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# The Role of Online Interaction as Support for Reflective Practice in Preservice Teachers

## Abstract

This study investigated how on-line interaction supports reflective practice in preservice teachers through a mailing list. Three groups of preservice teachers in the fourth year of a teacher training program (N=34) were studied using a mixed methods approach: individual and group interviews and an online questionnaire. Results indicate that online interaction plays a secondary supportive role for reflective practice in preservice teachers.

However, preservice teachers who got involved in online interaction showed evidence of several functions of reflective thinking and overall reflection on quality. Online interaction also appears to exercise the equally beneficial social and psycho-emotional functions. It therefore plays a secondary but positive role in supporting reflective practice in preservice teachers.

## Keywords

reflective practice, online interaction, teaching practicum

## Introduction

Reflective practice is considered a mandatory competency in many initial teacher training programs (Mansvelder-Longayroux, Beijaard & Verloop, 2007). Because reflection is integral to a sound professional approach (Schön, 1983), it is particularly important to develop during the teaching practicum. At the same time, web-based communication tools, such as online forums and mailing lists, hold great potential for the practicum: among other things, they allow contact between supervisors and students when students are widely dispersed and have fewer opportunities to meet face-to-face (Karsenti, Lepage & Gervais, 2002). It is therefore not surprising that online interaction is routinely included in tools to support reflective practice in preservice teachers. However, despite the pedagogical potential and the generally positive perceptions of online interactive support, the literature has not yet conclusively demonstrated its benefits. We therefore wanted to investigate the actual contributions of this type of support. How does it help preservice teachers develop their reflective thinking? In response to this question, we present the empirical results of a mixed exploratory study of online interactions among preservice teachers through a mailing list used to support reflective practice. More precisely, the research objective was to determine the role of online interaction in the reflective practice of preservice teachers. First, we establish the teaching internship as a time when preservice teachers are encouraged to associate reflective practice with online interaction. We then present an overview of the empirical literature on online interaction as a support for reflective practice, followed by the methodology and results. We finish with a discussion of the results in light of the relevant literature. To begin with, we define our research objective.

## The teaching practicum: where online interaction meets reflective practice

The official inclusion of reflective practice as a professional competency in initial teacher training programs in Quebec (Ministère de l'Éducation du Québec [MEQ], 2001) reflects a worldwide movement.<sup>1</sup> In the broadest sense, the teacher “reflects on his or her practice (reflective analysis) and makes the appropriate adjustments” (MEQ, 2001, p. 127). Because teachers develop their reflective thinking in reference to their work (Schön, 1983), they are particularly likely to do so during the practicum, and even more so when they have a mentor at their side. Initial teacher training programs in Quebec and elsewhere support reflective thinking in preservice teachers with various mentoring mechanisms such as face-to-face seminars during the practicums, web-based communication tools, portfolios, and analyses of teaching practices (Mansvelder-Longayroux *et al.*, 2007). Among these, online exchanges would appear to hold particular potential for supporting reflective practice, for two main reasons, the first being attributable to interaction in general (whether online or not) and the second more specifically to online interaction. First, they involve sociocognitive functions that can enhance the development of reflective practice (Baker, 1996a, 1996b; Depover, Karsenti & Komis, 2007). In this respect, according to Jonassen (2000), “perhaps no Mindtool described in this book better facilitates constructive, social learning than asynchronous conferencing, because it supports reflection on what one knows and, through communication of that with others, may lead to conceptual change” (p. 251). Second, they enable further mentoring of preservice teachers who are geographically dispersed and at different stages of the practicum, and therefore less likely to meet face-to-face (Nault & Nault, 2001). Online exchanges can also break through the isolation felt by preservice teachers. Therefore, web-based support mechanisms provide sensible solutions that are positively perceived in education circles (Barnett, 2002). Below, we present an overview of the literature on online interactive support and its potential for developing reflective practice in preservice teachers during the practicum.

1 For French-speaking Belgium, see the Administration générale de l'enseignement et de la recherche scientifique (2001); for France, see the Haut conseil de l'éducation de la République Française (2006); for the United States, see the National Council for Accreditation of Teacher Education (2008); for Europe, see the Institut national de recherche pédagogique (Rey, 2005).

