

Research Article

Online Student Team Learning in a Flipped Classroom

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Collaboration among students working in groups to master new material has been defined as “student team learning.” While past research has focused on student team learning in the classroom, this study presents evidence of student team learning by students working in groups online in a flipped learning environment. An online group activity conducted during a classroom offering of an upper-level university course in the fall of 2019 is compared with the same group activity conducted during an asynchronous offering of the same course in the spring of 2021. On both occasions, groups used Google Docs, and screenshots reveal that student team learning occurred similarly within groups working online in the classroom and in an asynchronous course. The evidence provided is particularly relevant in the wake of the COVID-19 pandemic, which has accelerated the development at universities worldwide of simultaneous classroom and asynchronous offerings of courses.

1. Introduction

In his novel, *Nineteen Eighty-Four*, Orwell [1] created a fictional character called “Big Brother,” who controls the totalitarian state of Oceania. The repetition throughout the novel of the political slogan “Big Brother is Watching You” symbolizes the ubiquitous presence of the state in everyday life, which has traditionally been interpreted as a critique of governmental restriction of individual liberty and choice. A half century before Orwell [1] published *Nineteen Eighty-Four*, Baum [2] published a children’s novel, *The Wonderful Wizard of Oz*, which includes a character at the top of the social pyramid, the Wizard, who is the opposite of Big Brother. In Baum’s [2] novel, the plot centers not on how the female protagonist, Dorothy Gale, is controlled by the Wizard but rather on the manner by which Dorothy defeats what the Wizard cannot control, namely, the Wicked Witch of the West. Whereas Big Brother employs constant surveillance in order to manipulate the actions of citizens, the Wizard encourages Dorothy to collaborate with her peers and find a way to kill the Wicked Witch. The same contrast distinguishes pedagogical attitudes toward group work. While some instructors attempt to promote collaboration

through direct interaction with students, others grant more autonomy to students working in groups. In the present study, I will demonstrate that the latter approach is more conducive to learning in online group assignments conducted in classroom and asynchronous courses.

Placing students into groups can magnify the effectiveness by which new material is presented. The reason this occurs in a foreign language course is that group work provides opportunities for students to speak in the foreign language, which is a phenomenon discussed by Long and Porter [3]. Opportunities for practice are increased by enlisting interaction within groups of students, rather than interaction between students and an instructor, as the means for assimilating new material. A widely used metric for determining whether students benefit from working in groups is student team learning, which occurs, as Szostek [4] explains, when “[n]ew material is presented by the teacher and then the students work within their groups to master the lesson. Teammates must assist one another in learning because the success of the group depends on the mastery of the lesson by each member [254].” In other words, a Big Brother instructor does not contribute to student team learning. On the contrary, research by scholars such as Szostek [4] indicates that a Wizard of Oz approach affords

students the autonomy that they need in order to master new material. This is particularly significant in an online asynchronous course, in which the role of the instructor is limited to pointing out to a group the path to achieving success autonomously, which recalls the role of the Wizard of Oz when he sends Dorothy, the Scarecrow, the Tin Woodman, and the Lion to kill the Wicked Witch of the West on their own.

Dorothy and her companions thus participate in what is known today as a flipped learning environment. As explained by Louhab et al. [5], the “flipped classroom [is] a learning strategy that reverses the roles of the teacher and the learner. Students are equipped with the learning content before attending class [757].” Moreover, the “flipped classroom methodology goes perfectly with the concept of distance learning since much of the learning process is done outside of the classroom [757].” In light of the postpandemic academic milieu, in which asynchronous offerings of courses are offered parallel to traditional classroom offerings at many institutions of higher education, I will describe a method for assessing the extent to which student team learning can occur among students working online in groups in a flipped learning environment. I will suggest that a key factor in implementing this method is limited interaction between students and the instructor. Screenshots presented to document the success of this method were collected from classroom (fall 2019) and asynchronous (spring 2021) offerings at the University of Tennessee of Spanish 331 (Introduction to Hispanic Culture), which is an upper-level course taught completely in Spanish that centers on key cultural moments in Spain from prehistoric to modern times.

