

Providing quantitative data with AI Mobile COLT to support the reflection process in language teaching and pre-service teacher training: a discussion

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Abstract. Mobile COLT is a portable platform for analysis of activities in the second language classroom, and is based on the well-known Communicative Orientation of Language Teaching (COLT) scheme (Spada & Fröhlich, 1995). It has been developed to facilitate real-time class analysis using a Windows tablet. This paper first describes the COLT analysis scheme, and expounds on the functions of Mobile COLT, its application in classroom practices, and the development of the Artificial Intelligence (AI) version (AI Mobile COLT). It also briefly reports on two studies carried out in Japan to examine how the use of Mobile COLT can further promote language teaching development. Then, the paper briefly describes a collaborative project initiated by the authors to explore how the AI Mobile COLT system can be combined with an ePortfolio platform in Moodle to provide quantitative data built on an evidence-based framework.

Keywords: COLT, AI Mobile COLT, pre-service teachers, language classroom analysis tool.

1. Introduction

1.1. The COLT analysis scheme

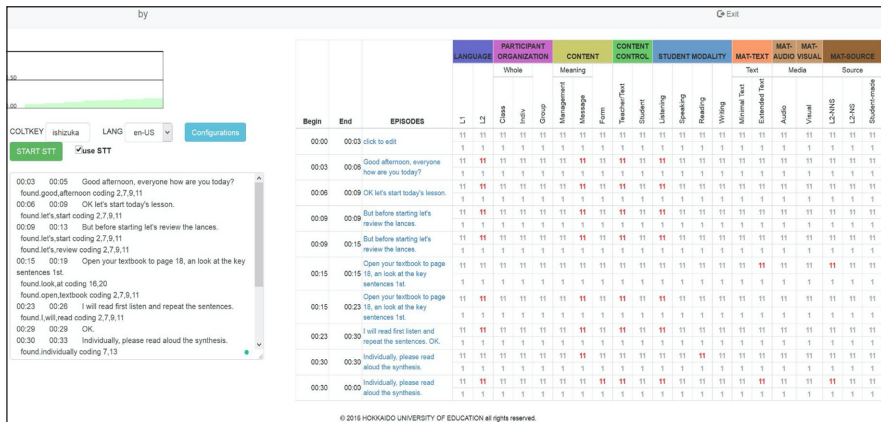
Various observation schemes, such as the Flanders System, the Jarvis System, and the Stirling Project System, have been developed and tested to qualitatively or quantitatively assess activities in language classrooms. One of the widely

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How to cite: Ishizuka, H., & Pellerin, M. (2020). Providing quantitative data with AI Mobile COLT to support the reflection process in language teaching and pre-service teacher training: a discussion. In K.-M. Frederiksen, S. Larsen, L. Bradley & S. Thouésny (Eds), *CALL for widening participation: short papers from EUROCALL 2020* (pp. 125-131). Research-publishing.net. <https://doi.org/10.14705/rpnet.2020.48.1176>

used schemes is COLT, introduced by Spada and Fröhlich (1995), which uses a standardized scale to assess features of the teaching process (Ishizuka & Yorozyua, 2014). Since it can quantitatively display the communicative features of the class as to the organization (class/group/individual work), the content (meaning/form), the content control (teacher/text/student), the student modality (reading/writing/listening/speaking), and materials (extended/minimal, native/non-native) of the class, COLT has demonstrated great potential as a facilitating tool for language teacher development. However, a key barrier to widespread use is that the manual coding procedures are time-consuming and complex. Thus, Ishizuka and Kibler (2018) have developed Mobile COLT, a portable, half-automated version of COLT that facilitates real-time class analysis using a Windows tablet. The two studies introduced in this paper below were conducted using this version of COLT. More recently, the team has incorporated AI into the platform, as well (AI Mobile COLT), which is planned to be used for the collaborative project reported in this paper (see Figure 1).

Figure 1. An example of the coded English class in Japan by AI Mobile COLT



1.2. Using digital video recording and ePortfolio platform

Pellerin (2011) and Pellerin, Branch-Mueller, Nicholas, and Wei (2018) studied ways to better document the evolution of the teaching practices of students enrolled in French language teaching programs in Canada by exploring the use of digital video recording as a tool to document the teaching practices of pre-service teachers. A Moodle ePortfolio platform was used to support the storage and sharing of digital video recordings. Access to the video on the ePortfolio platform allows students to engage in self-reflection, and instructors and supervisors can provide

feedback to the students regarding their teaching practices. However, the reflection and feedback available are based mainly on qualitative analysis of the videos. There are no quantitative data generated through the ePortfolio platform. Access to quantitative data would contribute to building an evidence-based framework to better support the development of the teaching practices during the initial training of language teachers.

1.3. Using AI Mobile COLT in pre-service training in the context of Canadian French immersion

The principal objective of this collaborative project is to investigate the potential for integration of AI Mobile COLT with a Moodle ePortfolio platform in order to create a standardized framework for the quantitative analysis of video collected during classroom teaching. The specific aim is to explore how the AI Mobile COLT system can enhance the analysis of the video recordings of lessons taught by Canadian pre-service language teachers and posted in a Moodle ePortfolio platform to produce standardized feedback to improve the reflective process and enhance supervision during training.

2. Teacher development using Mobile COLT

Using Mobile COLT, two studies were carried out in Japan to examine how this system can help promote language teaching development. Study 1 involved observation of three teachers at different school levels: elementary, junior high, and high school. Each teacher was visited four or five times, and their teaching was analyzed using Mobile COLT. The coding results were shown to the teacher with a graphical image, along with oral feedback. Study 2 involved observation of a single elementary school English teacher on two separate occasions within a two month interval. The same quantitative feedback process used in Study 1 was taken. After the last visits, all of the observed classes were compared, respectively, by their features and communicativeness in each study.

