research method

Most of the papers used a combination of different methods. Usually a mix of qualitative and quantitative approaches was undertaken. A survey of the field seemed to be the most dominant method

of gathering data. The papers that specifically studied teacher PD on social media used a survey disseminated through the medium itself, often combined with a follow up interview so as to triangulate different variables and data. Content analysis of tweets on Twitter or posts on Facebook was used too.

Carpenter and Krutka (2014) used a survey with three parts: an informed consent section, a demographic section, and 100 items that elicited Twitter usage information from K-16 educators. Both close-ended and open-ended items were used. Analysis of the data included cross tabulations of findings in order to discover relationships between data about participants and their Twitter usage patterns. In their other paper, Carpenter and Krutka (2015) use the same data from the previous paper. Wesley (2013) used netnography, "a type of virtual ethnography that uses participant-observational research based exclusively on online fieldwork" (p. 308). Participant-observation and interviews carried on Skype with 9 participants were considered primary to the research. Similarly, Visser, Evering and Barrett (2014) used an online survey disseminated via Twitter. Forte, Humphreys, and Park (2012) used a survey disseminated on Twitter, an interview with 8 of survey respondents, and content analysis of 2000 tweets. Ranieri, Manca and Fini (2012) used a preliminary survey with 5 FB-group admins and 1107 group member respondents to, quantitatively, analyse their responses in order to test their hypotheses. Bissessar (2014) used purposive sampling to interview four administrators that administered the FB-group studied and content analysis to scrutinize the interviews. Kabilan (2016) used a mixed methodology of qualitative and quantitative methods for gathering and analysing data from the teachers at a Malaysian university. Rehm and Notten (2016) scraped data around the Twitter users that had contributed around the #EdChatDE network on Twitter, using the software tool NodeXl, and conducted social network analyses (SNA) to compare the focal network of the study with other random networks. Britt and Paulus (2016) designed an instrumental case study of the #EdChat group on Twitter. The data were collected through participant observation, interviews, and documents. The data analysis involved inductive analysis, constant comparative analysis, and ATLAS.ti v. 7 software.

A limitation to surveying teachers online on social media such as Twitter or Facebook is that the non-random sampling relies upon self-reporting and we are not sure about the opinion of the non-responders (Carpenter & Krutka, 2014). Dissemination of a survey through Twitter makes it difficult to understand the response rate and the opinion of those who are not on Twitter (Visser, Evering, & Barrett, 2014). Non-responders are a problem in studying teacher communities (Wesley, 2013).

Communities of Practice as key theoretical framework

Communities of Practice (CoP)[1] is the most re-occurring theoretical framework in the reviewed papers. Ranieri et al., (2012) advocate that the elements of a CoP can help us understand the important factors related to teacher learning in professional FB-groups. However, Ranieri et al., (2012) argue that a better term to describe online CoP would be Networks of Practice (NoP)[2]. A CoP is responsible for self-maintenance and reproduction, and is a subset of a NoP, which is the set of all practitioners who share a practice.

Wesley (2013) uses CoP as a conceptual framework for investigating how an online community of World Language teachers engage on Twitter for PD. Wesley (2013) observes teacher learning through the lens of the three main elements of a CoP: domain, community, and practice. Learning through practice of sharing, collaborating, discussing and debating, were evidence that learning occurred.

Visser et al.,'s (2014) analysis of teachers' reflections on Twitter usage for self-directed PD showed that teachers themselves appreciated Twitter because, among other things, it helped them join CoP

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[1] I have used "CoP" as the abbreviation for "Communities of Practice" and "Community of Practice" throughout the document.

[2] I have used "NoP" as the abbreviation for "Network of Practice" and "Networks of Practice" throughout the document.

relevant to their practice. In this study, CoP is classified as a subtheme of a larger main theme (participatory culture) enabled by Twitter.

Forte et al., (2012) further emphasize that teachers who participate in online PD act as bridges between online CoP and their local communities, thus helping even those teachers that do not participate in online PD with shared knowledge.

In the same way, Kablian (2016) found out that social media help teachers develop through the facet of CoP. Britt and Paulus (2016) conclude that #EdChat reflects aspects of a CoP.

In summary, most of the papers advocate that teacher learning on social media reflects aspects of a CoP. Apart from Wesley (2013), who used CoP as a conceptual framework for the study, the rest of the papers used CoP to explain the findings. Research review also shows that CoP is a subset of a NoP, a larger set of all the practitioners with the shared practice enabled by social media.

Online PD affordances

All papers suggest that there are significant benefits related to PD in social media. Online PD is compared to more traditional PD and differences are pointed out. In the reviewed literature, online PD is argued to afford better teacher learning compared to traditional PD. Self-direction, personalization, differentiation, interactivity, low cost PD, providing emotional support, and breaking local barriers are some of the reported affordances of online PD in the literature.

Antidote to isolation

Overcoming professional isolation was among the most reported affordances of teacher PD on social media, especially on Twitter. Carpenter and Krutka (2014) found out that Twitter combats isolation in different ways: it helped teachers in rural or small districts; it helped teachers escape philosophical or methodological isolation; it helped teachers combat isolation associated with their specific content areas; and it helped teachers that entered the profession for the first time, making them feel less alone.

These findings are consistent with the results of other studies. Wesley (2013) concludes that teachers move from isolation to a community when they join online CoP on social media. It was found out that isolation came in different forms such as being the only language teacher in a small district or because of absence of collaboration between teachers of the same subject area in local schools (Wesley, 2013).

Visser et al., (2014) observed the same phenomenon with teachers that combated professional isolation by joining Twitter and thus connecting with people that shared the same ideas and beliefs as themselves. In their other paper, Carpenter and Krutka (2015) emphasize the same conclusions about professional isolation. Twitter provides the right environment for teachers to feel professionally and emotionally supported (Davis, 2015).

Bissessar (2014) claims that Facebook provides social support and collaboration for teachers through socializing, venting, giving and receiving advice, sharing kinship by surpassing geographical, ethnical, and hierarchical confinements.

Kabilan (2016) claims that Facebook, if used purposefully, provides teachers with a platform for socialisation and professionalization. Britt and Paulus (2016) suggest that teachers ought to reach outside of their building walls and connect with other teachers, as they remain active in the field of education.

Low-cost PD

PD on social media provides a low-cost alternative to traditional top-down PD that teachers have been receiving for years. The results of Carpenter and Krutka (2014) showed that teachers pointed out the

negligible costs of Twitter PD compared to the traditional alternatives that institutions provide. "Given its relatively low cost, PD via social media such as Twitter could have an important role to play in developing countries where budgets for educator PD may be more limited" (Carpenter & Krutka, 2015, p. 723).

Wesley (2013) presents arguments to emphasize that with the ubiquity of digital technology and internet connection in educating institutions, participating in CoP enabled by social media is a costless alternative. The focus should rather be on promoting participation so as to elevate the social/psychological factors that might act as barriers to online CoP participation.

Britt & Paulus (2016) claims #EdChat to be an alternative method of PD through which teachers can differentiate their own growth.

Reasons teachers join social media

There was a recognizable theme about the type of teachers and the reasons they joined social media. Ranieri et al., (2012) observed participants on five Italian FB-groups for teachers. The results proved the hypothesis that professional Facebooking had more effect on senior members' work life as compared to that of junior members. "Senior members show more active and confident behaviours compared with junior participants" (p. 766). In this sense, the senior participants are engaged in professional use of Facebook which is in line with other studies.

According to the analysis conducted by Visser et al., (2014), professional use was more dominant than personal use and interaction with students or parents among teachers who engaged on Twitter PD. In the same way in their qualitative analysis of their data, Carpenter and Krutka (2014) illustrate that among three possible uses – communication, classroom, and PD, teachers engage on Twitter mostly for PD.

As previously stated, with a non-random sampling, the opinions of those teachers who are not on social media are not heard, and hence their reasons for not joining too. On the other hand, the reason for those teachers who actually do engage on Twitter mostly for PD could be explained by the fact that those teachers who used Twitter for PD declared themselves as technologically proficient (Visser, Evering, & Barrett, 2014). However this statement contradicts findings by other research that emphasize that digitally native, younger, and less experienced teachers do not necessarily use social media for PD as diversely as senior teachers (Ranieri, Manca, & Fini, 2012; Carpenter & Krutka, 2014).

Types of professional use of social media

Literature shows a number of professional ways that teachers use social media. Qualitative research by Visser et al., (2014) identified four PD themes in which teachers used Twitter: general PD, conference supplements, blogging matters, and professional benefits.

This is central to research analysis carried out by Carpenter and Krutka (2015) according to which teachers use Twitter mostly for 1) sharing and acquiring of resources (96% of the time), followed by 2) collaboration with other educators (86% of the time), and 3) networking (79% of the time). Other professional use reported was 4) participating on Twitter chats, back-channelling (an activity that allows participants to ask questions and have a dialogue about a concurrent activity such as a lecture or a movie), and emotional support.

The first three uses are confirmed by other research as well (Ranieri, Manca & Fini, 2012; Wesley, 2013). In the parallels that Wesley (2013) draws between CoP and teacher online participation, it is suggested that when teachers engage on Twitter, they collaborate with other educators that share the same domain, they engage in a community by networking with educators that make up a community, and as teachers are practitioners, they engage in resource sharing and acquiring.

Ranieri et al., (2012) note that the nature of professional Facebooking should be studied on the three dimensions of domain, network, and practice. In this perspective, these three studies confirm that teachers use social media primarily to connect with other teachers, to collaborate with each other, and to share and acquire practical material and resources.

Measuring the impact

Teachers' reflections towards PD on social media was extremely positive. PD in general is meant to enhance teacher's main duty, that of teaching. If teachers' perception about PD on social media shows that they highly value it, this might mean that it has positive effects on teacher's practice of teaching and classroom outcomes. If this is true, what is the extent to which PD acquired on social media translates in better teaching practices and student learning? How do we measure such betterment?

Wesley (2014) presents arguments that participation in online CoP led those previously isolated teachers to revisit their teaching practices and then changing their behaviour in the classroom in a continuously transformative fashion. In the research provided by Forte et al., (2012), teachers self-reported improved teaching practices. However, other research does not provide clear evidence of this sort.

Carpenter and Krutka (2014) recommend that further research that goes beyond self-reporting is needed to determine the effects that Twitter PD has on teacher's classroom practices and student learning. In their other research, Carpenter and Krutka (2015) suggest that measuring the effects of Twitter PD could prove beneficial in untapping its true educational value. Visser et al., (2014) argue that in order to institutionalize Twitter PD administrators will need more evidence that shows that such a practice improves teaching and student learning.

Obviously, this was an identified gap in the literature. It does not provide any significant empirical evidence that teaching improved apart from self-reporting. In the same sense, the impact of online PD on student learning remains obscured.

Summary of previous research

The research retrieved from Scopus shows that PD on social media is a relatively new topic with a very specific number of articles cited at least twice and matching with the aim and scope of this review. Most of this research is focused on Twitter and less on Facebook. Other research concerns PD in slightly different contexts, such as considering specific development programs where social media take only subordinate part.

A common theoretical framework for studying PD on social media was the concept of CoP. Teacher learning on social media was studied along the three dimensions of a CoP: domain, community, and practice. This means that teachers learn by connecting, collaborating, and sharing/acquiring resources with each other. One of the papers distinguished between CoP and NoP and suggested that the latter is more fruitful theoretical concept to use.