## Reflective practice and online interaction: an overview of the literature

How can online interaction help develop reflective practice in preservice teachers? To respond to this question, we conducted a literature review on the relationship between reflective practice and online interaction in education. Due to space constraints, we report only the main findings here.<sup>2</sup> Some general comments can be made. First, the interactional aspect of reflective practice has been considered in recent empirical studies (for about 20 years, according to the dates of publication). However, it is difficult to find results that are both solid and corroborated. For instance, after conducting a literature review covering 28 studies in 14 virtual education communities, Zhao & Rop (2001) found that only six addressed reflective practice. These authors noted that, contrary to the communities' expectations in terms of reflective practice, "little is known about the effectiveness of these networks for teacher learning" (2001, p. 90). In a similar vein, Barnett (2002) reviewed 24 studies from the 1990s concerning electronic networking technologies and concluded that, despite favourable attitudes towards reflective practice and online networking, "the research findings are mixed regarding the power of electronic networks to support reflection" (p. 11). From their literature review, Wade, Fauske and Thompson (2008) also concluded that "despite the promise of CMD (computer-mediated dialogue), research findings are mixed about whether it [the forum] actually produces greater critically reflective thinking among prospective teachers" (p. 400).

Nevertheless, some trends are apparent. First, it is widely reported in the literature that the temporal flexibility (particularly for asynchronous communication) and spatial flexibility of online interaction are beneficial for reflective practice (Zhao & Rop, 2001). Electronic forums and similar communication tools (e.g., mailing lists) appear to be the most commonly used forms of interaction, as well as the most beneficial for reflective practice, notably due to the need to collaborate (see, e.g., the studies by Bodzin & Park, 2002; Hawkes & Romiszowki, 2001; Levin, He & Robbins, 2006; Makinster, Barab, Harwood & Andersen, 2006; Rhine & Bryant, 2007; Ruan & Beach, 2005). Nevertheless, in view of the conclusions of the literature reviews by Zhao and Rop (2001), Barnett (2002), and Wade *et al.* (2008) as well as some of the above-cited studies, these benefits should be interpreted with caution.

<sup>2</sup> For a detailed literature review, see Collin (2010).

## Objective

In light of this overview of the literature on online interaction and reflective practice, the research question was to better understand the role of online interaction in the development of reflective practice in preservice teachers. Accordingly, we aimed to identify how certain stakeholders in the teaching practicum (preservice teachers and their supervisors) viewed the role of online interaction in developing reflective practice. We now present the methods used to achieve our research objective.

## Methods

We used a mixed exploratory approach. We first present a description of the sample, followed by the data collection and analysis.

## Context and participants

The participants were preservice teachers in the fourth year of an initial training program for secondary teachers of different subjects at the Université de Montréal. The students were in their final year of university, which concluded with a practicum (teaching internship) where the students were in complete charge of teaching aspects (preparation, intervention, and assessment). They were required to demonstrate proficiency in the 12 teaching competencies in the framework for professional teaching competencies established by the MEQ (2001). For the practicum, the preservice teachers were assigned to groups of about 12 and supervised by a university professor and an associated teacher, who usually worked at the school where the practicum took place. A total of 37 participants, including three groups of preservice teachers (9, 12, and 13 participants) and their supervisors were followed throughout the year-4 practicum (45 teaching days, winter 2009). To help develop their reflective practice, the preservice teachers and their supervisors subscribed to a two-way mailing list<sup>3</sup>. They were instructed to use the mailing list to share their teaching experiences (unexpected events, problems, frustrations, and so on) during the practicum. Participation in the mailing list was mandatory, and reflections were submitted according to a schedule.

<sup>3</sup> A mailing list is “a list of names and addresses kept by an organization so that it can send information and advertisements to the people on the list” (Cambridge Dictionaries Online, n. d.). Members can therefore send a message to everyone on the list. In this study, the mailing list had an option to track the origins of email messages.