2. Methodology

The primary indication of successful student team learning is collaboration among students during group work. Students placed in groups in the classroom, as Cavalier et al. [6] assert, “demonstrate higher performance, better attitudes, and more interactive group behaviors [63].” In addition, Covington et al. [7] argue that collaboration among students contributes to “enhanced student knowledge, team communication, leadership, [and] problem-solving abilities [25].” During collaboration, as Johnson et al. [8] explain, “individuals seek outcomes that are beneficial to themselves and beneficial to all other group members [87].” In fact, research on second language acquisition by Pica and Doughty [9] demonstrates that, “compared with a teacher-fronted activity, group work provides students with many more opportunities to practice using the target language and to engage in direct interaction [247].” In a course taught in a foreign language like Spanish 331, students will be motivated to collaborate within a group when they feel that collaboration helps them improve their skills in the foreign language.

Students often work successfully in groups of five or six when 331 is taught in its classroom format (3 50-min MWF classes), although there are occasions when collaboration within a group fails to occur. On these occasions, the instructor can adopt a Big Brother approach by hovering over the

group in order to ensure that all students collaborate. However, when several groups are involved, this approach can be cumbersome, and assessment of collaboration can be difficult to gauge.

Google Docs provides instructors with the means for assessing whether collaboration occurs among students working in groups. Google Docs offers students a free word processing program that contains the full range of editorial tools. Individual students can make entries to a document viewed by other students on their computer screens, which allows anything entered to be seen by all members of a group. The instructor is the “owner” of a group’s document, and as such has the option of being notified by email in real time when entries to the document are made by students. Of course, Google Docs is not the only option for instructors, and the method described below can easily be adapted to any platform that involves the exchange of documents online. For example, the method could be incorporated into a Modular Object-Oriented Dynamic Learning Environment, or Moodle, which is described in a study by Louhab et al. [10]. As these specialists explain, the “Moodle goal is to provide a set of tools that support an approach based on research and discovery of e-learning. It allows teachers to provide and share documents homework, quizzes, etc. with the students by an easy way to learn [“Smart Adaptive Learning” 1–2].”

An advantage for instructors who use Google Docs is that it works seamlessly with Canvas, the course shell used at many high schools, colleges and universities in the United States to house content for classroom and online courses. Canvas does not have its own word processing program, and an instructor can connect students working together to a group Google Docs document by using the “Colaboraciones” (Collaborations) function on Canvas, which appears in the list on the left in Figure 1.

Instructors and students connected to the same document can access it by clicking on a highlighted link (for example, “Grupo 4 Google Docs primavera 2021,” as shown in Figure 1), which leads directly to a screen containing word processing tools and the document into which entries are made. This screen, which is shared by the members of the group and the instructor, is shown in Figure 2.

It is instructive to point out that a group Google Docs document can also be accessed by clicking on Google Drive, which appears in the list on the left in Figure 1 (below “Colaboraciones”). Google Drive, which functions better on some devices when using Canvas, takes students to their individual Google Docs accounts, where they will see their group Google Docs document.

Assignments on Google Docs are completed after one of the members of a group submits the web link to the document. Instructors can incorporate the process of submitting a Google Docs web link into an assignment housed on Canvas. This method allows final grades to be inserted into the Canvas gradebook, which eliminates the need to utilize paper and provides students with a record of their progress and up-to-date calculations of their overall course grades.

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Spring Sem 2021

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Grupo 1 Google Docs primavera 2021

Iniciada por Gregory Kaplan, 13 de ene de 2021 en 12:59

Grupo 2 Google Docs primavera 2021

Iniciada por Gregory Kaplan, 12 de ene de 2021 en 15:17

Grupo 3 Google Docs primavera 2021

Iniciada por Gregory Kaplan, 12 de ene de 2021 en 15:18

Grupo 4 Google Docs primavera 2021

Iniciada por Gregory Kaplan, 12 de ene de 2021 en 15:19

FIGURE 1: Spring 2021 Group Google Docs links on Canvas.