Many affordances of online PD were reported. Teachers appreciated social media for the self-direction, personalization, differentiation, and emotional support. Teachers use social media for PD by connecting with their colleagues, collaborating with each other, and sharing and acquiring resources. According to teachers' self-reporting, social media helps them combat professional isolation, and provides a low cost alternative to traditional PD schemes.

Although indications based on teachers' reflections exist, it is difficult to say if PD offered on social media improves teaching practices and student learning. As recommended by literature, further research that goes beyond self-reporting would be needed to measure the impact of social media on teaching and student learning.

Theoretical framework

The literature review gave me an idea as to what theoretical framework would be appropriate to use in my master thesis work. The majority of the papers reviewed in the literature take on the concept of CoP as their main theoretical framework. This concept was originally introduced by Lave and Wenger (1991) in their book titled *Situated learning,* however much of the theory is additionally developed individually by Lave (1991) and Wenger (1998), both having their roots in the original collaboration.

Situated learning and Legitimate Peripheral Participation

What is situated learning and what does Legitimate Peripheral Participation (LPP) entail? These are necessary questions to try to clarify in order to explain the appropriate nature of the theory vis-à-vis my master thesis. Situated learning theory illustrates learning as an ongoing social process where knowledge is distributed among people, tools, and social practices. According to this theory, the individual is not a separate cognitive entity that absorbs knowledge. The individual is rather inseparable from the social context where the individual is participating (Lave & Wenger, 1991). In *Situated learning in communities of practice,* Lave (1991) argues that learning occurs in the world that we live in and experience, through LPP in the ongoing social practice. LPP means that learning is an evolving form of membership in CoP. Social membership, identity, and knowledge involve one another in LPP (Lave & Wenger, 1991). As acknowledged by Lave (1991): "Knowledgeable skill is part of the construction of new identities of mastery in practice" (p. 64). Learning is not a shared socio-cultural cognition that results in individuals internalizing knowledge, but a process where knowledgeable skill is part of becoming an evolving member of a sustained CoP. LPP refers to both the evolving identities of members in practice and the evolving and transformation of CoP. The identity and participation form change are observed from the point of entrance of a newcomer to becoming an old-timer with respect to the newcomers (Lave, 1991). To sum it up, this theory treats learning as a movement from periphery (newcomer) to central participation (old-timer) in a particular CoP. Lave and Wenger (1991) elaborate on their argument based on a series of ethnographic studies of apprenticeship accounts such as midwives, tailors, quartermasters, and butchers.

What does a CoP entail?

According to Wenger (1998) a CoP has three main characteristics:

- The domain: the shared interest of a group of people which develops an identity
- The community: the members of a CoP interact together around their shared domain of interest
- The practice: the members of a CoP are practitioners

Thus, a CoP is a group of people who gather around a shared domain of interest and learn how to do it better by regularly interacting, collaborating, and, sharing with each other. Learning is a process of becoming a member of a sustained CoP (Lave, 1991). The roles of the "newcomer" and "old-timer" with respect to each other (as suggested by LPP) and the characteristics of CoP (domain, community, and practice) have informed my analytical focus by facilitating the search for similar and different patterns mobilized in the discussions induced by a newcomer and an old-timer within the thematic FB-group.

There are two reasons why this theoretical framework is appropriate for this study. First, the literature review revealed that the majority of the primary research adopted the same theoretical concepts for studying teachers on social media. Second, the nature of the study (research questions) requires for a theoretical framework that is not originally developed as part of online environments, but offers the right theoretical concepts for comparison. Teachers gathering on a FB-group share the domain of teaching, form a community, and practice teaching. Lave and Wenger (1991) claim that they are

required to assume the validity of the concept among examples of apprenticeships that are different in terms of times and places and they state such a discussion induced by their study is welcome. This master thesis aims at discussing the validity of applying these concepts to teacher participation in the thematic FB-group.

Actors with permanent peripheral attributes may have a critical role in the learning organization of CoP. Hindmarsh (2010) studied clinical dental training CoP as a representative case of apprenticeship learning, with the aim to investigate the interaction between the members of a typical CoP and thus contribute to the emerging literature on CoP. This ethnomethodologically informed study included audio/video recordings of interactions between dental students in training, their supervisors, and the patients. Hindmarsh found that patients, although peripheral, through their visual and verbal conduct, subtly but seamlessly contribute to the training discussion and organisation of learning happening in the dental CoP. Hindmarsh argues that literature on CoP has overlooked the importance and contributions of peripheral members. While the majority of studies on CoP focus on novices and experts moving towards central participation, Hindmarsh contends that more peripheral figures that may never move from periphery, such as patients in the dental CoP, can have a critical role in reproduction and sustainability of CoP. This observation reveals the rather complex nature of CoP, which calls for careful consideration of such peripheral participants while developing strategies for sustaining communities.

Ranieri et al., (2012) suggested a distinction between CoP and NoP. While CoP is the set of members "who share and coordinate practice and have implicit responsibility for the reproduction of their community", the NoP "denotes the collective of all practitioners of a particular practice." (p. 758). A CoP can be considered as a subset of a NoP because more local-only practitioners share practices. The line between the two is, however, blurry. The main difference between the two is that members in a CoP control the reproduction and coordination of the CoP while the NoP are more large-scale and less coordinated (Ranieri, Manca, & Fini, 2012). All CoP are part of networks, because they involve connections among members. Not all networks are CoP because a CoP comprises a shared domain that becomes the source of identification for its members. The identity, which creates a sense of commitment to the community, its sustainability, and reproduction, is not present in networks. NoP are a set of connections to a few linking nodes (BE, 2011).

Method

I have participated in the meetings of a research group at the University of Gothenburg. The research group has been studying a closed Swedish teacher-initiated thematic FB-group. The group is focused on discussion of the FC approach. The group was founded in April 2012 and the data from 2012-2015 were collected in April 2015. By the time the data were collected, the group had nearly 13,000 members. It is run as a private group by an active moderator who carefully monitors requests to become a group member as well as the discussions threads.

At the time of data collection, there were nearly 20,000 discussion contributions in the form of posts and comments. All of the discussion contributions in the group are contributed by one fourth of the group's total members. More precisely, out of the nearly 13,000 group members at the time of the collection, 675 have started a discussion through a post, 1,435 have commented in one of these discussion threads, and 6,526 have liked at least one post. This infers that one third of the total group members have acted passively as authorized visitors (Lantz-Andersson, Peterson, Hillman, Lundin, & Rensfeldt, 2017) without actively contributing in discussions.

Research review methods

Originally, the aim of the review was to find out about teacher's PD that occurs when they use Facebook. However, the literature research revealed that most of the primary research was centred on other similar social media platforms, such as Twitter. Twitter differs from Facebook on a few aspects, such as the way of posting and interacting. Twitter has a limit of 280 characters per message. The limit used to be 140 characters. It was expanded to 280 characters in November 2017. The message limit applies both to the main post and replies. Facebook on the other hand does not have such a limit. Even if there is a character limit on Twitter, there is no limit about how many messages one can type chronologically to convey a message completely. This is a well-known method for Twitter users. The character limit on Twitter does not generate a significant difference between the discussions occurring on Twitter and Facebook. My understanding is that both platforms, although with some interactive differences, facilitate similar discussions. Twitter is more open for researchers than Facebook as Twitter's privacy settings are mainly public. Facebook can have strict privacy settings when it comes to thematic groups. However, anyone interested can join these thematic FB-groups. On the other hand, discussions around popular hashtags on Twitter are basically thematic discussions, such as #EdChat. Thematic FB-groups and hashtag topics on Twitter form similar communities which invite similar discussions among teachers, albeit in different platforms. To sum it up, I see both platforms as similar with respect to teacher thematic discussions they enable.

That being the case, the aim of the literature research was broadened to include social media's general implications on teacher PD. The review of previous research was guided by the following questions:

1. How has the teacher PD on social media been studied?
2. How do teachers use social media for PD?
3. How does teacher PD affect teaching and student learning?

A systematic literature review was conducted in order to get a general overview of the literature body that exists on how teachers use social media for PD. To do this, the Scopus database was used. Establishing a proper search query was not a straightforward task as the concept of teacher PD is branched into other topics that are not part of the scope of this review. Some key terms such as "social networks" or "informal learning" are related but they might point to ends that do not concern the aim of this review.

After a few tests the following search query was established:

```
(
TITLE-ABS-KEY(teacher)
OR TITLE-ABS-KEY(educator)
AND TITLE-ABS-KEY("social media")
OR TITLE-ABS-KEY(Facebook)
OR TITLE-ABS-KEY(Twitter)
AND TITLE-ABS-KEY("professional development")
)
AND PUBYEAR < 2018
```

The query was inserted on Scopus database on 23.01.2017. Initially, the literature review was developed based on this search. However, I inserted the query on Scopus again on 06.03.2018 in order to update the literature review with the latest results. This literature review is updated and based on the latter search results. In other words, 4 additional relevant articles were added.

Figure 3 depicts the selection process of the articles for detailed analysis.
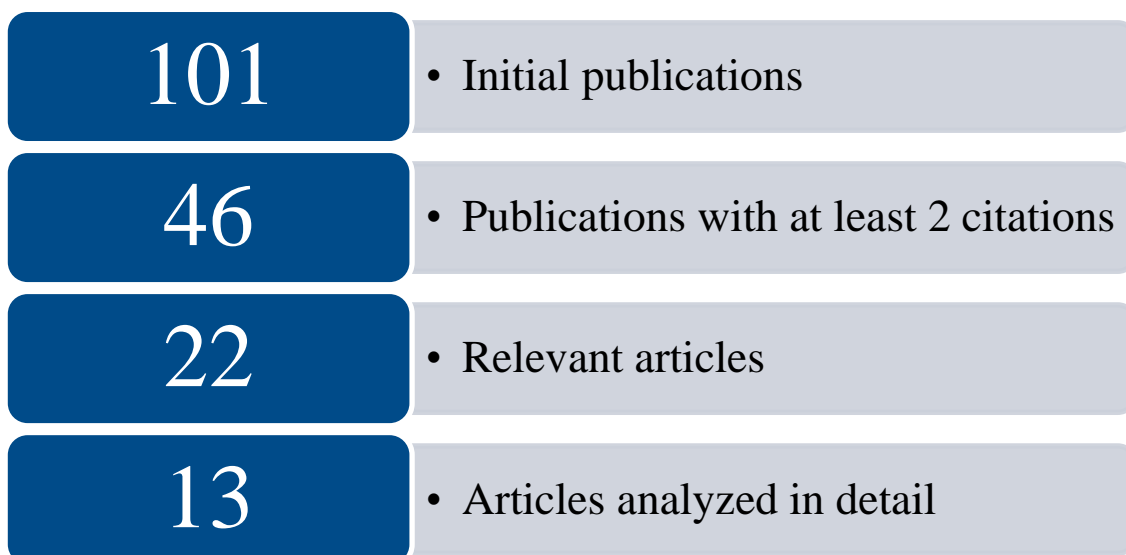
Figure 3 Selection process

Irrelevant articles were eliminated based on aspects that did not comply with the aim and research questions of this review. The scope of the identified irrelevant articles were about training medical professionals, MOOCs, developing some form of software application with teachers' cooperation, nurse education, or teachers using Facebook in classroom rather than for personal PD. These topics do not cover teacher PD on social media.