The university supervisors also subscribed to the mailing list, but they were instructed to intervene as little as possible so as not to discourage interaction among the preservice teachers. In addition, five face-to-face seminars were held at the university so the groups could review their shared reflections. Thus, the online and face-to-face interactions complemented each other to enhance group sharing of reflections.

### **Data collection and analysis**

We used two instruments for data collection: individual and group interviews and an online questionnaire. At the end of the practicum, the three groups of preservice teachers and their supervisors underwent four group interviews (one for each preservice group and one for the three supervisors) and four individual interviews (volunteers from the three preservice groups). The interviews addressed the role of online interaction as support for reflective practice, and were pretested. Individual and group interviews were first transcribed and then coded using QDA Miner qualitative analysis software. A semi-open coding scheme was applied based on themes that emerged from the interview transcripts. Reverse-coding showed 76.4% interjudge agreement. A thematic analysis (L'Écuyer, 1990; Van der Maren, 1996) was applied to determine the role of online interaction in the development of reflective practice in preservice teachers. Only results on the individual and preservice group interviews are presented here. The interview with the supervisors is addressed in another article.

We also used an adapted version of the Online Personal/Overall Interaction Survey (Abdel-Maksoud, 2007). Our version considers online interaction as a predictor of satisfaction and cognitive engagement in distance education. The questionnaire contains four main sections: 1) a scale to rate online interactions produced by individual respondents (Cronbach's alpha: 0.738), containing items such as, "I found the mailing list useful during my internship"; 2) a scale to rate interactions produced by the respondent's group (Cronbach's alpha: 0.798), containing items such as, "I rarely share my ideas and opinions with the other teacher interns on the mailing list"; a scale to rate individual satisfaction with the tool (Cronbach's alpha: 0.874), containing items such as, "The mailing list has led to some valuable reflections"; and 4) an item addressing the preservice teachers' cognitive engagement in the online interactions: "I participated actively in all the mailing list discussions." The

reasoning for this item was that by cognitively engaging in the online interactions, the participants would demonstrate interactional reflective practice. The online questionnaire was sent to the three groups of preservice teachers at the end of their practicum (but not to their university supervisors) and to the entire cohort of fourth-year preservice teachers in the secondary school teacher training program at the Université de Montréal (N=+/- 130) to ensure robust results in a larger sample. A total of 57 preservice teachers responded to the questionnaire. To ensure a degree of homogeneity between the two respondent groups (i.e., the 3 studied groups and the entire cohort), we ran a one-factor ANOVA. The results showed no significant difference between the two groups for the three scales, indicating generalizability for the entire cohort of students. We then performed a Pearson cross-correlation analysis for the average score on each scale (i.e., individual interaction, group interaction, and satisfaction) with the variable cognitive engagement to determine whether participation in online interactions was associated with cognitive engagement. If so, this could be interpreted as the exercise of reflective thinking through online interaction.

## Results

The results are presented below according to the thematic analysis of the interviews. Descriptive and inferential statistics are provided.

### *Online interaction as support for reflective practice: a secondary role*

First, we note that online interaction plays a secondary supportive role compared to other resources that were provided during the practicum. The associated teachers were almost unanimously the first line of interactional support for reflective practice. They enabled the preservice teachers to spontaneously reflect on situations that they experienced:

PS2/II<sup>4</sup>: “It’s [the reflection] more in connection with my associated teacher.”

This spontaneous interaction with the associated teacher allows prospective reflection. That is, the preservice teachers could reflect in order to prevent specific problems from arising in the short term, which is more difficult to do with deferred online feedback:

4 For the results presentation, PS means “preservice teacher,” II means “individual interview,” and GI means “group interview.” Numbers denote the order of statements by interviewed participants.