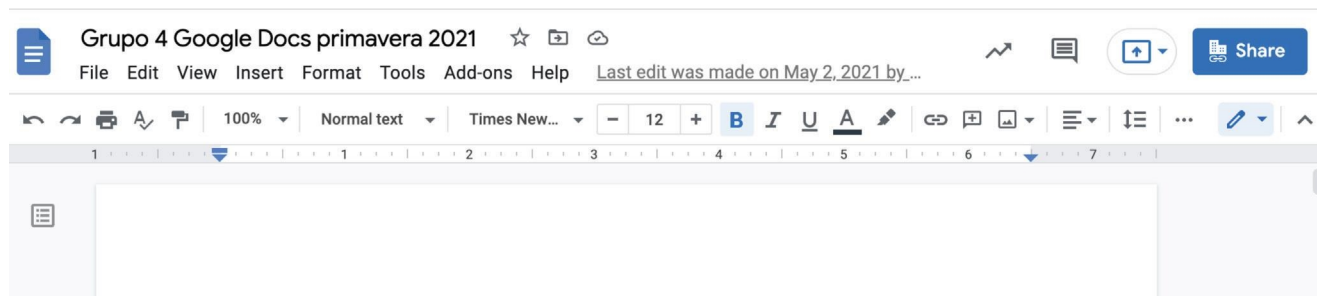


FIGURE 2: Spring 2021 Grupo (Group) 4 Google Docs document.

The version history of a group Google Docs document provides a record of all entries made by students and the dates and times that entries were made. This feature of Google Docs is accessible exclusively to the owner of the Google Docs document (in this case, the instructor) by clicking on the “Open version history” button, as shown in Figure 3.

Google Docs version histories can be particularly useful in determining how work within a group has been distributed. For example, as shown in Figures 4 and 5, different colored highlighted text corresponds to entries made by students working on a group Google Docs document. When only one member of a group is working on a Google Docs document, as shown in Figure 4, the highlighted text corresponds to a single dot on the right that is followed by the name of the student and the time the highlighted text was entered into the document.

When two or more students are working on a Google Docs document simultaneously, each student’s contribution is made visible by a different color in a Google Docs version history, as revealed in Figure 5. Figure 5 shows the collaboration that is essential for the completion of a typical group assignment in 331, which requires sentence- or paragraph-long answers

written in Spanish. The moments at which answers to questions 6, 7, and 9 were entered are shown in Figure 5. The two students who entered the answers to questions 6, 7, and 9 had the opportunity to correct answers entered previously by other students in the group to questions 1 through 5. Figure 5 thus demonstrates how each student in a group can participate in the evolution of all the discourse that ultimately constitutes the assignment submitted. During this process, phrases, sentences, and paragraphs are examined by multiple sets of eyes and are refined on conceptual and grammatical levels.

The effectiveness of Google Docs as a tool for assessing student team learning is evident in version histories of a Google Docs assignment from the fall 2019 classroom offering of 331, which enrolled 25 students who worked in groups of the same five students throughout the 16-week semester. This assignment, the Google Docs group essay, was conducted over the course of three classes in 2019. On the first day, each student reacted individually to images viewed in the classroom by electronically submitting a Word document in which they wrote three sentences in Spanish (each sentence needed to contain between 20 and 30 words). In these three sentences, students identified differences and similarities between the

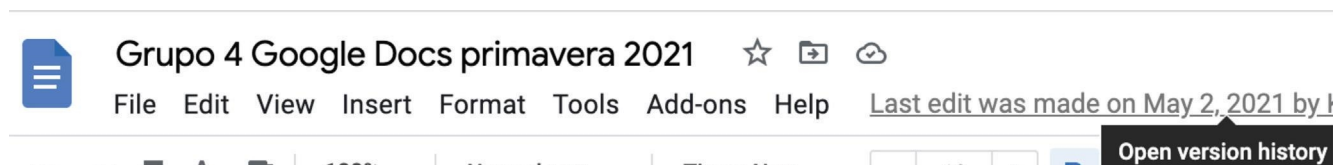


FIGURE 3: Accessing a version history on Google Docs.

2. ¿Cómo se definía España jurídicamente durante la dictadura de Franco?

Jurídicamente, España se definió a un Estado Católico.

FIGURE 4: Entry made to a Google Docs document by an individual student.