Data collection

Data were collected by the research group at the University of Gothenburg where I was invited to conduct my master thesis. To query the Facebook database in order to access the activity of the participants in the FB-group, programmatic approaches through the Graph Application Programing Interface were used. This way, the corpus of all the activity between April 2012 and May 2015 was assembled. All posts, comments, and likes were scraped (Lantz-Andersson, Peterson, Hillman, Lundin, & Rensfeldt, 2017). For all these activities, the user and timestamp were assembled in analysable forms such as databases, spreadsheets, and hypertext documents (Marres & Weltevrede,

2013). For the research group, it was important to find ways to identify discussion threads for detailed interaction analysis, since the three years activity in the group amounted to a corpus of almost 3,000 posts and over 16,000 comments. Computational content analysis techniques were used in a process to find patterns that could be used to select particularly relevant threads. The five collaborating researchers in the research group engaged in a prolonged ethnographic study of the FB-group. They observed the interactions of members on a more or less daily basis so as to get a sense of what is happening in the discussions (Davies & Merchant, 2007; Selwyn, 2009). This ethnographic inspired method made it possible to identify potential patterns in the discussions that could then be analysed using the corpus data. The research group chose to focus on the intensity of interaction between participants in the discussions. Aided by the ethnographic engagement insights, the intensity of activity in a thread was operationalized as the number of comments and likes, and the times between each of these activities. In the large corpus of group activity which contained nearly 20,000 posts and comments and hundreds of thousands of likes, the research group used these patterns of interaction to find a small number of relevant threads suitable for detailed interaction analysis. The minimum selection criteria were established using the identified metadata dimensions. The criteria were the minimum of the discussion group mean of the comments and likes (16.95 comments and 14.63 likes). The research group, for the purpose of their study (Lantz-Andersson, Peterson, Hillman, Lundin, & Rensfeldt, 2017), chose the criteria of a maximum average of 15 minutes between comments.
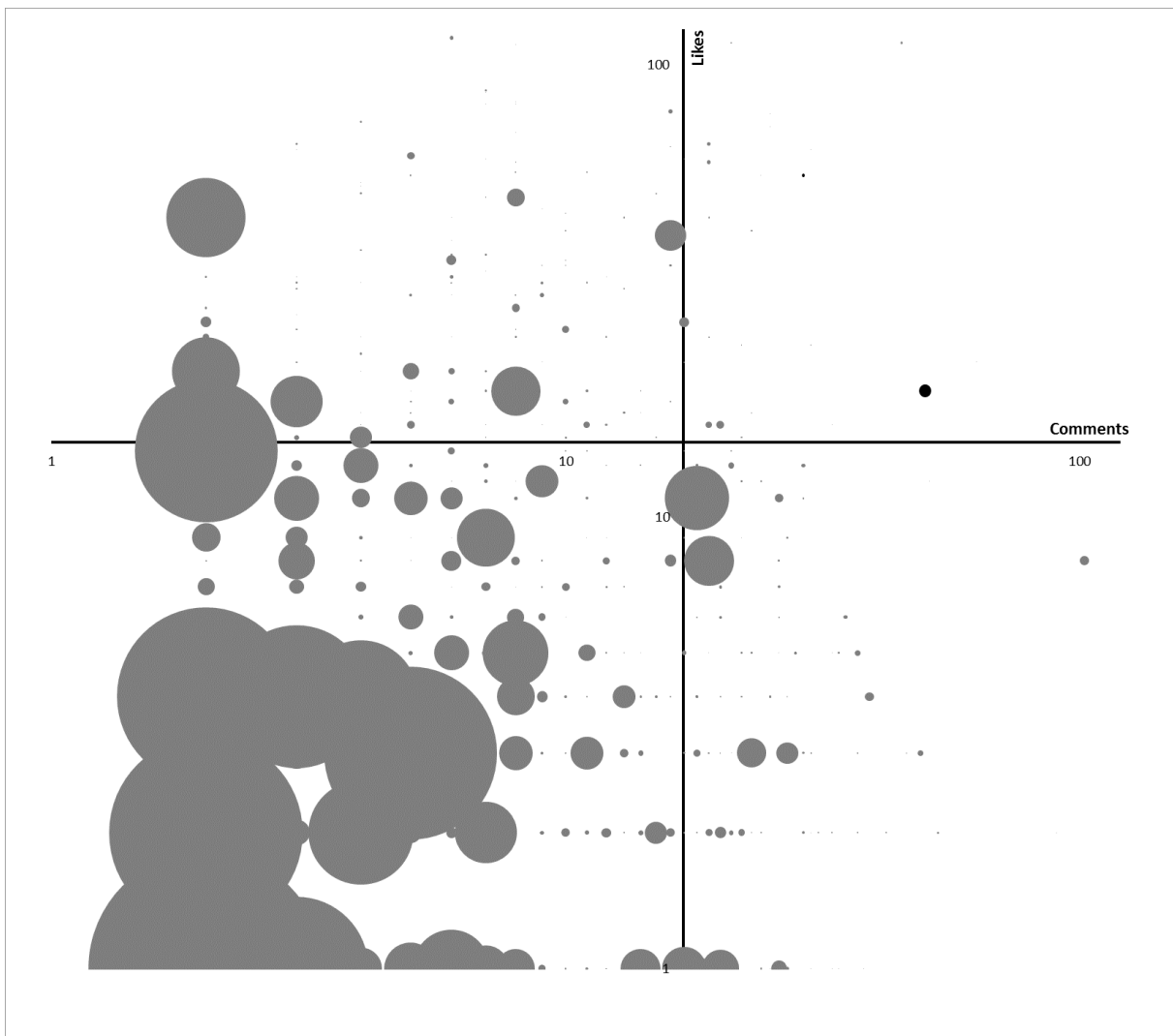

Figure 4 Distribution of discussion threads by intensity developed by Thomas Hillman

Figure 4 represents the distribution of discussion threads in relation to the research group's selection criteria. The axes are located at the group's mean for likes and comments, and the larger the data point the shorter the average time between actions. The chart displays four quadrants with those threads located in the lower left quadrant having few likes and few comments, suggesting relatively narrow interest among group members. Those in the lower right have few likes, but many comments suggesting substantial discussion, but narrow interest. Those threads in the upper left quadrant have many likes, but few comments suggesting little discussion, but wide interest in the initial post. Those threads in the upper right quadrant have both many likes and many comments suggesting both wide interest and a substantial discussion. This quadrant of threads is of interest in this study. 17 threads can be seen in the upper right quadrant in Figure 1. These threads met the criteria of exceeding the group mean for likes and comments suggesting that they were particularly substantial discussions and generated wide interest. I read these threads in iterative manner in order to identify patterns or themes within data. The initial analysis of the discussions revealed two specific threads that I decided to go into detailed thematic analysis. Both threads concern the possibility to flip in different ways other than by using videos. The two posts in these threads were particularly relevant to the theory of CoP. Thread 1 is the case of a newcomer in the thematic FB-group, while thread 2 is the case of a member who seems to be more of a central member (old-timer) in the community. The sharp difference in the discussion contexts of the two threads with a similar topic was relevant enough for me to put these two threads under the lens of this master thesis.

The language used in the FB-group is Swedish, hence the data analysed and used are in Swedish. The two threads used for further analysis were translated to English but I have represented posts and comments, both in their original and translated versions.

Data analysis

The 17 posts and their comments/discussion threads were read in an iterative manner. I have used thematic analysis to find meaningful patterns/themes within the discussion threads. The data analysis also draws on aspects of conversation analysis (CA) and discourse analysis (DA). In the following sections, I will elaborate on these methods and explain how I have used them for the purpose of this master thesis work.

Conversation Analysis and Discourse Analysis

To study the threads and the comments, I drew on two methods: CA and DA. Silverman (2006) explains both methods in his book titled *Interpreting Qualitative Data*. The following elaborations are based on the same book.

Silverman (2006) offers CA as a tool to analyse data from naturally-occurring conversations between participants, e.g. transcriptions from tape-recordings. There are four fundamental assumptions for CA:

1. *Talk is action*: In CA, talk is considered the main driver for human action.
2. *Action is structurally organized*: The actions that form the fabric of social life are structured and organized. Single actions are part of larger structurally organized entities.
3. *Talk creates and maintains intersubjective reality*: CA offers the possibility to study "meaning" and "experience" in a thorough way, rather than overlooking them.
4. *Understanding is publicly displayed*: CA focuses on the public understanding expressed by participants in the conversational action, but does not concern the participant's inner experience. The elementary public understanding pertains to the current speaker's display of understanding for the preceding turn. Any turn is shaped in the context of the previous turn and exhibits understanding of the previous turn.

Turn-taking has three main aspects:

1. How the speaker makes the turn relate to the previous turn ('yes', 'but', 'hmm' etc.)
2. What the turn accomplishes in terms of interaction (a question, an answer, an advice, agreement etc.)
3. How the turn relates to the succeeding turn (a question, an invitation etc.)

CA focus lies on talk. At the same time, CA studies are usually carried on transcribed data from tape recordings (Silverman, 2006). In the case of this study, Facebook allows teachers to converse in text format. CA studies data from naturally-occurring conversations. The discussions on Facebook are not researcher-provoked either. CA also focuses on talk being structurally organized and that single actions are part of larger structurally organized entities. Facebook offers the conditions to structurally organize talk in the text format. Single comments are part of larger structurally organized discussions in the comment section of Facebook threads. As speakers take turns to listen and reply, Facebook users take turns by reading what others say and reply by writing comments. In this sense, written comments on Facebook can be put under the lens of CA.

CA calls for understanding how a talk/action relates to the participant's understanding of the conversation. In CA, we avoid analysing isolated single turns of talk, such as the case in researcher-provoked data, e.g. interviews where the interviewee answers that which is being asked. CA provides with a sophisticated tool for analysing comments as talking actions expressing the understanding of the FB-group members in relation to what is going on in the conversation. In cases where it was necessary, I analysed the comments not as single turns of written talk, but as turns related to the previous and succeeding turn, as well as to the whole thread.

DA and CA both consider talk as a human action without attempting to understand the intentions behind it. DA has been concerned with more conventional science topics such as for example gender relations. Unlike CA, DA considers researcher-provoked data such as open-ended interviews as more acceptable than naturally occurring data. There is no clear definition for DA (Silverman, 2006), however we can say that it analyses the discourse in texts and talk occurring in social practice while the focus is on the language as the medium for interaction. DA studies the argumentative organization of talk and texts as a way to analyse what people do.

The following is a partial list of concepts used in DA:

1. *Interpretative repertoires*: a set of terms that are systematically related and used with style and grammatical coherence in order to define broad "discourses" that participants identify with, e.g. motherhood repertoire, scientific repertoire, political repertoire.
2. *Stake*: the constructions people use to discount or rework the nature of a significant action.
3. *Scripts*: the way in which people describe the normative character of their actions. The way they align their actions to a wider approved or disapproved pattern.

While CA is used to describe people's methods for sequential organization of social interaction, DA studies the discourse of texts or talk and the rhetorical or argumentative organization. I have not chosen one over the other, instead I have drawn on both where due. For example, to analyse the main threads, I have drawn on DA concepts. I have considered DA concepts such as interpretative repertoires, stakes, and scripts to identify the rhetorical or argumentative organization expressed by the original poster (OP) in the main thread. To study the sequential organization of the comments, I have drawn on CA concepts.

