Co-authoring for Collaborative Learning in Global Understanding

Guangwei Zhang

Shaanxi Normal University, China

Author Note

Guangwei Zhang, School of History and Civilization, Shaanxi Normal University.

Correspondence concerning this article should be addressed to Guangwei Zhang, School of History and Civilization, Shaanxi Normal University, No. 620, West Chang'an Avenue, Chang'an District, Xi'an 710119, China.

Contact: zhangguangwei@snnu.edu.cn

Abstract

Collaborative learning can help students better understand the foundation of their knowledge. Global Understanding (GU) provides students with a remote collaborative learning platform with the aid of modern technologies such as video conferencing and social media applications. The students organize their ideas after discussion in class with their international partners and communicate with their partners through email, which is required during the collaborative project in GU. However, the communication by email is so asynchronous due to the time differences that it is not easy for partners to working together on the collaborative project. At times, misunderstandings occur due to the inconsistency in communication regarding their papers or presentation slides. Nowadays, online co-authoring tools allow multiple users to work on the same document simultaneously allowing the users to see what their partners are typing in real time and how their partners generate and organize their ideas. Besides the synchronous collaboration, the students can also work together asynchronously. The co-authoring tool creates an ideal environment for remote collaborative learning for GU.

Co-authoring for Collaborative Learning in Global Understanding

Global Understanding (GU) is an important class for all the partners of Global Partners in Education (GPE). It is an excellent remote collaborative learning community for the students from different countries to learn different cultures of the world. The knowledge that they gain from GU is important for them, but it is more important that the students can practice collaborative learning with foreign partners. They get a kind of procedural knowledge—how to collaborate—that would play a crucial role in their other studies as well as their career in the future, e.g. the students of Shaanxi Normal University (SNNU) become more active and self-confident in their study after attending the GU class.

The GU students mostly use email to contact each other, which works perfectly in most of the cases. However, email is not an efficient collaborative tool. Remote collaboration requires both effective communication and timely work sharing, which are discontinuous when attempted by email, which can result in misunderstandings and poor efficiency. We found that co-authoring tools perform better than email for collaborative learning in GU because all of the partners can work on the same documents synchronously or asynchronously as it also integrates communication and work sharing with the collaborative process. We discuss the advantages of applying co-authoring tools in GU especially for the collaborative project and its usage in the mentoring procedures.

Collaborative Learning in Global Understanding

"Collaborative learning" is a situation in which two or more people learn or attempt to learn something together (Dillenbourg, 1999). We consider GU as a kind of collaborative learning environment because all of the students must work on four specific topics with several

foreign partners within a month. The students develop their knowledge about the culture of another country with the help of their partners.

> "... Collaborative learning is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetry roles" (Mitnik, Recabarren, Nussbaum, & Soto, 2009).

Each GU student generates his or her knowledge through group discussion in the following two forms: (1) topic based face-to-face talking through videoconference and text chatting in class and (2) email or social media communication outside of class. In this case, every student plays two roles: (1) offering help for his or her partner to better understand his or her country and (2) acquiring the knowledge of the partner country as much as possible from his or her partners. Besides the group discussion of the four GU topics (i.e., College Life, Family and Cultural Traditions, Religion and the Meaning of Life, and Stereotypes and Prejudices), all the partner students of the two universities must complete a collaborative project and present their work to the class on the final day of linking in videoconference.

As a result, the students have more common knowledge of the culture of their partner countries after participating in the GU class. The increase of common knowledge is called knowledge convergence (Jeong & Chi, 1997), which can be used as an assessment method of the collaborative learning that takes place in GU.

Knowledge Convergence in Global Understanding

Knowledge convergence occurs during collaborative learning and the collaborative interactions among partners who are responsible for the common knowledge construction, i.e. more communications equates to better knowledge convergence (Weinberger, Fischer, & Mandl,

2004; Jeong & Chi, 2007; Zheng, 2017). Knowledge convergence is found in different forms within collaborative learning such as resource homogeneity, process convergence, and outcome convergence (Weinberger et al., 2004). The collaborative learning which occurs in GU involves almost all three aspects. The group discussion part relates to the first two aspects (i.e. resource homogeneity and process convergence) and the collaborative project is a kind of outcome convergence because the GU students are required to present their partners' work. There are many studies on assessing collaborative learning through knowledge convergence quantitatively or empirically. The most important factor for productive knowledge convergence of collaborative learning is effective communication and work sharing among partners.

The group discussion part of GU provides students with basic knowledge of the partner countries and the communication during this part is efficient most of the time because we have been applying a mature technology framework and the discussion is guided by the teachers. The collaborative project motivates collaborative learning in GU to occur much more intensely because the students need to choose a topic, prepare, and present the final work together with their partners to the class. The group discussion helps the students get the conceptual knowledge and the collaborative project provides an opportunity for students to gain procedural knowledge, including how to prepare for a paper, how to organize the idea of a paper, and how to write a paper, etc.

As we know, the communication in the GU course is mostly based on email, and although students achieve their aim most of the time, misunderstandings still occur and it is not very efficient. It is of a similar case in the tutoring procedure between a teacher and his or her students. Through our practice together with several partners in GU as well as in other courses,

online co-authoring tools can solve this problem perfectly. In the past, when a teacher is mentoring a student in writing his or her thesis, the manuscript is sent back and forth by email many times between them. Both the teacher and the students store many versions of the paper. At times, new versions might be overwritten with older versions by mistake. When we use online co-authoring tools, a shared document is created for all of the participants and stored on a server. All of the participants can view and edit the document at any time and even know how their partners make changes to the document. Through the co-authoring procedure, a paper is generated, and the procedural knowledge they learn is more important than the cultural (conceptual) knowledge they gain (Ertl, 2009).