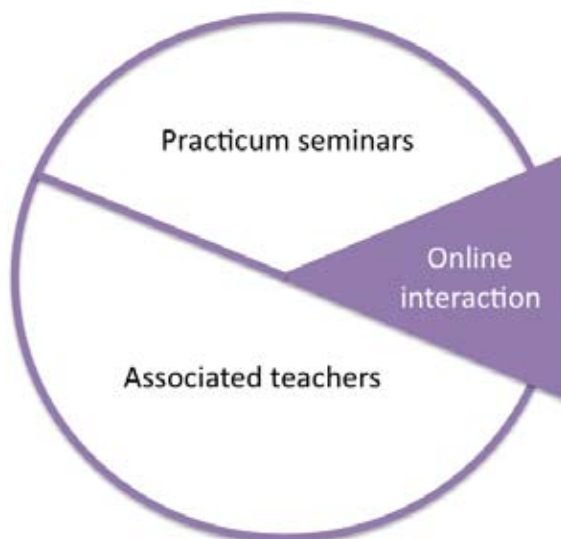
PS2/II: “Sometimes there are situations where you need to talk so you can make a quick change in strategy.”

Aside from the associated teachers, the practicum seminars were also perceived as support for reflective practice, albeit less strongly. These seminars were held in parallel with the online interactions, the idea being to establish continuity of reflection between the face-to-face and distance exchanges.

Consequently, the online interaction appeared to be less relevant for reflective practice than other forms of support, that is, the associated teachers and seminars, which were judged more effective. We then rated the supports for reflective practice in terms of relevance:

PS2/II: “I would say that, first, it was my associated teacher, and second, the seminar, and last was the [mailing list].”

Figure 1 summarizes the main results obtained so far. Note that online interaction provides secondary support for reflective practice, the more effective resources being the associated teachers followed by the seminars. The associated teachers provided support that was spontaneous, on-site, and prospective, which online interaction could not do.



**Figure 1. Online interaction as support for the reflective practice of preservice teachers: a secondary role.**

Does this mean that online interaction does not support reflective practice? Not necessarily, as we shall see in the next section.

### Some reflection after all...

Even though the support was considered secondary, online interaction appears to provide a reflective space for preservice teachers who get involved in it. This is seen in the quality of the reflective thinking in their exchanges.

#### *Reflective functions in online interactions*

In the individual and group interviews, the preservice teachers attributed a number of reflective functions that they exercised in their online interactions to the use of the mailing list as support for reflective practice, independently of the additional support provided by discussions with the associated teachers and discussion seminars with supervisors. The eight main functions of reflective practice and some subfunctions are presented in Table 1.

**Table 1 :** Reflective functions attributed to online interaction, illustrated by preservice teachers' statements.

Reflective functions attributed to online interaction	Participants' statements
Sharing experiences	PS3/II: "I think it's good that the preservice teachers can talk together about what we've gone through, and what bothered us."
Exchanging viewpoints and advice on teaching practices	PS1/II: "When you get an email that says, 'I did this or that,' it's the best thing. That's what it's [the mailing list] all about."
Collaboratively resolving teaching problems	PS1/GI2: "If somebody is unhappy about a problem in the internship, they can talk to their colleagues to find out if somebody has a similar problem and get some suggestions."
Stepping back from the practice by getting a reality check	PS3/II: "Sometimes, even if they don't have the answer, they can identify the problem and be objective enough to give you some good advice."
Better understanding of one's teaching practice by benefiting from the experience of others	PS76/GI1: "Sometimes just by reading other people's reflections, I think, 'Oh yeah, that's true. The same thing [...] happened to me.'"
Anticipating future practice by observing the experience of others	PS1/II: "Over time, it gives us some options. Somebody has gone through the same problematic situation in their class, and everybody has reflected on it. Then if it happens to me in my class, I don't feel stuck."
Gaining a professional perspective by: - Recognizing differences between one's practice and the practice of others - Expressing disagreement	PS79/GI1: "You realize that everybody has their own way of doing things."  GI1/II: "If you don't agree with somebody's point of view, you explain how you see it, and then everybody explains why they do what they do."
Professional development	PS3/II: "In my internship, I made some mistakes. I reflected, and I shared, and this let me get past it and improve."



