

# 3 Promoting pre-service teachers' inquiry skills in a blended model

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## Abstract

Lesson observation has been used with pre- and in-service teachers to improve classroom practices. In addition, reflection and criticality can be developed when teachers use evidence from their lessons and engage in collaborative discussions. Therefore, it is essential for pre-service teachers to collect data from their practices and reflect upon them individually and as a part of a teaching community. Thus, classroom-based studies in which blended models promote reflective research skills based on pedagogical practices are needed. Bearing this in mind, the aim of our case study was to examine the development of reflective inquiry skills amongst pre-service teachers in an English language teaching programme in Chile. We implemented a blended model of face-to-face sessions and an online community to foster discussions about classroom related issues. The face-to-face interactions took place as part of the Applied Research (AR) in teaching English as a foreign language course. The pre-service teachers' videos from the Practicum I (PI) course were uploaded onto the Video Enhanced Observation (VEO) online portal where self, peer, and teacher observation occurred. Data were collected from a questionnaire, comments on the VEO platform and focus groups. Statistical analyses were carried out using R scripts and quantitative content analyses were conducted with word clouds.

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A thematic analysis was performed for the focus groups. Our findings suggest that the pre-service teachers' experiences in the blended model promoted their understanding of pedagogical issues and their capacity to address them as they embarked on research.

**Keywords:** pre-service language teachers, VEO, blended learning, reflection, inquiry skills.

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### 1. Introduction

Language teachers should engage in constant professional development to meet the pedagogical needs of students who live in a rapidly changing world. It is essential that teachers develop teaching and reflective skills to identify issues in the classroom which lead to innovations. To foster teachers' reflections, videos have been used for lesson observation at both initial and continuous professional development (Sherin & Van Es, 2005; VEO Europa Project, [www.veoeuropa.com](http://www.veoeuropa.com)). The process of self and peer observation allows pre-service and in-service teachers to detect teaching problems and solve them via reflection. In addition, mobile technology has facilitated lesson observation. Also, as online communities proliferate, teachers and teacher students engage more in social media for professional development (Lord & Lomicka, 2014). Mann and Walsh (2017) suggest that teachers should use evidence from their lessons to develop reflective skills. They indicate that “[d]ata-led accounts are essential since they provide the kind of evidence which promotes understandings of reflection” (Mann & Walsh, 2017, p. 17). We argue, thus, that to educate critical pre-service teachers, it is necessary to promote inquiry skills that help them to reflect and solve classroom issues effectively.

Reflection is encouraged in the English language teaching programme at Universidad Diego Portales (Chile) but emphasised in the students' PI course. Here, the students' teaching is observed and discussed with a mentor teacher. However, the students' ability to critically observe, reflect, and, mostly, provide

concrete suggestions for a specific classroom related issue materialises when they design their research projects in the AR in English as a foreign language course prior to their thesis completion. The goal of our study, therefore, was to determine how reflective thinking skills were promoted, so teacher students develop a ‘critical eye’ in order to produce a research proposal. We implemented a blended model which included the face-to-face lessons in the AR course plus an online community using the VEO platform ([www.veo-group.com](http://www.veo-group.com)).

## 2. Conceptual framework

Our study took a socio-constructivist stance as we considered the views of Dewey (1933). He suggests that inquiry is a process in which individuals analyse a situation of puzzlement and aim to solve it. He states that reflective thinking is developed by discussing, creating hypotheses, and eventually testing them. Dewey (1933) argues that reflection requires individuals to be open-minded, responsible, and enthusiastic. For educators, this means that they should be predisposed not only to provide constructive ideas and feedback, but also to receive them with an open mind. Therefore, the reflective thinking cycle to promote inquiry is supported by a teacher’s experience, attitude, and belief.