To clarify, CA and DA are not the main methods used to analyse the data in this master thesis work. I have used CA and DA to support the main method, thematic analysis, which is developed in the following section. I have used thematic analysis to find meaningful themes/patterns across the data.

Each comment, in both threads studied, was in a sense a reply to the main post, if not to other comments. However, not in all comments the relation to the context of the discussion and turn-taking were important in developing the thematic codes. In those cases, the CA was not utilized. In cases where the relation to the context was deemed as pertinent, the CA was helpful in developing the thematic codes. That being the case, in the findings section, I have presented and explicated the themes/patterns that have emerged from thematic analysis. CA and DA have affected the way I have developed the thematic codes, however CA and DA are of secondary nature with respect to the methodology of this master thesis. The findings are based on thematic analysis.

Thematic Analysis

The main method I used to analyse the data was thematic analysis developed by Braun and Clarke (2008) in their article titled *Using thematic analysis in psychology*. Below I have elaborated on this method as developed by Braun and Clarke (2008).

With thematic analysis, one can identify, analyse, and report patterns or themes in the data. Thematic analysis can provide organization of data in detail and can interpret the research topic in various ways. Thematic analysis is about going back and forth in the data such as interviews, transcriptions, or texts, to find patterns that are prevalent across the data and capture meaning related to the research question. Thematic analysis is not a product of a previous theory and can be used within most of the theoretical frameworks.

It is in the researcher's responsibility and judgment to decide what counts as a theme or pattern. However, a theme must capture some important aspect related to the research question and represent some kind of patterned meaning in the data set. As long as one is consistent throughout the research, there are a number of ways to choose themes. Themes do not depend on the quantity of repetition, rather on the importance they capture in relation to the research topic. There are a few conventions for determining themes without quantification, although more debate is needed as to how much they tell, e.g. "a number of participants", "the majority of the participants", "many participants".

There are a few nuances of thematic analysis that the researcher must consider prior to conducting thematic analysis on the data. They are the following:

- *A rich description of the data set, or a detailed account of one particular aspect*. One can choose between thematic analysis of the overall data set and a more detailed analysis of a particular theme or group of themes.
- *Inductive versus theoretical thematic analysis*. Inductive analysis means to analyse the data without trying to fit it into a pre-existing theoretical framework. A theoretical thematic analysis is to look at the data with a theoretical lens and researcher's preconceptions. An inductive analysis provides with a reach detail of the overall data, while a theoretical approach offers a more detailed account of only a particular aspect of the data.
- *Semantic or latent themes*. With a semantic approach, we analyse the data at their surface level meaning. Themes do not capture beyond what is said or written. With a latent approach, one goes beyond of what is said and written and themes are identified by the motivations, concepts, underlying ideas, assumptions, and ideologies that are theoretically informing the semantic layer of the data.
- *Epistemology: essentialist/realist versus constructionist thematic analysis*. Essentialist/realist thematic analysis focuses more on the individual psychology and motivations. Constructionist thematic analysis, in contract, focuses on theorizing the sociocultural context and structural conditions that enable the provided individual accounts. Constructionist thematic analysis overlaps with the latent analysis and thematic DA.

According to Braun and Clarke (2008), approaches that consider specific aspects of the data, are latent, and constructionist, often go hand-in-hand. The approaches that consider a wider aspect of the data, are semantic, and realist, often go hand-in-hand. There is no right or wrong of conducting thematic analysis. Nonetheless, a more inductive approach would be facilitated by not engaging with literature prior to the analysis and a more theoretical approach would require the researcher to be engaged with literature prior to the analysis. I have taken a more theoretical approach prior to conducting the thematic analysis in this thesis. I consider my thematic analysis as more specific to a portion of the data, latent, and constructionist.

Braun and Clarke (2008, p. 87) offer a step-by-step guide for conducting thematic analysis:

1. *Familiarizing yourself with the data*. In this phase one transcribes the data if needed, immerses oneself in the data by reading and re-reading the data and taking notes of the very initial ideas.
2. *Generating initial codes*. Coding the initial interesting features consistently across all the data and assembling resembling codes with each other.
3. *Searching for themes*. Gathering similar codes into potential themes and gathering all related data into the potential themes.
4. *Reviewing themes*. Checking if the themes are fitting to the coded extracts and the entire data set. This step requires generating a thematic map.
5. *Defining and naming themes*. A recursive process of analysis in order to refine the themes, their specifics and the general story that the analysis tells. In this step names and definitions of the themes are given.
6. *Producing the report*. The last round of analysis. Selection of prominent extract examples and the final step in analysing them. Relating the analysis to the research questions and literature. This step is about producing a scholarly report of the analysis.

This process is not about doing one step and going to the next. It is more about going back and forth between phases until no more value is added to the analysis. It is the responsibility of the researcher to decide when no more value is added and stop the process. Braun and Clarke (2008) suggest that the analysis should not be guided by the method only. Instead, the researcher should shape the method according to the research questions and the theoretical framework. Thematic analysis is flexible and allows that.

Codes

I used thematic analysis to identify and analyse meaningful patterns/themes in the comments following the two threads scrutinized in detail in this thesis work. I analysed each comment to find interesting and important patterns. I identified patterns not only on the quantifiable prevalence, instead on the importance and distinctiveness of the pattern within the data set. I focused not only on what was written, but also on how that related to the overall discussion, the structural organization of the content, and turn-taking, as suggested by CA. I conducted a more specific, latent, and constructionist thematic analysis. Having read literature and theory prior to the analysis, I consider my thematic analysis more as theoretical rather than inductive. As Braun and Clarke (2008) suggest, it is important that the thematic analysis is driven by the research topic and theoretical underpinnings. I have adapted it to the research questions and theoretical framework of this thesis. I refer to the identified patterns/themes as "codes" because each comment was coded with the identified patterns/themes.

Excel spreadsheet was used to develop the codes and analyse them. In the two threads selected for this master thesis work, I coded each comment with three different codes. The first code describes the major theme of the comment. The second code describes a secondary theme that could be present in the comment. The third code describes minor themes in the comment. I coded some comments with three codes, some with two, and others only with one. As there were a maximum of three codes for

each comment, the total number of codes for each thread is more than 100% of the actual number of comments for that thread. Table 1 exemplifies a comment that I coded with three codes.

Comment	First code	Second code	Third code
Personally I actually only focus on students. In which way do they learn best? I think through having some prerequisites and having some sort of relationship with that which we will talk about and work with. But I agree that an important question is what we do with the time in the classroom. On the other side it is the exact same question we should always ask ourselves. Isn't it? För egen del har jag faktiskt bara eleverna i fokus. På vilket sätt lär de sig bäst? Jag tror genom att de har vissa förkunskaper och att de har viss relation till det vi ska prata om och jobba med. Men jag håller med om att en viktig fråga är vad vi gör med tiden i klassrummet. Å andra sidan är det precis samma fråga som vi alltid borde ställa oss. Eller?	Opinion	Individual practice	Question to commenters

Table 1 A comment coded with three codes

Initially, the following codes were identified in the discussion in the two threads' comments:

- Critique
- Disagreement
- Emotional support
- Individual practice
- Professional awareness
- Professional support

After recursively analysing the comments and seeing how they fit within the discussion threads, their structural organization and context, and their relation to the entire dataset, the list was expanded and 12 final codes were established. To check the validity of the codes, I collaborated with my thesis supervisor. The final codes, alphabetically sorted, were as follows:

- Agreement
- Clarification
- Critique
- Curious of others' practice
- Disagreement
- Emotional support
- Following
- Individual practice
- Opinion
- Professional awareness
- Professional support
- Question to commenters

A description followed by examples for each of the 12 codes is given in Table 2 below.

Code	Description of Coding	Example
Agreement	Cases in which a commenter agrees with post contributor or with other commenters.	*I agree!!* Håller med!! *I agree with you, Anna, lack of reading comprehension surely does not depend on more digital tools at school.* Jag håller med dig, Anna, bristande läsförståelse beror nog inte på mer digitala verktyg i skolan.
Clarification	Cases in which the thread contributors tried to clarify their stand when they seem to feel like they are being misunderstood by other members.	*I hope I am not perceived as a public criticizer of flipped, I am genuinely interested and have tried a little, completely voluntarily :-)* Jag hoppas inte att jag uppfattas som en allmän kritiker av flipped, jag är genuint intresserad och har provat lite, helt frivilligt :-) *It was no attack at all! I thought I knew what it was, but was not sure when I read posts. Now I know! That's it!* Det var inget påhopp alls! Jag trodde mig veta vad det var, men blev osäker när jag läste inläggen. Nu vet jag! That's it!
Critique	Comments that criticized other commenters or the main thread contributor about their respective positions were tagged with this code.	*I do not understand what you are after? First you state that you have not checked what the flipped classroom is, then you give a good description of what it can be. Therefore you mean that the posts in majority discuss the film production. This group is open for all who want to work with flipped and we have come a long way on how we work. There is no answer, for some it is important to get the technique to work, others have found their way around it, others take a new start in technology and they get tips from others and so on. If one reads all the posts in the group (if one has enough time :)) one can surely notice that here everything is discussed from pedagogic questions to technical to anything.* Jag förstår inte vad du är ute efter? Först påstår du att du inte har koll på vad flippat klassrum är, sen ger du en bra beskrivning av vad det kan vara. Därefter menar du att inläggen här till största delen diskuterar filmproduktion. Den här gruppen är öppen för alla som vill arbeta flippat och vi har kommit olika långt i hur vi arbetar. Det finns inget facit, för vissa är det viktigt att få tekniken att funka, andra har kommit förbi det, vissa tar ett omtag på tekniken tipsar andra osv. Om man läser alla inläggen i gruppen (om man har mycket tid över :)) så märker man nog att här diskuteras allt så väl pedagogiska frågor som tekniska som vad som helst.