In the COLT scheme, activities involving group work, meaning-focused content (management and topics), student-controlled content, discourse (extended text), and materials for native speakers are considered more communicative.

In both experiments, the participant teachers tried to change their teaching styles every time their language classes were observed. They attempted to improve the less communicative aspects of their classes. The result of their efforts were sometimes

successful, and sometimes not. Figure 2 shows an example of the improvement of communicative indexes of one participant teacher during the five observations (one year) in Study 1.

Figure 2. Development of one teacher in the communicative indexes

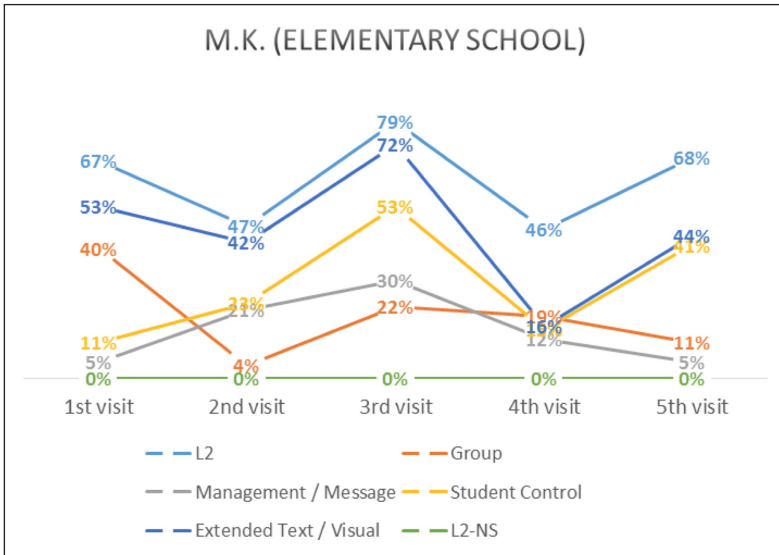


Table 1, for instance, shows the analysis data of the activities conducted in English. Between the first and second observations, group work increased by 6%, and student control of the content increased by 19%. On the other hand, focus-on-meaning activities decreased by 12%, and the use of visual materials decreased by 18%.

Table 1. Development of an elementary teacher (Study 2)

COLT categories	First visit		Second visit	
	Time	Rate	Time	Rate
Group	5:23	11%	8:18	17%
Student	5:53	12%	14:56	31%
Management/Message	2:55	57%	21:17	45%
Extended Text/Visual	1:51	55%	17:25	37%
L2-NS	0:00	0%	0:00	0%

The main outcomes that emerged from the two studies conducted in Japan using Mobile COLT are as follows:

- the data that Mobile COLT provides to teachers can affect their teaching styles in a short span;
- Mobile COLT can suggest the points that teachers need to improve and facilitate self-reflection;
- Mobile COLT can provide teachers with quantitative data about the features of their teaching styles.

3. Discussion and future work

The aim of the project is to integrate the AI Mobile COLT system with the ePortfolio platform in Moodle in the training of French language teachers in the western Canadian context.

We will first explore the feasibility of the project by testing the compatibility of the AI Mobile system with the Moodle ePortfolio system. In particular, we will examine how the segmenting and coding system used by AI Mobile COLT can be adapted for the context of Canadian second language teaching, and, more specifically, in the context of the French Immersion approach for second language teaching and learning.

In order to adapt the segmentation and coding system built in the AI Mobile COLT system,

- the AI quantitative analysis system will need to be adapted for the French language;
- direct classroom observation in the Canadian classroom will need to be carried out in order to better get acquainted with the enfolding language learning activities in an immersion approach to a second language; and
- video recordings of the lessons taught by pre-service teachers during their practicum will need to be collected for the purpose of testing the quantitative analysis of the AI Mobile analysis system embedded in the Moodle ePortfolio.

Unfortunately, the project has been put on hold since the end of February because of the COVID-19 virus. As teachers and pre-service teachers needed to transfer to

remote learning at the beginning of March, direct classroom observation was no longer possible. Moreover, since the transfer to remote teaching was challenging at times for teachers, as well as pre-service teachers, it was not possible to collect any video recording for the purpose of the project. It is the hope that the re-opening of schools after the Fall of 2020 will allow the project to resume its activities. However, with the adoption of hybrid and online teaching in Canadian schools, it may also be possible to gather video recordings of lessons taught completely online by pre-service students.

4. Conclusions

The integration of the AI Mobile COLT analysis in pre-service language teacher training has a strong potential to provide improved follow-up on the progress of the pre-service teachers throughout their practicum. More specifically, the combination of the AI Mobile COLT system with an ePortfolio platform in Moodle could contribute to providing quantitative data built on an evidence-based framework to better support the development of their teaching practices during initial training.

Moreover, in the new era of COVID-19 and online and hybrid teaching, the integration of the AI Mobile COLT analysis with the ePortfolio platform for pre-service teaching programs could promote innovative ways of online supervision and training for a new era.

5. Acknowledgments

Part of this work was supported by the Japanese Grant-in-Aid for Scientific Research (C) and (B) and Kule Dialogue Grants from University of Alberta, Canada.

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Contact: info@research-publishing.net

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CALL for widening participation: short papers from EUROCALL 2020
Edited by Karen-Margrete Frederiksen, Sanne Larsen, Linda Bradley, and Sylvie Thouéšny

Publication date: 2020/12/14

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ISBN13: 978-2-490057-81-8 (Ebook, PDF, colour)

British Library Cataloguing-in-Publication Data.

A cataloguing record for this book is available from the British Library.

Legal deposit, France: Bibliothèque Nationale de France - Dépôt légal: décembre 2020.