Some of these functions (resolving teaching problems, stepping back from the practice by taking time to reflect, better understanding one's teaching practice by asking questions about situations and clarifying situations, anticipating future practice, professional development) would be attributable to individual reflection on one's practice. These functions are found in typologies of reflective practice developed by authors such as Beauchamp (2006, p. 69-70). The other identified functions (sharing experiences, exchanging viewpoints and advice on teaching practices, stepping back from the practice by getting a reality check, better understanding one's teaching practice by benefiting from the experience of others, gaining a professional perspective) appear to be more specific to reflective practice through verbal interaction, in that they require a third party. In other words, online interaction can add group-developed reflection functions to those developed individually through portfolios and logbooks, for example.

### **Variations in individual reflection quality**

The results of the inferential statistical analysis reveal a significant correlation between individual and group interactions and cognitive engagement. Respondents who perceived that they had participated actively in the online interactions (individual interaction) reported higher cognitive engagement, although the association between the two variables is relatively weak ( $r = .472, p < .01$ ). Similarly, respondents who perceived that their group had participated actively in the online interactions (group interaction) reported higher cognitive engagement ( $r = .530, p < .01$ ). Although these results do not inform directly on the quality of reflective practice among the participants, they suggest that online interaction can provide a space for high quality reflective practice as long as preservice teachers get involved. Thus, about half the respondents reported active online participation, and 50% agreed or agreed completely that they had consistently tried to respond to questions from other preservice teachers (individual interaction), and that their group interacted frequently (group interaction). This indicates that online interaction provided a space for reflective practice for about half the preservice teachers.

Note the significant correlation between satisfaction with the online tool (mailing list) and individual interaction ( $r = .701, p < .01$ ) as well as group interaction ( $r = .764, p < .01$ ). Another significant correlation was found between satisfaction and cognitive engagement, although the association was not strong ( $r = .462, p < .01$ ). This indicates that

the higher the satisfaction with the online interactions, the higher the cognitive engagement. We may therefore posit that appreciation of the tool as a support for reflective practice varied. However, this individual variation also appears to apply to the entire mentoring system. Furthermore, it would seem normal, or even inevitable, that not all participants in a study would perceive all tools used as equally useful.

In addition to the above-mentioned reflective functions, the participants also appear to have exercised other functions through the mailing list, as discussed in the next section.

### **Other functions of reflective practice through online interaction**

Aside from the above-mentioned reflective functions, online interaction appears to have exercised other useful functions during the practicum, including social and psychoemotional functions, as described next.

#### ***Social functions***

Online interaction provides a way for preservice teachers to build and maintain good group cohesion when they cannot meet face-to-face:

PS69/GI1: "It creates a community, too. I think we all felt comfortable with each other."

This feeling of cohesion was reinforced by the fact that the online interaction served as a social connection for 56.2% of the questionnaire respondents. It also allowed them to express themselves freely without fear of judgment by the associated teachers:

PS3/II: "We're more comfortable with each other, between students, to say what bothers us, what affects us, what we see as positive or negative, just between ourselves than in front of the teachers."

Online interaction therefore creates a social connection and allows free expression, which would not be the case during the practice teaching at school:

PS2/II: "It's important to keep in touch with your peers, people like yourself, who are going through the same thing, because we have discussions with the associated teacher and the other people there, but they aren't the same thing, because the preservice teachers understand each other. We're going through the same thing, and we're all about the same age."

Online interaction provides a separate space for socialization and free expression, which complements opportunities for discussion with the associated teacher.

### **Psychoemotional functions**

Online interaction also exercises psychoemotional functions. First, it provides an outlet for the preservice teachers to externalize their negative feelings in confidence:

PS3/II: “When you get home at night and you’re a little upset by something or other, then you tell yourself, ‘O.K., I can write this down.’ You can post your thoughts on the mailing list and give them time to digest.”