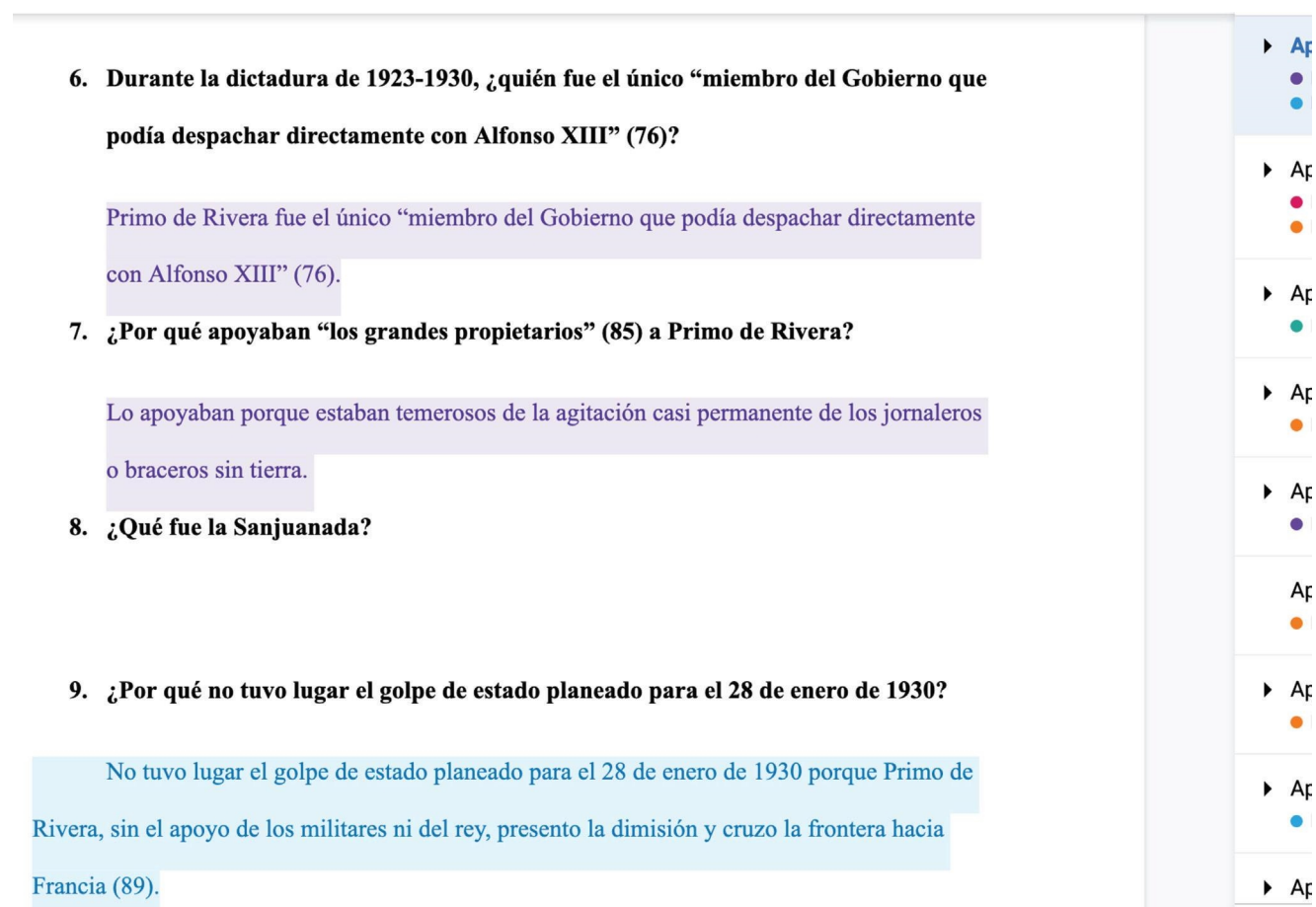


FIGURE 5: Entries made to a Google Docs document by two students working on the document simultaneously.

Roman architecture of Tarragona and the Islamic architecture of Medina Azahara. It is instructive to underscore that, prior to composing their three sentences, the students had been introduced in a previous class to characteristics of peninsular Roman and Islamic architecture.