Co-authoring Tools

Co-authoring is considered a natural form of cooperative learning (Chapman, Leonard, & Thomas, 1992). Cooperative learning is not the same as collaborative learning, but they are similar in many aspects. Therefore, we do not distinguish them for GU in this paper. Nowadays, online co-authoring tools are widely used in companies. They provide users a tool for collaboratively working on the same document in real time. One can review other's work and make some modifications, which should be noted with some colored fonts. We can see where our partners are editing and what they are typing in real time.

There are many kinds of co-authoring tools we can use, for example, Google Docs, Microsoft Office, Dropbox Paper, Zoho Docs, Overleaf, ShareLaTeX, etc. Google Docs and Zoho Docs are similar creating and editing documents in Microsoft Office. Overleaf and SharedLaTeX are Latex-like authoring applications. LaTex is a famous document preparation system, widely used in technical and scientific document production. A detailed user guide can

be found in (Lamport, 1994). The free versions of these co-authoring tools are sufficient for GU collaboration. The Microsoft Office-like co-authoring tools are WYSIWYG editors (i.e., What You See Is What You Get) and the Latex-like tools are WYTIWYG editors (i.e., What You Think Is What You Get). We can use both of the kinds of co-authoring tools in GU and in different steps according to their characteristics.

1. Office-like co-authoring tools: Microsoft Office is widely used all around the world. Therefore, the office-like co-authoring tools are easier for the students to use. They are called WYSIWYG text editors. The students can use them to collect materials and prepare their paper or presentation.
2. LaTeX-like co-authoring tools: LaTeX is a great typesetting system and wildly used in writing and publishing academic papers. Most international journals and conferences provide their own LaTex templates. Though they are not as easy as Microsoft Office-like tools, they let the authors focus on the content of the document rather than on the appearance. When students are writing a final report, they can use LaTeX-like co-authoring tools and share their documents with their teachers. This can help improve thesis supervision.

When we choose a co-authoring tool for GU, the accessibility to all of the partner countries is critical because not all tools can be accessed in all of the countries in the world. We have tested several tools with our partners and found that Zoho Docs and ShareLaTeX are available in most countries. This could be taken into consideration when teachers decide to use co-authoring tools in their GU class. Besides the co-authoring tools ability to improve collaboration efficiency, they can also keep track of editing history of the shared documents by

the integrated version control system.

Version control

It is important to keep track of all of the document versions for the collaborators before they get the final version. Version control is widely used in source code management and different tools are used such as CVS, SVN, and Git. Editing a document is similar to writing a piece of source code. However, it is not practical for students who have no idea how to use version control tools. Therefore, the co-authoring tools with version control support would be useful. Most of the on-line co-authoring tools support version control. Keeping track of what several partners edit together would provide students the relevant details of how common knowledge is generated among them. When they find some errors or misunderstandings happen in the collaboration document, they can drop the current version and resume their work based on an earlier version.

Collaborative Learning Using Co-authoring Tools

The co-authoring tool can significantly improve communication efficiency and the learning effects for collaborative learning in GU. We can use them for communication, work preparation, paper review, and supervision.

1. For communication

Communication among partners is essential for collaborative learning. It is currently achieved by using tools such as email, social media apps, and chat room software in GU courses. It is easy to find that the work sharing and communication are separated. Some co-authoring tools, such as Zoho Docs, integrate communication functions so that students can chat with each other while they are editing their documents. Everyone can see others' work in real time, which

is also a helpful for communication. Therefore, the co-authoring tool is an ideal instrument for communication among partners and students can integrate co-authoring tools into their preparation of their collaborative projects in GU courses.

2. For presentation preparation

The collaborative presentation is important for the students to show what they have learned and shared with other partners on a more personal level since they work in small groups of 2-4 students on average. It is an important part of collaborative learning in GU. The students have to prepare their presentations with their partners before presenting their projects to both classes during videoconference. Traditionally, students do their part and the documents composed of all the partners' work are sent back and forth between all the partners through emails which has been shown to be poorly efficient.

However, the students can share their work and communicate with their partners in the online co-authoring tools' environment. A shared document can be divided into several parts, each of which is for one partner to be responsible for at the very beginning. The final document is completed when all of the partners finish their parts. This method creates a virtual office for all of the partners. The efficiency would potentially be greatly improved.

3. Paper supervision and review

Collaborative writing among students with co-authoring tools is useful. However, it is much more productive if it is used for paper review and supervision between teachers and students. The teachers would know what the students are working on, the problems they meet, and their research progresses. If the teachers share their academic papers in progress with their students, they would learn how to write an academic paper, which is much more meaningful than

just telling what they should do as in traditional teaching.

4. Teacher monitoring

The students organize the email-based collaborations in GU, and it is usually out of the teachers' control. The guidance from teachers can guarantee the learning effect, though the students play the leading role in collaborative learning. If we require all of the partner students to share their documents with their teachers, they can motivate students who delay their work to continue with the project, correct errors as well as comment when necessary. In this case, what the teacher sees is not only the final papers or presentations but also how they are generated.

Conclusion

GU provides students an excellent remote collaborative learning platform for all of the partner universities of GPE. The co-authoring tool creates an ideal environment for remote collaborative learning for GU because it mixes effective communication and timely work sharing together. Through the practices of SNNU with several partners we consider it as an effective tool for improving the learning experience of GU.

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