Besides providing an outlet, online interaction allows preservice teachers to extend mutual moral support:

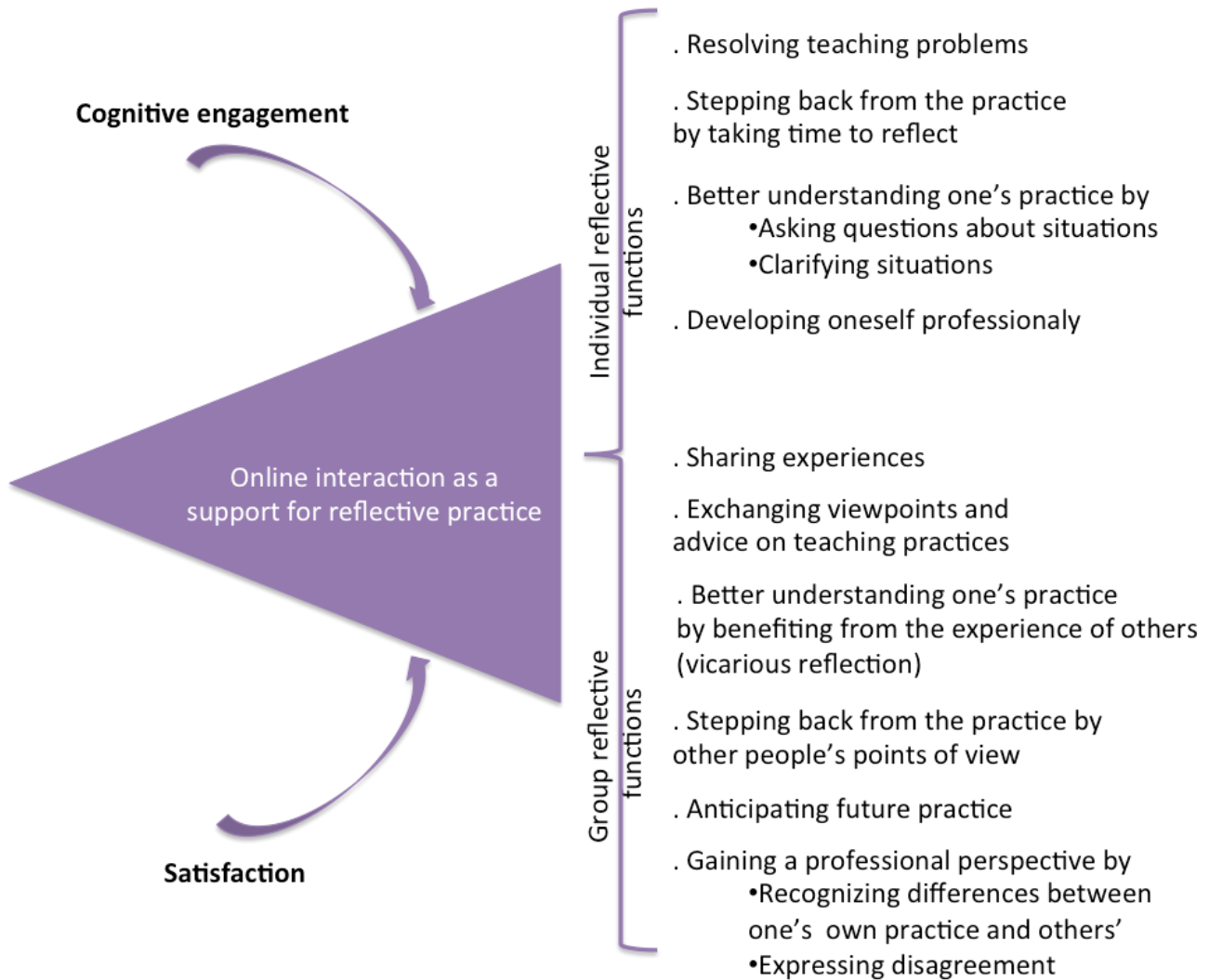
PS8/GI3: “I really found the discussion group supportive.”

This support function goes hand-in-hand with the breakdown of teacher isolation, which preservice teachers often feel:

PS5/GI1: “I found it really useful and I think it helped me feel less alone.”

PS6/GI3: “I felt less isolated, even though my school is at [name of city].”

Figure 2 summarizes these results, including the above-described reflective functions (see Reflective functions in online interaction) and the social and psychoemotional functions in online interaction.