We also drew on socio-cultural perspectives where social interaction is key as a means of supporting learning through collaboration. Consequently, it is important for students to reflect both individually and as part of a ‘community of inquiry’. Lipman (1991) suggests that in communities of inquiry, individuals challenge truths and seek for meaning through dialogue and critical analysis. Collaborative learning has also been implemented in online learning. For instance, authors Garrison, Anderson, and Archer (2001) propose an approach for promoting reflection online, based on the work of Dewey (1933). They consider the members of the community, the interactions and the teacher as essential for learning to take place in an online environment. The online community model has been widely implemented with pre-service and in-service teachers to promote technology-mediated teacher education (Morales & Windeatt, 2015; Pawan, Paulus, Yalcin, & Chang, 2003).

Interactional and socio-constructivist approaches are essential to promote reflective thinking and classroom awareness amongst language teachers. Mann and Walsh (2017) consider the perspectives of Dewey (1933) and Vygotsky (1978) as fundamental for teachers' reflective skills development. In order to foster such reflection and interaction, video recordings of lessons can provide rich evidence for teachers to analyse individually and collaboratively. Van Es and Sherin (2002) acknowledge the benefits of videos in education and propose the concept of *noticing*. This means that teachers can detect relevant aspects of their teaching and analyse them. The authors highlight three essential elements for effective noticing:

“(a) identifying what is important or noteworthy about a classroom situation; (b) making connections between the specifics of classroom interactions and the broader principles of teaching and learning they represent; and (c) using what one knows about the context to reason about classroom interactions” (Van Es & Sherin, 2002, p. 4).

The socio-constructivist view of our study was not only aligned with the theoretical framework, but also with our methodological choices. The quantitative and qualitative data we collected showed us how the participants worked on the blended model to enhance their inquiry skills and their perceptions about the process.

### **3. Methodology**

We adopted the exploratory case study strategy for research design and mixed methods of data collection and analysis. Our research question was: how can inquiry skills be promoted for an effective design of a research project in the AR course?

The purpose of a case study is to investigate a phenomenon in its context to gain in-depth understanding of such phenomenon (Gomm, Hammersley, & Foster, 2000; Yin, 2003). Because this was a small-scale exploratory research,

we believed that our main question should be broad enough to allow for data to emerge. Therefore, the case study allowed us to analyse how pre-service teachers developed their inquiry and reflective skills in a contextualised manner. In order to answer our research question, quantitative data were gathered using pre- and post-questionnaires to examine the students' perceptions on video-based lesson observation. Statistical analysis for the questionnaires was carried out through R scripts (<https://www.R-project.org/>). Also, the participants' comments on the VEO platform were quantified and analysed with word clouds (McNaught & Lam, 2010) to identify recurring words. Qualitative data were collected from focus groups and analysed using thematic analysis. The information from the quantitative and qualitative data set helped us to better understand the students' processes from different angles.

### **3.1. Context and participants**

The study was conducted in an English language teaching programme at Universidad Diego Portales, Chile, between August and December 2017. The participants were 12 fourth year students, seven females and five males, enrolled in the AR and PI courses.

### **3.2. Methods and implementation**

A blended model was implemented in the AR course; face-to-face lessons and the VEO platform. VEO is a mobile app created for reflective teacher professional development. Its customisable tag system allows teachers to identify and label relevant moments in their lessons. VEO also has a portal where participants can upload videos, share them, and exchange ideas. Considering the socio-constructivist approach of our study, VEO secured a space for meaningful online learning. In other studies (Battle & Miller, 2017; Çelik, Baran, & Sert, 2018) VEO has been used to examine teacher observation practices and the role of different modes of teacher observation tools for peer feedback. In our study, the participants worked in dyads for the observation process. They were required to upload three recorded lessons from their PI course onto the VEO portal. They had to watch the videos and give each other feedback using a reflection

template<sup>4</sup>. They also had to self-reflect on their performance. The teachers from the PI (Teacher 1) and AR courses together with the main researcher (Teacher 2) commented on the videos. The face-to-face lessons in the AR course served to link research related content (e.g. the problem statement, research questions) to the participants’ teaching experiences in the PI.