Curious of others' practice	As is suggested by the name, this code has to do with cases when a commenter asks another one to explain in more detail about how the latter usually conduct their own practice.	*Sounds exciting Anders Johansson:)* *Don't you feel like describing shortly how you do in maths?* **curious** Låter spännande Anders Johansson:) Du har inte lust att beskriva lite kortfattat om hur du gör i matematiken? *nyfiken*
Disagreement	Disagreement between discussants, comments with such content in relation to previous comments or opinions of others.	*Helena Svensson I am with you that the book is not the goal – but the capacity to assimilate 15 pages of text, and with the thought of how much one can learn, makes it still valuable. Someone who watched 5 minutes of movie can stand out in a discussion against someone who read 15 pages – or?* Helena Svensson Jag är med dig om att boken inte är målet - men förmågan att kunna tillgodogöra sig 15 sidor text, och med tanke på hur mycket man då kan lära sig, gör det ändå värdefullt. Den som sett 5 minuter film står sig slätt i em diskussion mot den som läst 15 sidor - eller?
Emotional support	Comments that show some kind of support towards one's position without elaborating much around it in a professional sense, were considered as emotional support. Usually these comments were paired with the agreement code.	*Very good comment from you, Johan.* Mycket bra kommentar från dig, Johan. *Good luck with flipping!* Lycka till med ditt flippande! *Lisa Karlsson we seem to share a lot of pedagogic thoughts :)* Lisa Karlsson vi verkar dela många pedagogiska tankar :)
Following	This was a very special case when commenters just commented 'following' in what seems to be an attempt to subscribe to notifications for the discussions to follow under the main thread. This was an interesting finding since this option is enabled by Facebook without having to comment (at least nowadays) and these comments put this otherwise hidden intention into light.	*Following* Följer
Individual practice	This means that the commenter referred to his individual practice when making a point or supporting his point.	*I worked in secondary school and am starting to work in upper secondary next week. Will try to flip in psychology ;-)* Jag arbetade på högstadiet och börjar arbeta på gymnasiet nästa vecka. Skall prova flippa i psykologi ;-) *I have just started, but I have only made short flipmovies which clarify some words and concepts that I know I will use in the upcoming lecture. I do not*

		want to add all the reviews in a single flip when I know I have students who have difficulties to do their homework… Jag jar precis börjat, men jag har bara gjort korta små flippfulmer som förklarar vissa ord och begrepp som jag vet att jag kommer använda under den kommande lektionen. Jag vill inte lägga all genomgång i en flipp då jag vet att jag har elever som har svårigheter att göra sina läxor...
Opinion	When a commenter expressed their personal opinion about something without treating it necessarily as a fact. This was usually done by commenter indicating that they think something is the way it is however not necessarily the factual truth.	*I think to flip the classroom is similar to many other ideas, interesting but maybe it does not directly solve some problems. The method is usually idealised like this in the beginning.* Jo jag tror att flippa klassrummet är liksom som många andra idéer, intressant men kanske inte direkt löser några problem. Det blir lite idealiserande av metoden så här i början. *I think that depends on what ambition one puts down on the movie.* Tror det beror på vilken ambition man lägger ner på filmen.
Professional awareness	The case when a member of the group gives advice to another member (who seems to be asking for it) and thus making the latter aware of how things are supposed to function. These types of comments usually contain language constructs that seem almost like an order, such as: 'If X, do A, if Y, do B'. They are usually supported by individual practice examples.	*If the book is ok, go with both of them, or a little of both. The important thing is to know WHY one does things and dare to ask themselves… From the beginning I thought to only flip Spanish grammar, but I realize that students rather want some other content, so I have thought about it and will surely do flipmovies with other content as well…* Är boken bra, så kör både och, eller lite av varje. Det viktiga,är ju att veta VARFÖR man gör saker o våga ifrågasätta sig själv... Från början tänkte jag bara flippa spansk grammatik, men inser att elverna hellre vill ha annat innehåll, så jag har TänktOm en del och kommer nog att göra flippfilmer med annat innehåll också... *Johan Larsson good luck with flipping! And remember that there is not a SINGLE way which is right :) The flipped classroom suits the needs of your students.* Johan Larsson lycka till med ditt flippande! Och tänk på att det finns inte ETT sätt som är det rätta :) Flippat klassrum anpassar du efter just dina elevers behov!
Professional support	The difference between professional awareness and professional support is that the former is about advice related to professional practice while the latter is about advice related to technical support which is closely	*Johan Larsson have you tried Screen cast o matic ? A software you download for free on your computer. Check it. Really simple and fast!*

	linked to the professional practice. In this case it usually has to do with software used for aiding the FC movement. This code could be called "technical support". Because this kind of technical support was closely linked to professional practice, "professional support" is more suitable as a name for the code. That is because the term "professional" points more to the professional character of this kind of support than the term "technical".	Johan Larsson har du provat Screen cast o matic ? Ett program du laddar ner gratis till datorn. Kolla på det. Väldigt enkelt och snabbjobbat!
Questions to commenters	Questions posed towards other members about various reasons, to clarify their position, or questions related to how one does a certain thing.	*Do all of you who flip work in high school?* Jobbar alla ni som flippar på högstadiet?

Table 2 Codes, examples and descriptions of codes from data.

Selecting two discussion threads for further analysis

In the more detailed analysis of the discussion threads I have chosen to focus on two specific posts in the FB-group and their comments. In thread 1, the OP positions himself as a newcomer in the context of FC approach, which is the theme of the FB-group studied, and engages in discussion with members who seem to be more established/experienced in the group, such as e.g. moderator of the group who started the group in 2012. In thread 2 on the other hand, the OP seems to be more familiar with the FC approach and thus the issues at hand, and the comments that follow seem to constitute a discussion between equally experienced and old members of the group. These phenomena motivated me to further analyse the relations, identity[3], knowledge, activities, and learning of a newcomer and an old-timer within the same CoP and the consequences of such for the comments and discussions established.

Ethical considerations

I have drawn on the research group's ethical considerations in order to be in line with existing ethical guidelines in the field of educational research on social media. Throughout the work with the FB-group, the research group has regarded the ethical considerations as situated. This means that the ethical considerations are inductively formed throughout the entire process, including participant observation, data collection, and analysis. The situated approach is backed by recent and more traditional ethical guidelines for social media research (e.g. Zimmer & Kinder Kurlanda, in press; Sloan & Quan-Haase, 2017).

The research group's project has relied on the current limited ethical codes and guidelines offered. One of them is the Swedish Research Council (2017) which to ensure the research ethics codes of consent and archival requirements, in the project funding application, stated:

> Informed consent in written form will be asked for before any data is collected (whether web based or not). The identity of participants will be made confidential in the material when used

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[3] The evolving identity of members in a CoP (Lave & Wenger, 1991).

outside the project team (i.e. in publications, at conferences and other forms of dissemination of project results). The material will be kept in secure facilities at the University of Gothenburg and the regional ethical board will review the study before any fieldwork is conducted.

Key aspects of ethical guidelines developed by the internet research community alongside national guidelines such as *Guidelines for Research Ethics in the Social Sciences, Humanities, Law and Theology* (Torp, 2016) were adopted. *Ethical decision-making and Internet research: Recommendations from the AoIR Ethics Working Committee* by Charles Ess & AoIR Ethics Working Committee in 2002 and Annette Markham & Elisabeth Buchanan in 2012 are prominent guidelines coming forth from the internet research community. The idea within the AoIR community is to form guidelines emerging from the everyday practice of researchers in various fields, that is bottom up instead of the more usual top-down guidelines (2012, p. 2). *Social media research - a guide to ethics* by Townsend and Wallace (2016) provides with another guide. In general, these research communities suggest a situated approach towards ethics during a project. First, the research group asked and got permission from FB-group administrator to become members of the closed group. Using the pinned-post function of Facebook, the administrator informed the group members about the research group's intentions for observation and corpus data collection over a specific time frame. The pinned-post included a link to another post made by the research group's principal investigator (PI) which included an attached document with information about the project and among other things stated the following:

> All participating in the study will be anonymous in our reports from the project. If specific posts by members are to be used, these members will be contacted for approval. We want to emphasize that we are not interested in individual members of the group, but in the group itself as a forum for sharing experiences. The results of the project will be presented at conferences and in journals, in anonymized form to prevent individual persons from being identifiable.

These initial ethical measures seemed right, however in later stages of the project were looked on as naïve. In a group of nearly 13,000 at the time of data collection, it would be unrealistic to promise complete anonymity. The presented results could be easily traceable from group members. In addition, it can be presumed that not every member read the project details, which casts doubts on the informed consent of the complete set of group members being participants in the project. Nevertheless, the PI's post received eight comments expressing a positive outlook towards the project and 44 likes, whereas the average number of likes per post from the collected data is 5.7. Coughlan and Perryman (2015) used a similar strategy to gain informed consent by asking the group administrators to raise awareness in the group about the research while asking the group members to object if they did not want to be participants. In this way, the ethical measures undertaken regarding informed consent were deemed reasonable.

Another ethical challenge for the research group was the privacy and privacy protection. On technological platforms and Facebook, users usually agree to privacy terms which grant third-parties such as researchers the right to gather user data. Users are often not aware of third-party access to user data (Townsend & Wallace, 2016, p. 5). These data can be collected through Application Programming Interface (API) which has direct access to the database underlying the platform interfaces. API was used to collect the corpus of data for this project. The data included all the posts, likes, and comments made by group members. The research group had in mind that the manipulation activities offered by APIs are usually blackboxed (Latour, 1999) from the typical user. Also, because not all the researchers in the group had the same technical knowledge about APIs, the data were to some extent blackboxed also from the researchers.

According to Lomborg and Bechmann (2014, p. 257), there is a problem with the methodological quality of research based on APIs as they do not represent lurkers the same way as they represent the active users. Those who liked, commented, or posted in our corpus were represented during the three-year period of the study while nearly 50% of the members who did not, were unrepresented. Townsend and Wallace (2016, p. 3) claim that it is important that social media researcher manoeuvre

themselves towards ethical issues by familiarizing themselves with the specific nature of the social media platform being researched. The APIs created specific methodological and ethical implications for the privacy and representation of the FB-group.

Another factor complicating the privacy ethical issues is the unclear boundaries of FB-groups. The group privacy settings can be set to public, open to everyone on Facebook, closed, visible to everyone on Facebook but only members can interact and see the interactions in the group, and private, visible only to members. The FB-group studied in this project was closed, however, due to its professional nature and very large membership, it was considered as a public forum rather than a private group. In this light, the privacy specified by the platform might not be suitable from the research perspective. Although the identity of the members is hidden and the group name not made public, it is still possible for the users to be traced back within the large group. Thus, a better promise would have been to not guarantee the total anonymity. However, the fact that the group is considered more of an open forum rather than privately oriented, renders the privacy issues important but less serious. Thus, in each case studied, specific and context-oriented measures were taken to ensure the privacy and potential harm that could be caused in regards to the profession of the members, such as in cases where they posted playful or ironic comments.

The ethical considerations in the research with the FB-group were regarded as situated and inductively formed throughout the research process based on the methodological choices. Privacy protection and informed consent were operationalized to a group rather an individual level. Operationalizing the privacy issues to a group rather than individual level has been the main point which has affected the ethical judgments throughout the research.

I have operationalized the ethics in my thesis work by anonymizing the members and not disclosing the FB-group name. I have thus not anonymized the theme[4] of the group (FC approach) because the theme is central to the discussions in the two threads I have scrutinized in this thesis work. If the theme would be anonymized, much of what is crucial for the analysis of this study would be worn off.

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[4] The group theme in this case is the FC approach. The group name is not the same as the group theme. The group name refers to the collection of letters/characters that form the name with which one can search for the group on Facebook.

Findings

In this section, the findings of this master thesis are presented. In the following, the two threads selected are analysed. I translated the excerpts used from Swedish to English but have included both the original and the translated versions in the analysis. Then, I have provided the comments on their content. I have presented the coding results in a statistical overview. Based on these findings, I have pointed out similarities and differences between the two threads. I have shown such similarities and differences by using examples from the data.

As a reminder, the research questions are:

- What is the current state of research concerned with teachers' use of social media for competence and professional development?
- How do teachers participating in a thematic group on Facebook share their teaching practice/experiences?
- What kind of activities do teachers engage in while participating in a thematic group on Facebook? What is mobilized when a more peripheral member makes a post as compared to when a legitimate member does the same? Do peripheral and more legitimate members use the thematic group differently?
- How do teachers contribute in maintaining, developing, and sustaining such social media communities?