**Figure 2. Reflective, social and psychoemotional functions in online interaction during the teaching practicum.**

We may posit that the psychoemotional functions are exercised insofar as group cohesion is established (i.e., social functions). The reflective functions, which imply a certain vulnerability of the speaker to peers (Collin, 2010), also appear to depend on the degree of group cohesion. In other words, the psychoemotional and reflective functions depend in part on the social functions. Inversely, the exercise of reflective and psychoemotional functions in online interactions could strengthen group cohesion through the

development of closeness and trust. We therefore propose that the different functions involved in online interaction during the teaching practicum are interdependent.

To recap, we discuss the results in light of the literature.

## Discussion

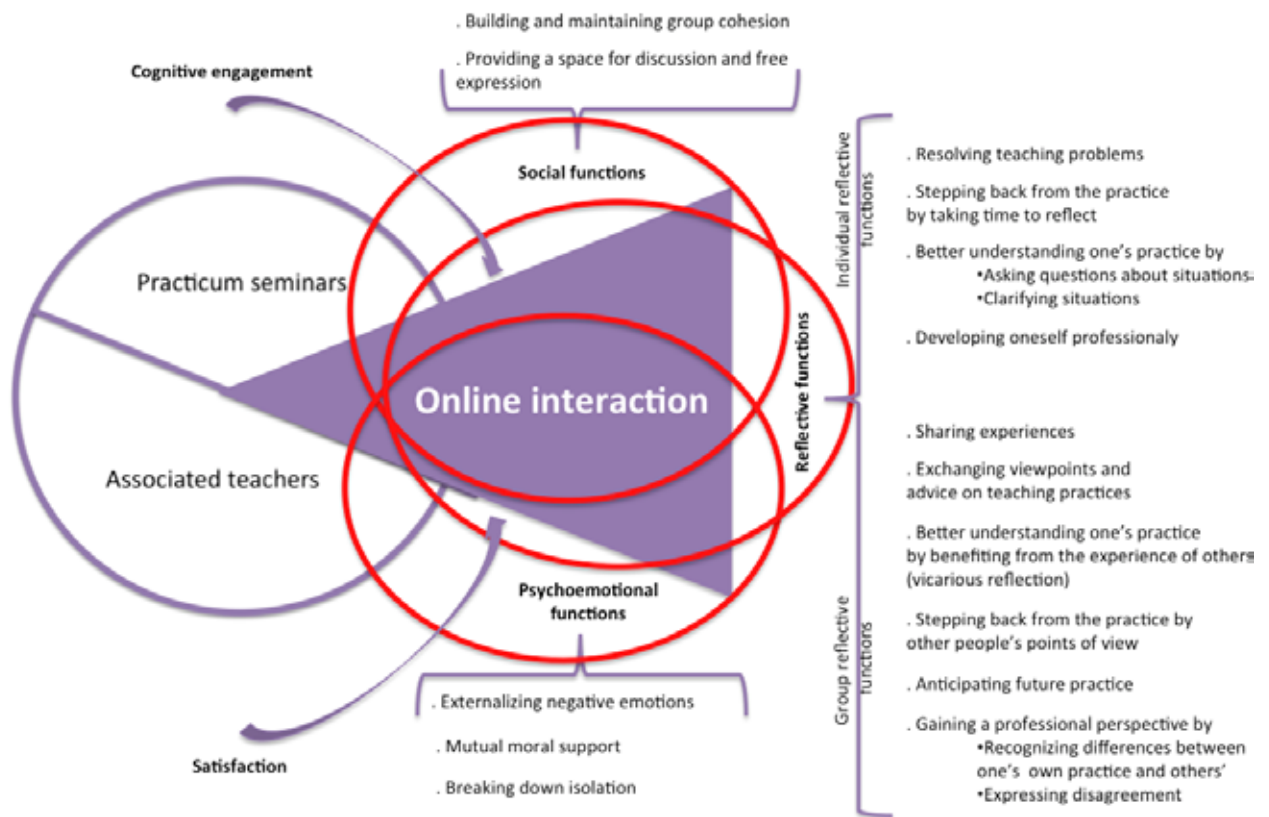
We begin by recalling the research objective, which was to determine the role of online interaction in developing reflective practice in preservice teachers. It appears that online interaction plays only a secondary role compared to other support resources, such as the associated teachers, and less strongly, the practicum seminars. These results concur with those of studies showing that some students perceive online interaction as less supportive than face-to-face interaction (e.g., Joiner & Jones, 2003; Kurubacak, 2006). However, they run counter to the idea that asynchronous interaction gives students more time to reflect than synchronous interaction does (e.g., Guiller, Durndell & Ross, 2008; Joiner & Jones, 2003; Zhao & Rop, 2001).