### 3.3. Data collection and analysis

To answer our research question, we collected data regarding:

- the participants’ views and comments about the use of VEO;
- the usefulness of the blended model; and
- the participants’ views about the link between AR, PI, and VEO.

Evidence was gathered through questionnaires, the online community, and focus groups. We used frequencies, correlations, Multiple Correspondence Analysis (MCA) and a Kruskal-Wallis test for the quantitative data. We ran the Cronbach’s alpha test for validity and reliability. Word clouds, MCAs, and graphs were applied as visualisation strategies. Qualitative data was categorised in themes with thematic analysis (Table 1).

Table 1. Summary of data collection and analysis

Instrument	Raw data	Method of analysis	Visualisation technique
Online questionnaire	24 answers in two applications of the questionnaire of 12 questions each, Likert scale	<ul style="list-style-type: none"><li>• Cronbach’s alpha</li><li>• Answer frequency</li><li>• Spearman correlation</li><li>• MCA</li><li>• Kruskal-Wallis test</li></ul>	<ul style="list-style-type: none"><li>• Graphs</li><li>• MCA</li></ul>

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4. See supplementary material: <https://research-publishing.box.com/s/27xpp3xm4ni3xdagu21d7j3sw4mfyi6x>

VEO platform	83 comments written on VEO separated between students and teachers	<ul style="list-style-type: none"> <li>• Quantitative content analysis per word frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Word Cloud</li> </ul>
Focus groups	Verbatim transcription	<ul style="list-style-type: none"> <li>• Quantitative content analysis per word frequency</li> <li>• Qualitative thematic analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Word Cloud</li> </ul>

We adapted a questionnaire about videos for teacher professional development from Harvard University’s ‘Best Foot Forward’ project (<https://cepr.harvard.edu/best-foot-forward-project>). The questionnaire was sent to the students on the first and last sessions of the AR course. The application of this instrument sought to explore the students’ experiences using self-recorded video lessons. It included questions such as: *To what extent do you oppose or support video in addition to at least one in-person observation?* It had 12 Likert and three open ended questions. The latter were not considered in the analysis. The students’ answers were brief; therefore, recurring patterns were not identified. Likert question number six was eliminated because its phrasing was unclear.

The internal consistency of the instrument was measured with Cronbach’s alpha. A descriptive analysis of answer frequency per question was performed. Considering that sample size was lower than the number of questions (i.e. categorical variables), MCA analysis (Michailidis & de Leeuw, 1998) was carried out to detect the presence of an association among the questions, if any, between the answers expected after our model and the answers given by each of the students (observed answers). To assess the level of concordance between the pre- and post-questionnaires, we calculated the Spearman’s rank correlation coefficient. The statistical significance of the differences between both sets of data was calculated applying a Kruskal-Wallis test.

Concerning the interactions in VEO, we conducted a word cloud analysis (McNaught & Lam, 2010). This examination showed us the most frequent concepts and/or words used by the members of the online community (see

results). It also helped us to identify the nature of the reflection in which the students and teachers engaged.

The focus groups were conducted in Spanish and the questions we used were:

- What do you think of the use of VEO and the tags?
- How do you perceive VEO and its link with the PI and AR courses?

Transcription of the focus groups was carried out verbatim and a quantitative content analysis with word clouds (McNaught & Lam, 2010) was performed. The emerging patterns were displayed for the analysis, showing word size and frequency in the data. A thematic analysis was carried out by two of the researchers.

Lastly, the complete data set was contrasted against the final evaluation rubric of the AR course to determine how the blended model promoted critical reflection.