Most of the set of the 17 posts constituted discussions around the topic of FC. For example, in one of the posts, the discussion was about a flip app. Another post addressed two video clips, i.e. flips, and there was discussion about the content of such videos. In another of the 17 posts, the group moderator asked the members to an f-2-f hang out outside of the group. There was also one of the 17 posts that was an advertisement. In the following, the two threads of specific analytical interest in this thesis will be presented and analysed.

Thread 1 – A newcomer asking for support

The original post[5] in thread 1 is posted on January 16, 2014. It has received 49 comments and 19 likes.

> *A teacher in the 80s gave us students as homework to read some pages for every lecture. In the lectures we discussed (even those 90 % of students who had ignored the homework). Was this also a flipped classroom? Why all this focus on Youtube when so many want to increase the reading comprehension? Thankful for comments to me who is new at flipped! Thanks in advance!*

> En lärare på 80-talet gav oss elever i läxa att läsa några sidor till varje lektion. På lektionerna diskuterade vi (även de 90 % av eleverna som struntat i läxan). Var detta också ett flippat klassrum? Varför all denna fokus på Youtube när så många vill öka läsförståelsen? Tacksam för snälla kommentarer till mig som är nybörjare på flipped! Tack på förhand!

The OP opens up the discussion by sharing his own student experience from the 1980s. This experience constitutes a story about a teacher who used to give students as homework to read a few pages before each next lesson followed by a discussion of what they had read. The OP emphasizes the fact that even the students who ignored the homework became engaged in the discussion that followed. Then the OP formulates a question concerning if that be seen as an example of a FC too. Another question follows where the OP casts doubt on the extensive focus on the visual media of YouTube in the flipped approach when student reading comprehension needs to be increased.

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[5] Original post refers to the post while OP refers to the member writing the post.

Interestingly, the OP mitigates such strong claims by positioning himself explicitly as a newcomer in the context of FC approach, thus asking the other teachers to take such inexperience into account by providing nice comments to his post. The OP ends the post by in advance thanking the other teachers for their potential comments to the post.

Thread 2 – A legitimate member seeking support

The original post in thread 2 is posted on November 26, 2013. It has received 29 comments and 57 likes.

> *Hi! I wonder if I got it wrong with flipped classrooms? I thought it meant that students prepared themselves at home with basic skills in order to make time for deeper discussion, analysis, reflection, help from the teacher and input from classmates. When I read here it seems like focus is on creating good own fact-based films for students to watch, but one should have the opportunity to flip in a lot of different ways! For example, texts, concepts or events to check up, pages on the net, documentaries, movies, and other? Otherwise I think that one loses a great deal if one consequently lectures for "empty classroom" so to speak, I lose contact, the opportunity to clarify directly, the chance to see sparks light up. I am very keen on flipping, but in many different ways! Am I thinking wrong, or on something else??*

> Hej! Jag undrar om jag fattat fel med flippade klassrum? Jag trodde det innebar att eleverna förberedde sig hemma med baskunskaper för att frigöra mer tid till djupare diskussion, analys, reflektion, hjälp från läraren och input från kamrater. När jag läser här verkar fokus ligga på att skapa bra egna faktafilmer för elever att titta på, men man måste ju kunna flippa på massa olika sätt! Exempelvis texter, begrepp eller händelser att kolla upp, sidor på nätet, dokumentärer, spelfilmer och annat? I annat fall kan jag tycka att man förlorar en del om man konsekvent kör genomgångar för "tomt klassrum" så att säga, jag förlorar ju kontakten, möjligheten att förtydliga direkt, chansen att se gnistor tändas. Jag är jättesugen på att flippa, men på många olika sätt! Tänker jag fel, eller på nåt annat??

Thread 2 differs discursively from thread 1 (Silverman, 2006). Here the OP starts by asking if her understanding of the FC approach is incorrect. The OP then provides her own definition of what the FC approach implies. Interestingly, the OP takes what seems to be a relevant, sound definition of the approach and compares it to the general discussions taking place in the FB-group, thus pointing to a discrepancy between the definition or the idea of the FC approach and the focus of the group as such. The focus of the FB-group is, according to the OP, on self-produced films/video clips and thus stresses that film clips should not be the only way to flip the classroom. The OP suggests that it should be possible to flip in many different ways, and thus gives a few examples: texts, documentaries, etc. The OP motivates the reasons to apply this perspective in the teaching practice somehow by relating it to her own teacher experience. The OP then stresses an interest in "flipping" but in different ways. In the end, the OP downplays what can be seen as potential critique of the group by opening up that she might have thought wrong. In the analysis to follow I will first focus on the coding results of the two threads and then unpack some of these results by going into the details of some of the discussions taking place in the threads following the two threads. The analysis is organised around the similarities and differences between the two threads.

Coding results

In thread 1 when a newcomer, as defined by the OP himself, is the original poster, 39% of the comments (n=19), as Figure 5 below shows, were coded as *individual practice*[6]. 35% of the comments (n=17) were coded as *professional awareness*. 20% of the comments (n=10) were coded as *disagreement*. 18% of the comments (n=9) were coded as *opinion*. 16% of the comments (n=8) were coded as *questions to commenters*. 14% of the comments (n=7) were coded as *emotional support*. 12%

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[6] I refer to the codes in *italic* in order to make them visible in the text.

of the comments (n=6) were coded as *agreement*. 4% of the comments (n=2) were coded as *professional support*. 4% of the comments (n=2) were coded as *curious of others* practice'. Last, 2% of the comments (n=1) were coded as *clarification*.
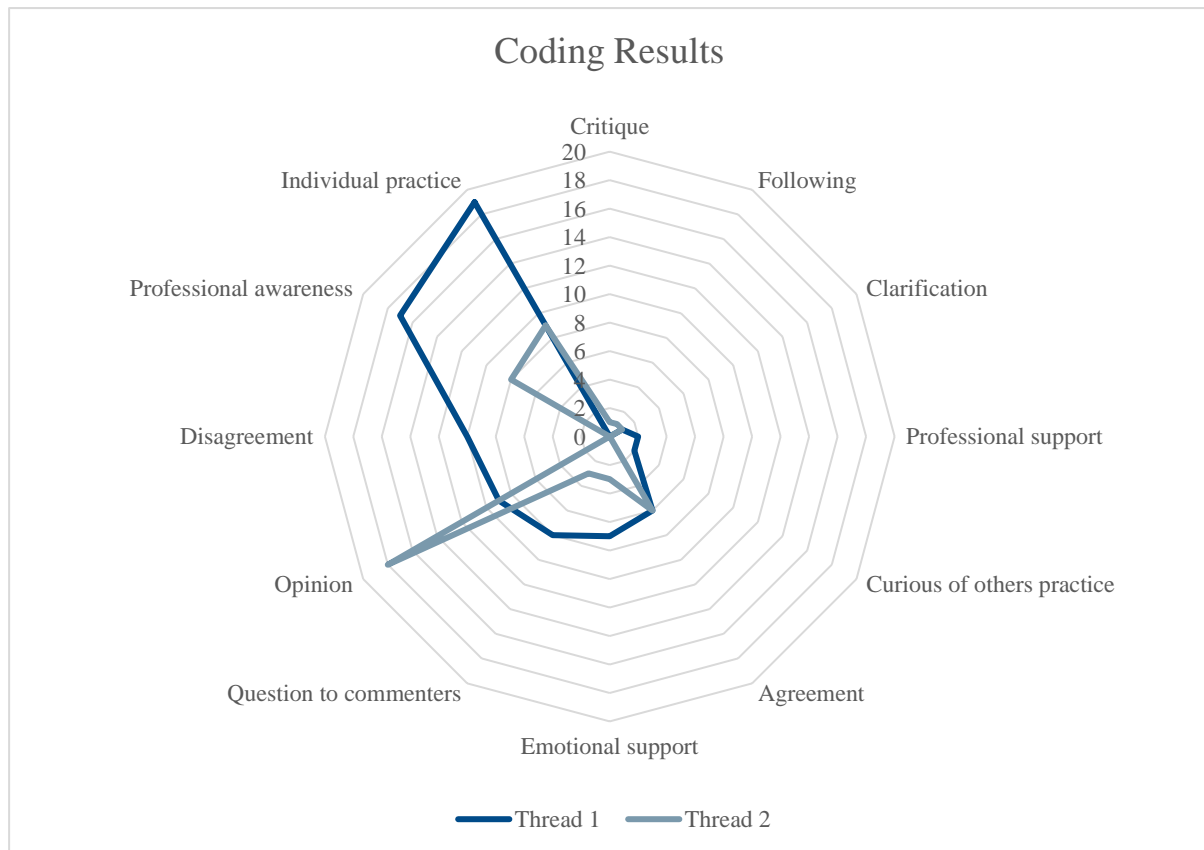
In thread 2, where a more experienced teacher and thus a legitimate member of the group, posted in the FB-group, 62% of the comments (n=18) were coded as *opinion*. 31% of the comments (n=9) were coded as *individual practice*. 28% of the comments (n=8) were coded as *professional awareness*. 21% of the comments (n=6) were coded as *agreement*. 10% of the comments (n=3) were coded as *emotional support*. 10% of the comments (n=3) were coded as *questions to commenters*. 3% of the comments (n=1) were coded as *clarification*. 3% of the comments (n=1) were coded as *critique*. 3% of the comments (n=1) were coded as *following*. Figure 5 above depicts the coding results for both threads 1 and 2.

Professional advice versus opinion-focused discussions

The coding results showed that thread 1 is strongly based on comments that refer to *individual practice*, *professional awareness* and *disagreement*, which were the three most present codes in the comment section (see Figure 5). That is very different to thread 2 where e.g. the *disagreement* is not present. There is also much more of *emotional support* present in thread 1 (7 comments in thread 1 and 3 comments in thread 2 showed emotional support). Thread 2 is instead strongly based on *opinions* (see Figure 5). *Individual practice* and *professional awareness* are common in both threads, they are appearing as first and second most common codes in thread 1, and second and third in thread 2, respectively. In the following sections I will point out the specific characteristics of each of the two threads before I come back to discuss the two threads again. I will do this by explicating some comments that I have chosen as examples from the comment section of both threads.

Thread 1

As already stated, thread 1 is strongly based on what I have coded as *individual practice*, *professional awareness*, and *disagreement* (see Figure 1). *Individual practice* is the most occurring code. *Professional awareness* and *disagreement* are the second and third, respectively.

Individual practice

The following is an example of a comment that was coded as *individual practice*:

> *I have bought a small web camera for my classroom computer and it has a microphone. Works well. 100 bucks on Biltema. I think it works without a problem on my home computer. Check it out on http://bruunsklassrum.blogspot.se/2014/01/writing.html*

> Jag har köpt en liten webkamera till min klassrumsdator och i den fanns en mikrofon. Fungerar bra. 100 spänn på Biltema. I min hemmadator funkar det utan problem tycker jag. Kolla på http://bruunsklassrum.blogspot.se/2014/01/writing.html

The comment is solely based on the commenter's experience with the specific equipment, which in this case is a camera with a microphone. The commenter in the end also gives a link to some kind of blog which explains how the equipment was used. The theme of this comment is the reference to this teacher's personal experience with technology.