Yet online interaction appears to support reflective practice in preservice teachers, if we go by the quality of the reflective thinking generated. Thus, we found significant correlations between individual and group interaction and cognitive engagement. This corroborates the findings of Abdel-Maksoud (2007, p. 94), from whom we adapted the questionnaire for the present study. Assuming that cognitive engagement is evidence of interactive reflective practice, we propose that online interaction plays a valid, albeit secondary, role in supporting reflective practice in preservice teachers, and more so when they get involved in the interactions, as was the case for about half our participants. We also identified a number of reflective functions, some individual and others group, when they required the presence of a third party. This suggests that by adding group reflective functions, online interaction fosters the use of functions other than those habitually used with individual tools such as the portfolio and the logbook.

Aside from the reflective functions, online interaction appears to exercise social and psychoemotional functions, adding relevance for the practicum. Karsenti *et al.* (2002, p. 11) found that a similar support resource for reflective practice helps break down isolation so that preservice teachers can share their day-to-day experiences without waiting for the seminar, allowing them to diffuse difficult

situations. This would involve social functions such as free expression and psychoemotional functions such as mutual support and the externalization of negative emotions. In our case, we suggest that all the above-mentioned functions are interdependent, and cannot be fully developed in isolation.

Figure 3 summarizes the main results on the role of online interaction in developing reflective practice in preservice teachers. The secondary role of online interaction is shown (at the left of the figure). Nevertheless, the positive correlation between cognitive engagement, satisfaction, and individual and group interaction (arrows) suggests that online interaction provides a space for reflective practice, as long as preservice teachers get involved. When they do so, they appear to exercise a range of reflective functions (at the right of the figure), both individually and as groups. To these reflective functions we may add the social and psychoemotional functions (at top and bottom of the figure).



**Figure 3** Secondary but positive role of online interaction with associated teachers in supporting the reflective practice of preservice teachers. [Above, change to Externalising, Recognising]

Our results indicate that online interaction plays a secondary but positive role in supporting reflective practice in preservice teachers. It also acts in a multiple capacity by exercising both social and psychoemotional functions. Therefore, online interaction, although less essential, appears to complement other types of support for reflective practice, such as associated teachers and practicum seminars. Combined with practicum seminars and mentoring by associated teachers, it could provide additional conditions for fostering and sustaining reflective practice. On this point, we concur with Guiller *et al.* (2008) and Abrams (2005), who suggest that online interactions can complement face-to-face interactions to support reflective practice in preservice teachers.

## Conclusion

Our analysis yielded mixed results. We first established that preservice teachers perceive that reflective practice plays a secondary role during the practicum, other support resources being judged more relevant, notably discussions with their associated teacher and discussion seminars with their university supervisor. However, we also found that online interaction encourages both individuals and groups to exercise a range of reflective functions. Furthermore, online interaction is positively and significantly correlated with cognitive engagement. In sum, it appears to provide a space for reflective practice, although student teachers must get involved in order to reap the benefits. In addition to the reflective functions, online interaction also exercises social and psychoemotional functions that appear to be interdependent. We conclude that online interaction plays a secondary but positive role to support reflective practice in preservice teachers. Moreover, it plays a multiple role in that it also involves social and psychoemotional functions.

In light of these findings, we recommend that online interaction be included as a support resource for developing reflective practice in preservice teachers in combination with other support resources (e.g., associated teachers, discussion seminars). To further explore this topic, it would be instructive to compare different online interaction modes (e.g., synchronous vs. asynchronous online interaction) and different interactors (preservice teachers, university supervisors, associated teachers) in order to determine whether the role varies across support mechanisms, and according to what criteria. Given today's rapid technology advances, it would also be worthwhile to examine Web 2.0-based tools and platforms in order to anticipate changes to come.

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