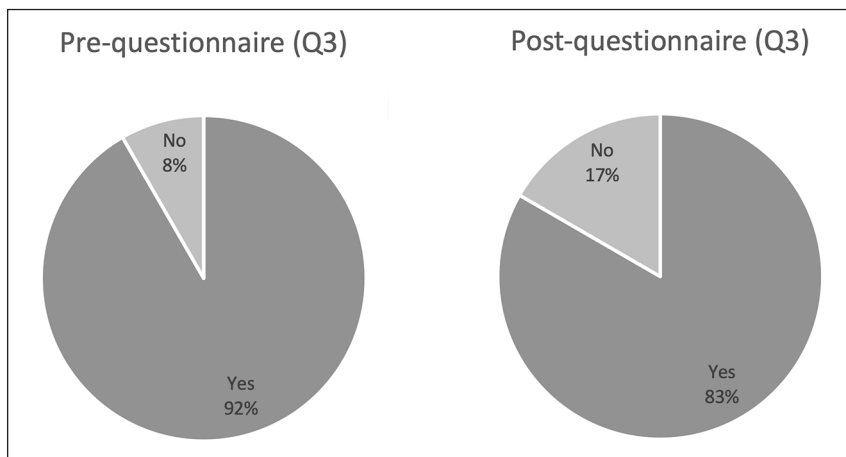
## 4. Results

The questionnaires had high internal reliability with a Cronbach's alpha of 0.78. When comparing both questionnaires, the Spearman's rho (i.e. used to observe association of variables) was of 0.9074. This showed a strong correlation between them and was consistent with MCA results that showed little variation between pre- and post-questionnaire responses.

When analysing the questions, 83.3% of the students answered *yes* (Figure 1) to Question 3: *Can you identify a specific change in your teaching practice you made as a result of the observation process this year?* This indicates that their experience in the blended model contributed to their development as pre-service teachers and the centrality of observation in promoting reflection. Also, when asked about the types of observation evidence that was most helpful for them, most students preferred video recordings of classrooms than, for example, teacher's notes or peers'/supervisors' notes.



Figure 1. Question 3 results



The VEO platform data set included 44 comments – self-reflection and peer feedback from the students and 39 from the teachers. Table 2 shows the number of comments. These comments were analysed quantitatively with word clouds. Figure 2 illustrates the total of all the words used in the three videos on VEO. Words such as ‘students’, ‘class’, ‘instructions’, ‘good’, and ‘activity’ predominated in the corpus produced by the community.

Table 2. Number of self-reflection comments, peer and teacher feedback on VEO

Video 1			Video 2			Video 3		
Student reflection	Peer comment	Teacher comment	Student reflection	Peer comment	Teacher comment	Student reflection	Peer comment	Teacher comment
12	8	11 PI1 <sup>5</sup> 11 PI2 <sup>6</sup>	9	6	5 PI1 5 PI2	8	1	7 <sup>7</sup> MR <sup>8</sup>

5. One comment was sent via email.

6. One comment was sent via email.

7. The other two teachers sent three comments via email.

8. Main researcher



started thinking about the use of technology for language teaching. Another student stated that by seeing how children used games in class, he realised that this could be his research topic.

The participants stated that giving and receiving feedback in the platform was difficult. Watching the videos and writing feedback was time consuming. Additionally, there were times when they received delayed feedback (or no feedback) from all the teachers. In response to this, the teachers said that the delays in, and lack of, feedback was due to high workload and time constraints. Another limitation for the students was the use of the tags and the reflective template. They explained that they had always had ‘freestyle’ reflection in their courses, so they felt that using predetermined criteria was restrictive. In terms of having linked the PI and AR courses, the students commented that it was useful as their videos were used in both courses, but they stated that they felt confused at times about the activities they had to do for each course. For instance, other reflective tasks were conducted in the PI that did not involve VEO. Despite these challenges, the students expressed the view that discussing their videos was helpful for their teacher training and their research projects.

The pre-service teachers’ final evaluation was considered in our analysis, as it served as a valid mediation tool. Table 3 shows upon which parameters the students were assessed, and how many students achieved each performance level. Each parameter earned three points, so for a student to get a full grade, they needed 24 points. The final evaluation was also preceded by presentations and discussions that stemmed from the community of inquiry.