I coded the following comment as *individual practice*, *professional awareness*, and *disagreement*:

> *Does it not depend on HOW one has read 15 pages of text? Many read without reading. Without understanding or getting the content. Many times, I give a flip that is later built with printed material. This way they have a pre-understanding and can easier get what is written.*

> Beror inte det på HUR man har läst 15 sidor text? Många läser utn att läsa. Utan att förstå eller ta till sig innehållet. Jag ger många gånger en flipp som sedan byggs på med tryckta källor. Då har de en förförståelse och kan lättare ta till sig det skrivna.

By asking "*Does it not depend on HOW one has read 15 pages of text?*" the commenter makes an introduction to the topic of the comment to come. By asking such a question, the commenter seems to disagree with the suggestion offered by the OP that reading could be a good flipping alternative, at least not for every student. This is followed by "*Many read without reading*" and "*Without understanding or getting the content*", which seems to be the commenter's counter-arguments for making the OP aware that many students do not understand or get concepts just by reading. In the end, the commenter concludes his set of argumentation by giving examples from personal teaching practice. The commenter provides arguments as to why this practice is the right thing to do.

Professional awareness

The following is an example of a comment from a teacher that addresses what is coded as *professional awareness*:

> *We sometimes assume that everyone is learning the same way and it is a pity for those who need alternative input.*

> Vi förutsätter ibland att alla lär bäst på samma sätt och det är synd för dom som behöver andra ingångar.

The commenter seems to be experienced in teaching and the comment could be seen as an attempt to make the OP aware of the fact that not everyone is learning the same way and that different students need different input, which is the actual challenges teachers are to manage in today's classrooms.

The next comment is an example of a comment that I coded as *professional awareness* and *opinion*. The moderator of the group, who is extensively involved in many of the discussions in the group (not only the 17 in this material), replies to the OP in thread 1 in the following manner:

> *That depends on how much ambition you put in the movie. If you don't want to do the movie, borrow it instead. Jonathan Bergmann[7] said something good in the lecture in Stockholm: "Do you want it perfect or do you want it Tuesday?"*
>
> *Therefore, you do not need to produce a perfect movie to reach your goal. (The most important is to get the sound right. Bad sound is never fun.)*

> Tror det beror på vilken ambition man lägger ner på filmen. Vill du inte göra filmen så låna istället. Jonathan Bergmann sa något bra på föreläsningen i Stockholm:"Do you want it perfect or do you want it tuesday?"
>
> Dvs du behöver inte producera en perfekt film för att nå ditt mål. (Det viktigaste att få till är ljudet. Dåligt ljud är aldrig roligt.)

The main theme in this comment is the intention of the commenter/moderator to provide the OP with professional advice. This can be noticed in the second sentence where the imperative form of the verb is used: "*If you don't want to do the movie, loan it instead.*" That is to say, the OP or any reader of the comment who is concerned is shown what he needs to do. That is, they need to loan the movie if they do not have the resources to create one. Then the commenter uses a metaphor "*Do you want it perfect or do you want it Tuesday?*" a supporting premise to explicitly state the advice: "*Therefore, you do not need to produce a perfect movie to reach your goal.*" The final, more pragmatic advice about getting the sound right, concludes the comment. On the other hand, the latter pragmatic advice seems to be based on the moderator's personal opinions that might be derived from personal experience of producing material with bad sound.

The moderator also states her opinion in the opening question. Not a lot would have changed if we add "In my opinion," to the first sentence. The same is valid for the point she makes about getting the sound right in the end. That cannot be considered a universal fact, although it is an advice that is based on an opinion that could have been derived from personal practice. For another teacher, it could be important to get the video quality right. However, the point here is that the opinions are helping the main purpose of the comment, that of professional awareness. The main role of the comment here is to give advice on how to conduct a practice that would work better, that is, making the other teacher professionally aware.

Disagreement
The following is a comment that I coded as *disagreement* and *individual practice*:

> *I flip middle school and do not see the problem or the obstacle? Flipping is not making movies, but think the contrary!! The ideaflip[8] is more important than that it is just a movie. Then I often use a movie clip but also other ways.*

> Jag flippar mellanstadiet och ser inte problemet eller hindret? Flippa är inte filma utan tänks tvärt om!! Tankeflippen är viktigare än att det just är en film. Sen använder jag oftast filmklipp men även annat.

The commenter clearly disagrees with the OP and that is visible in the first question-sentence. The first sentence is followed by a statement about flipping which seems to come from an experienced

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[7] Jonathan Bergmann and Aaron Sams are widely recognised as the founding fathers of the FC approach (Bergmann & Sams, 2012) and thus not anonymised in the excerpt.

[8] Often referred to as the mental flip.

teacher and a teacher using the flipped approach. In the last sentence, the commenter shares a personal way of doing things regarding the topic. The main theme of this comment is the commenter's disparity with the OP expressed in the first sentence about the idea of movies being the only way of flipping. The commenter also draws on personal experience.

Emotional support
The following is a comment that I coded as *professional awareness* and *emotional support*:

> *Johan Larsson good luck with flipping! And remember that there is not a SINGLE way which is right :) The flipped classroom suits the needs of your students.*

> Johan Larsson lycka till med ditt flippande! Och tänk på att det finns inte ETT sätt som är det rätta :) Flippat klassrum anpassar du efter just dina elevers behov!

The comment is a reply to the OP. By wishing the OP good luck with flipping and owing to the fact that the OP declared to be inexperienced in the FC approach, the commenter offers emotional support to the inexperienced OP. In the rest of the comment, the commenter advises the OP to remember that there is not a single way to flip and that FC approach suits the needs of the students, thus making the OP professionally aware.

The following is a short comment that I coded as *agreement* and *emotional support*:

> *Very good comment from you, Johan.*

> Mycket bra kommentar från dig, Johan.

It is the only comment from the commenter and it is a reply to the OP. By affirming the OP's concerns about the possibility to flip in different ways other than by using videos, the commenter supports the inexperienced OP emotionally. At the same time, it can be claimed that the commenter agrees with such concerns.

The coding results showed that thread 1 is strongly based on comments that refer to *individual practice*, *professional awareness* and *disagreement*, which were the three most present themes in the comment section.

In summary, the discussion mobilized in the comment section of thread 1 is strongly based on reference to individual practice, professional advice and disagreement. There is more disagreement and emotional support in thread 1 than in thread 2.

Thread 2
Much like thread 1, thread 2 concerns the possibility to flip in different ways other than by using videos. In thread 2, where a more experienced teacher on the FB-group and to the FC approach is the OP, the comments from the other teachers and the discussion can be characterized as strongly opinion-focused. At the same time the commenting teachers' individual teaching practices were heavily drawn on in the discussion and the teachers also showed a strong focus to professional awareness in their comments. Lastly but not least, the discussion is clearly based on a discourse of agreement. In the following sections, I will explicate some themes of these codes.

Opinion
The following is an example of *opinion*:

> *The downside feels to be that the teacher must increase their preparation time through creation of all these movies.*

> Nackdelen känns ju att lärare måste öka sin förberedelsetid genom skapandet av alla dessa filmer.

This is a comment in reply to the OP and expresses the commenter's perspective of the issue. The commenter mitigates the boldness of this statement by saying, "feels to be". The main intention of this comment does not seem to share some form of self-reference or to make the OP aware of some professional practice. The commenter has formed an opinion that creating movies only adds to the teacher's preparation time, which is already heavy. This statement can also be seen as the commenter expressing a concern about flipping being equated with film clips. Nonetheless, the main theme of the comment is an opinion.

The next excerpt is an example from thread 2 that I coded as an *opinion* and *professional awareness*:

> *Without common preparation, the difference between the pupils' prior knowledge is greater. That is why it benefits all, but mostly those who have it difficult due to little prior knowledge.*

> Utan gemensam förberedelse är skillnaden mellan elevernas förkunskaper större. Därför gynnar det alla, men allra mest de som har det tufft pga av lite förkunskaper.

It is the second comment in the thread, and it is a direct reply to the OP. According to the commenter, the FC approach acts as a bridge that reduces the difference between individual student's knowledge. The commenter also holds that the difference between students' prior knowledge is greater without common preparation. These statements represent the commenter's view on the specific topic and cannot be considered more than an opinion. The comment is concluded with the claim that the FC approach benefits all and mostly those with poor prior knowledge. In this sense, the comment can also be seen as a professional awareness because it intends to bring awareness on the benefits of common preparation. The main theme of the comment seems to be a personal opinion that the commenter could have derived from personal experience.

Individual practice
The following is a comment that I coded as what I have called *individual practice*:

> *Yes but I have material of a different kind that I have collected during my years but that does not mean I'm working on the old material but I often look for new and better material.*

> Jo men jag har material av annat slag som jag har samlat under mina år men det betyder ju inte att jag jobbar med det gamla materialet utan man letar ju ofta efter nytt och bättre material.

This comment was a reply to the OP. The commenter refers to their experience with collecting material to work with during the years of a, presumably, teaching career. The commenter also clarifies that despite collecting old material, they constantly search for new material to work with. It seems that a self-reference in relation to the topic raised by the OP is how this member made their way into the discussion.

Often a comment that included a teacher's *individual practice* was combined with an *opinion* as well, as is exemplified in the comment below:

> *I have my reviews as usual in the classroom just because I want the discussions there. I think it may vary slightly depending on the subject. Maybe it is good for math students to look at a review and then work at the lesson where the teacher is for help? I use my flippers to complement my lesson reviews as well as for repetitions for tests and the like.*

> Jag har mina genomgångar som vanligt i klassrummet just för att jag vill ha diskussionerna där. Jag tror att det kan variera lite beroende på ämne. Det kanske är bra för matteelever att titta på en genomgång och

> sedan jobba på lektionen där läraren finns för hjälp? Jag använder mina flippar som komplement till mina lektionsgenomgångar samt för repetition inför prov och dylikt.

This comment is a reply to the OP. The commenting teacher explains that, in what can be referred to as self-reference, they have the reviews in the classroom. The commenter goes on to state their judgement that having reviews in the classroom might depend on the subject at hand by bringing up the example of math students in the form of a question. In the end, the commenter sums it up by shifting the focus back to their individual practice by showing for what purpose they use "flippers".

Professional awareness

The following is a comment that I coded as *professional awareness* and *opinion*:

> *Perhaps it is easier to focus on what is (for the teacher) new? Creating, or using, technical solutions and/or movies are still quite new to many. The other homework that you describe maybe one feels that one already has competence to implement without the help of an extended collegium?*

> Kanske blir det lätt så att fokus hamnar på det som (för läraren) är nytt? Att skapa, eller använda sig, av tekniska lösningar och/eller filmer är fortfarande ganska nytt för många. De andra hemarbetena som du beskriver kanske man känner att man redan har kompetens att genomföra utan hjälp från ett utvidgat kollegium?

In an attempt to provide an answer to OP's concern about why many teachers focus on flipping mainly by using movies, the commenter claims that perhaps this is due to the fact that it is easier for many teachers to focus on new technical solutions. In the last sentence and pretty much in the same way, the commenter attempts to answer some other of the OP's concerns and that comes in the form of a question, in what can be thought of as a way to soften the claims. This is an opinionated comment that aims to answer some of the issues that the OP has opened up.