Prior to day 2, each student received their graded sentences electronically from the instructor before meeting in groups during class to discuss topics contained in their sentences. Although the students had been informed that the essay would be based on these topics, they did not yet know

the precise wording of the questions they would be required to answer. On day 3, the essay questions were revealed at the beginning of class: “¿Cuáles son algunas diferencias y similitudes entre la arquitectura romana de Tarragona y la arquitectura islámica de Medina Azahara? ¿Qué revelan esas diferencias y similitudes sobre las dos culturas?” (What are some differences and similarities between the Roman architecture of Tarragona and the Islamic architecture of Medina Azahara? What do these differences and similarities reveal about the two cultures?). Groups had 50 min to compose

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<ul style="list-style-type: none"> Gramática, 0-3 pts.: <ul style="list-style-type: none"> 1 pt. Limited range of accuracy in concordance (verbos/adjetivos/pronombres/artículos; tiempo/modo/persona/género/número); frequent errors; work was poorly edited for grammar. 2 pts. Adequate range of accuracy in concordance (verbos/adjetivos/pronombres/artículos; tiempo/modo/persona/género/número); some errors; some editing for grammar evident but not complete 3 pts. Wide range of accuracy in concordance (verbos/adjetivos/pronombres/artículos; tiempo/modo/persona/género/número); very few errors; work well edited for grammar <p>***Each error=-0.1 pt. For example, 3 errors will result in a grade of 2.7 points out of 3 for the grammar section.</p>	<ul style="list-style-type: none"> Contenido, 0-3 pts.: <ul style="list-style-type: none"> 1 pt. Limited information; ideas present but not developed; lack of supporting detail or evidence 2 pts. Information is adequate; some development of ideas; some ideas lack supporting detail 3 pts. Information is very complete and relevant to topic; thorough development of topic
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FIGURE 6: Components of the final grade for the Google Docs group essay.

essays of 325–350 words and submit the Google Docs web link to the instructor to indicate completion.

The same Google Docs group essay was repeated during the subsequent offering of 331 in the spring of 2021, when the course was redesigned and offered in an asynchronous format after the outbreak of the COVID-19 pandemic. Asynchronous 331 enrolled 22 students, who worked in groups of the same five or six students throughout the 16-week semester. Groups were required to submit two to three assignments per week via Google Docs, including the Google Docs essay, which took place over a 1-week period as during the fall of 2019.

In the spring of 2021, prior to the Google Docs essay, students viewed images of Tarragona and Medina Azahara online and then submitted their three sentences. After students received their graded sentences from the instructor, groups were instructed to meet on a virtual platform (such as Zoom), at times arranged by the groups, to discuss the topics contained in their sentences. On the day of the essay, the instructor revealed the essay questions to the groups at a time that had been agreed upon at the beginning of the semester, so as to ensure the availability of all students. The groups then had 50 min to complete the essay (325–350 words) and submit the Google Docs link. The fact that the Google Docs essay was conducted over the same time frame and involved the same questions in classroom and asynchronous 331 invited a comparison of Google Docs version histories from 2019 and 2021.

3. Metric for Measuring Student Team Learning

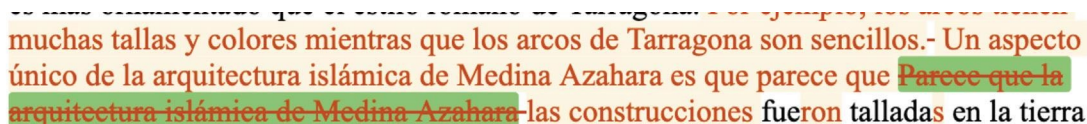
The comparison of Google Docs version histories from 2019 to 2021 involved grammatical agreement in Spanish, which constituted 50% of the final grade on the essay in classroom and asynchronous 331. As shown in Figure 6, the final grade for the Google Docs group essay was based on a total of six points: three points could be earned for responding in a completely relevant manner to the essay questions, and three points could be earned for perfect grammatical agreement. Unlike the points for a relevant response, which were awarded somewhat subjectively by the instructor, points