Table 3. Final evaluation rubric

	<b>Exceeds expectations</b>	<b>Meets expectations</b>	<b>Approaches expectations</b>	<b>Below expectations</b>
Research problem	6	6		
Literature review	2	10		
Research questions	10	2		
Rationale and coherence	2	10		
Methodology	2	10		

References	4	8		
Structure and organisation	6	6		
Grammar and Vocabulary	2	8	2	

To illustrate the students’ performance level, [Table 3](#) shows the number of students per level. For example, 50% of the students managed to state a research problem that exceeded expectations, while 50% met the expectations. These percentages indicate how well the students managed to develop reflective inquiry skills to identify a classroom problem and produce research questions and a research proposal.

## 5. Discussion

Overall, the pre-service teachers perceived their experience with the blended model positively. [Dewey \(1933\)](#) suggests that reflective thinking is triggered by the identification of a problem that needs to be solved. In our study, the pre-service teachers’ interactions fostered their knowledge about teaching and supported the development of criticality. The results of the questionnaires show that there was not a significant variation in the students’ perceptions about using videos in their training. This indicates that they were aware of the usefulness of videos for lesson observation prior to our study. The reason, perhaps, was that they had been using videos in their PI course, so they were familiar with such visual resources. Nevertheless, they perceived that video recording was the most helpful type of observation evidence. In the blended model, they were able to use videos in an integrative manner for a research oriented rather than purely pedagogical purpose.

The videos were key in promoting reflection and discussion in the blended model. This is in line with what [Mann and Walsh \(2017\)](#) suggest regarding using authentic data to promote reflective practice. In our study, students had evidence to reflect upon from different perspectives. They were also able to re-watch their videos on VEO. This is particularly important as when observations are

conducted live there might be aspects of the teaching that could go unnoticed. Also, in the virtual environment, members provided opportunities to engage in dialogue at any time. These ongoing interactions allowed pre-service teachers to think critically about ideas for their research projects. Therefore, this process supported the students' skills to notice relevant episodes in a lesson as proposed by [Van Es and Sherin \(2002\)](#). The VEO platform was essential to develop the pre-service teachers' reflective skills as they co-constructed knowledge through video tagging and discussion. [Çelik et al. \(2018\)](#) found that VEO was useful for the teachers as they made meaning of their collaborative reflections. The authors suggest that VEO should be used in initial teacher education. As shown in our results with the visualisation of the words commonly used in VEO (e.g. students, class, activity), the pre-service teachers became aware of their teaching while fostering their reflective thinking.

The use of predetermined tags was challenging for our participants. Sometimes, they identified something that was not in the tags or were not sure about what tag to use according to what they saw in the recording. The teachers in the research by [Batlle and Miller \(2017\)](#) about teachers' perceptions of VEO stated that, even though they thought tags were essential for giving feedback, they were also limiting. Thus, their observations coincide with the students' experience in our study. This poses the question about the usefulness of the tag system as it seemed to have inhibited the reflective process. [Mann and Walsh \(2017\)](#) encourage a revitalisation of reflective practice, and technological innovations are of great support to it. However, considering our findings, reflection was somewhat undermined by the tags. Going forward, we encourage users to create their own tag sets collaboratively, considering their observation needs. As a result, reflection could be enhanced by reflecting about triggering reflection.

## 6. Conclusions

Our study aimed at supporting the development of reflective inquiry skills in a blended model amongst senior pre-service teachers in the English as a foreign language teaching programme at Universidad Diego Portales, Chile. We

implemented a blended model that integrated reflection in face-to-face lessons (AR course) and an online community in the VEO portal. Our findings show that the pre-service teachers were able to identify issues from their teaching and produce a research proposal. This outcome suggests that the teacher students' work in the blended model supported their reflective skills. Therefore, we strongly suggest that such reflective experiences continue to be implemented in initial and continuous teacher education. It would be interesting to further observe the effectiveness of technological reflective tools and their impact on pre-and in-service teachers' reflections and teaching. We consider the experience of the pre-service teachers in this blended model as a starting point in their journey to become active reflective practitioners and researchers in their teaching communities.

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**Edited by Christina Nicole Giannikas, Elis Kakoulli Constantinou, and Salomi Papadima-Sophocleous**

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