Agreement

The following is a comment that I coded as *agreement*, *opinion*, and *professional awareness*:

> *I think like you. The students should prepare themselves home for that which is coming. It can be to search for something especially in the newspaper etc.*

> Jag tänker som du. Eleverna ska förbereda sig hemma på som komma skall. Det kan ju vara att leta efter något särskilt i tidningen mm.

This comment is the only comment this teacher produces in the thread. In the first sentence the commenter shows agreement with and support to the OP's critical attitude towards the development of the FC approach. After agreeing with the OP, this commenter also provides an opinion of his own by stating what students ought to do before coming to the class. The comment is finished off as the commenter gives advice by suggesting how the students could prepare themselves before coming to the class. And as such, the commenter intends to provide professional awareness.

Summary of findings

The systematic research review showed that CoP is the most applied theoretical concept in the current state of research regarding teacher PD on social media. Thread 1 is the case of a more peripheral member asking for clarification from the community about a specific topic. The coding results showed that thread 1 is strongly based on *individual practice*, *professional awareness* and *disagreement*, which is very different to thread 2 where e.g. *disagreement* is not present. This suggests that when a newcomer initiates a thread which concerns some of the interpreted common sense about the FC approach, a form of self-reference to teaching practice and professional advice is mobilized in the discussions. On the other hand, there seems to be more disagreement present in the discussion

following a thread initiated by a newcomer as opposed to a thread initiated by an old-timer. There is many more comments in thread 1 that constitute *emotional support* between members of the group as compared to thread 2. This suggests a thread initiated by a newcomer invites more emotional support as opposed to a thread initiated by an old-timer. Thread 2 is the case of more legitimate member in the group who opens up a similar topic to thread 1. The comments to the original post in thread 2 and in the discussion emanating from such post are strongly based on *opinions*. *Individual practice* and *professional awareness* were common in both threads.

Discussion and conclusion

In this master thesis, I have systematically reviewed research concerning teacher competence or PD and social media. Empirically, I have scrutinized a thematic FB-group for Swedish teachers focused on discussing the FC approach. I have analysed data collected between 2012 and 2015. 17 Facebook threads exceeded the mean for number of likes and comments and were analysed in more detail.

Of these 17 threads I have taken a specific analytical interest in two different discussion threads based on original posts from two different members of this FB-group and the discussions happening in the subsequent comments to these postings. The following research questions have guided this thesis:

- What is the current state of research concerned with teachers' use of social media for competence and professional development?
- How do teachers participating in a thematic group on Facebook share their teaching practice/experiences?
- What kind of activities do teachers engage in while participating in a thematic group on Facebook? What is mobilized when a more peripheral member makes a post as compared to when a legitimate member does the same? Do peripheral and more legitimate members use the thematic group differently?
- How do teachers contribute in maintaining, developing, and sustaining such social media communities?

Thread 1 is the case of a more peripheral member asking for clarification from the community about a specific topic. What follows is a flow of information and tips from more experienced members of the community towards the newcomer. The majority of the information that flows is in the form of personal examples of, seemingly, more experienced members, or professional advice. The comments that follow this newcomer's posting can be seen as the more experienced members' way of accepting a new member into the community. On the other hand, thread 2 is the case of a more legitimate member in the group who opens up a similar topic as compared to thread 1 as both threads concern the possibility to flip in different ways other than by using videos (which seems to have the default interpretation of the FC approach and thus both OPs can be considered critiquing such common sense interpretation). However, because of the way the OP in thread 2 positions herself as a more experienced member of the community, which differs from the OP of thread 1, what follows is an exchange of opinions between several more experienced members of the FB-group, a discussion in order to enhance the general knowledge of the community around the FC approach. These activities portray the way teachers contribute in maintaining the community by keeping it active with discussions; developing the community by sharing knowledge/practice and enhancing the general knowledge of the community; and sustaining the community by supporting the members with professional advice. In the discussion to follow, I will discuss about how the findings in this master thesis relate to the existing literature and argue why CoP is an incomplete conceptual framework when it comes to studying teacher PD on social media.

Relation to literature: professional support and senior members' confidence

The main themes identified in the literature review were the following: teachers come together on social platforms as formations of CoP; social media provide certain affordances for teachers who participate in them; social media serve as antidote to isolation for teachers; social media provide low cost PD; there are certain reasons why teachers join social media; and measuring the impact of informal PD through social media on the classroom practices is a tricky task and needs further research.

Overcoming professional isolation

Overcoming professional isolation was one of the most important affordances of online competence development reported in the literature. Carpenter and Krutka (2014) found that Twitter made teachers that entered the profession for the first time, feel less alone. Thread 1 is related to this finding owing to the fact that the OP was a new member of the community and he used it as a platform where he could ask his question and, as a result, he got 49 comments and 19 likes. 49 comments and 19 likes can be considered a substantial activity that the OP might not have induced elsewhere. Davis (2015) claims that social media provide the right environment for teachers to feel professionally and emotionally supported. Professional support, in the form of advice and awareness, was observed to be a central aspect of the discussions in both of the threads analysed in this thesis. Emotional support was observed in the discussions of both threads, although it was emphasized much more in reply to the inexperienced OP in thread 1. Apart from emotional support being present in the comments as confirmed by the coding results, it was expressed additionally in the form of likes on both threads (thread 1 got 19 likes, thread 2 got 57 likes). With this in mind, the thematic groups render possible for teachers that have no support for their ideas from their school management to use social media as an extended staff room.

Senior members show more confidence

According to the literature, teachers are on social media mainly for professional reasons and teachers with more experience are often more active. Ranieri, Manca and Fini (2012, p. 766) go as far as saying that "[s]enior members show more active and confident behaviours compared with junior participants". The findings in this thesis seem to be in accordance with such claims. After posting a direct question, the OP in thread 1 mitigated his otherwise strong claims by telling that he is new to the field, thus asking for kind replies. On the other hand, the OP in thread 2 was more critical towards, according to her, a slightly wrong focus of the group. She also downplays her critique but overall shows more confidence than the OP in thread 1.

Self-reference as a common theme in both threads

In thread 1 the OP can be seen as a more peripheral member making his way into the periphery of the community by asking a question within the theme of the community. On the other hand, the other members of the community, often the more experienced ones, offer their advice based on the experience acquired through their individual teaching practices. In thread 2, a more legitimate member asks a question to the community by expressing a somewhat more confident position in the thematic group. The community discusses and share opinions around the topic. However, the tone of the discussion, despite the OP's quite critical posting, is rather civilised and factual. Reference to teachers' individual teaching practice, such as how one uses material other than videos to open up more time in the classroom, was common in both threads. Selwyn (2000) argues that teachers' online professional discourse is more self-referential than group directed, i.e. the OP is explicit in their reaffirmation of their individual professionalism – it becomes more as a competition. This argument is used to point to such online discussions as sites of information and empathetic exchange among disparate professionals whose sense of community lies elsewhere (p. 774).

CoP as an incomplete conceptual framework?

As the literature review showed, many of the studies concerned with teachers' PD and social media use the concept of CoP (Ranieri et al., 2012; Forte et al., 2012; Wesley, 2013; Visser et al., 2014; Kabilan, 2016; Britt & Paulus, 2016) as baseline. This motivates, I will argue, a discussion of this concept in relation to my data and analysis as well. The dynamics of and discussions in thread 1 and thread 2 easily loan themselves to an analysis using concepts from CoP. The thematic teacher professional FB-group can be discussed by means of the three characteristics of a CoP, as developed by Wenger (1998). The *domain* in Wenger's vocabulary translates in the case of the thematic FB-group to the group members' shared interest in the FC movement. This interest as the two threads

show, is constituted in both more beginning, peripheral interest (thread 1) as well as a more developed and expert interest (thread 2). The concept of *community* translates in this case to the set of all members of the FB-group who interact with each other around the FC movement. The membership to this community is thus varied; as there are members very active as contributors to the group but also as so-called teacher celebrities (Rensfeldt, Hillman, & Selwyn, 2018) who advocate the FC approach around Sweden. And finally *practice* implies in the case of this thematic FB-group that the members of the FB-group use flipped movement practices in their local contexts. However, the concept of NoP creates scepticism around this interpretation. Although, the FB-group resembles a CoP considerably, it is unsure where the line between the FB-group being a CoP or a NoP is. If the members of the group deduct a sense of identity from the FB-group, thus committing to its reproduction, the FB-group is more of a CoP. On the other hand, if the members of the group participate in the FB-group mostly to bring about their individualism in the form of competition, while their sense of community lies in their local contexts, then the FB-group resembles more of a NoP. Moreover, most of the members are part of many FB-groups who are there just to gain information and use it in their local environments, otherwise known as lurkers (Lomborg & Bechmann, 2014) or authorized visitors (Lantz-Andersson, Peterson, Hillman, Lundin, & Rensfeldt, 2017). Only a small number contribute with content and discussions. All of the discussion contributions in the group are contributed by one fourth of the group's total members. Out of the nearly 13,000 group members at the time of the collection, 675 have started a discussion through a post, 1,435 have commented in one of these discussion threads, and 6,526 have liked at least one post (Lantz-Andersson, Peterson, Hillman, Lundin, & Rensfeldt, 2017). Adding to the complexity of the problematic application of CoP as a theoretical concept for studying the thematic FB-group is the critique offered by Hindmarsh (2010). Hindmarsh (2010) points to the fact that peripheral figures who might never be part of the actual community can have a substantial role in the sustainability of the CoP. Currently, the CoP concept does not focus on members with this status. In the sense of the thematic FB-group, the lurkers and authorized visitors can be thought of as peripheral figures with no intention of being an integral part of the CoP. Nevertheless, CoP is an appropriate concept for this master thesis as the two threads that are examined are contributions in maintaining, developing, and sustaining the CoP that exists as a subset of the NoP in the large thematic FB-group. Studies that would have concerned a wider aspect of the data could benefit from NoP.

The findings in this thesis further extend the rather small body of research and literature on the topic, which has obviously gained more momentum in the recent years. Originally, Lave and Wenger (1991) coined the theory of the CoP at a time when the Internet did not exist as we know it today. With the Internet, the potential to exploit the teachings of the situated learning paradigm is immense. Lave and Wenger (1991) studied midwives, tailors, quartermasters, butchers, and recovering alcoholics. The findings in this research show that, although partially, the concept of CoP can be beneficial to apply in studying teacher PD on social media. However, findings in this research further extend the literature by showing that CoP alone might be problematic as a conceptual framework to apply when studying teacher PD on social media. The NoP might be more appropriate a theoretical concept to use when studying teacher communities on social media.

The limitation with this thesis work is that it only captures the discussions of only two threads in the corpus of almost 3,000 posts and 16,000 comments. Seen in this light, more research is needed to unpack the dynamics of discussions across a wider dataset.

Conclusions

The findings in this thesis work show that CoP might be an incomplete conceptual framework to apply when studying teacher PD on social media. The concept of NoP is necessary to cover the complete picture of different types of memberships present in social media. The majority of teachers on social media are part of many different FB-groups and rarely do they contribute with content, however they probably use the information from these groups in their local teaching contexts. Only a small portion

of members do actually contribute to, using Wenger's terminology, developing, reproducing, and sustaining these online CoP. In this sense, when studying teacher PD on social media, concepts other than CoP alone might be useful to apply, such as NoP. In this evolving field, further research is needed to explore the PD that occurs from participating in social media PD. This calls for more studies on teachers' activities in social media and how this participation affects the classroom.

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