for errors involving grammatical agreement were deducted in an entirely objective manner. Each grammatical mistake involving agreement (including verbal mood, person, and tense, as well as gender, number, and person of adjectives, pronouns, and articles) would reduce a final grade by 0.1 points. For example, if a group made 7 grammatical errors (resulting in a loss of 0.7 out of three points), the highest final grade on the essay it could achieve was 88% (5.3 points out of 6) if it earned 3 points for a completely relevant response. It should be underscored that students in 331 learn the norms for grammatical agreement in courses in Spanish that they must complete prior to 331. The grammatical agreement grade for the Google Docs essay is thus achieved in a flipped learning environment in which each student assumes the role of “instructor” by assisting the group in applying previously learned skills.

4. Results

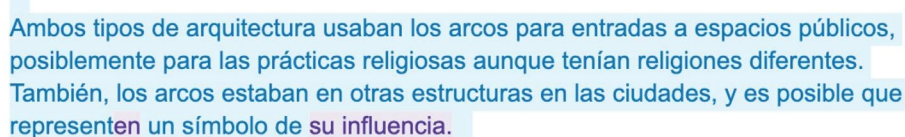
Screenshots from fall 2019 Google Docs group essay version histories provide evidence of collaboration among students who achieved grammatical agreement in Spanish, which indicates student team learning during an online activity in a course taught in the classroom. Each screenshot records a moment during the composition of the essay. The different colored dots on the right of the screenshots represent students working simultaneously, and the corresponding different colored text reveals their entries during the time they collaborated. Text not highlighted by a color in the screenshots was already present in the Google Docs document at the moment the two students began to collaborate. In some screenshots, therefore, two students are working together to correct text entered previously by another member of the same group. By reaching grammatical agreement, the two students working simultaneously in the screenshots directly contributed to the success of the entire group insofar as all group members received the same final grade for the essay.

Figure 7 shows the deletion by a student (green) of text entered by another student (orange) working simultaneously (the deleted text was: “Parece que la arquitectura islámica de Medina Azahara” [It seems that the Islamic architecture



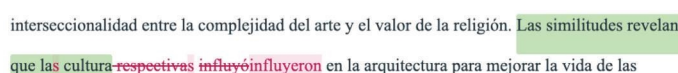
muchas tallas y colores mientras que los arcos de Tarragona son sencillos.- Un aspecto único de la arquitectura islámica de Medina Azahara es que parece que Parece que la arquitectura islámica de Medina Azahara las construcciones fueron talladas en la tierra

FIGURE 7: Fall 2019 collaboration between two students on the correction of errors A.



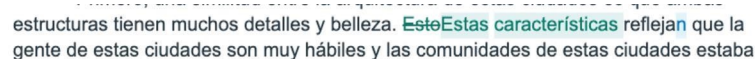
Ambos tipos de arquitectura usaban los arcos para entradas a espacios públicos, posiblemente para las prácticas religiosas aunque tenían religiones diferentes. También, los arcos estaban en otras estructuras en las ciudades, y es posible que representen un símbolo de su influencia.

FIGURE 8: Fall 2019 collaboration between two students on the correction of errors B.



interseccionalidad entre la complejidad del arte y el valor de la religión. Las similitudes revelan que las cultura-respectivas influyeron en la arquitectura para mejorar la vida de las

FIGURE 9: Spring 2021 collaboration between two students on the correction of errors A.



estructuras tienen muchos detalles y belleza. EsteEstas características reflejan que la gente de estas ciudades son muy hábiles y las comunidades de estas ciudades estaba

FIGURE 10: Spring 2021 collaboration between two students on the correction of errors B.

of Medina Azahara]). The latter student (orange) then provided the correct plural endings to text entered previously by another student by adding -ron (“fueron”) and -s (“talladas”). The result is a coherent phrase that is also grammatically correct (“Un aspecto único de la arquitectura islámica de Medina Azahara es que parece que las construcciones fueron talladas en la tierra...” [A unique aspect of the Islamic architecture of Medina Azahara is that it seems as if the buildings were cut into the land...]).

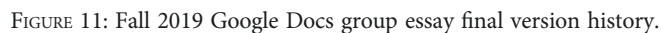
Figure 8 shows collaboration between two students on the completion of a paragraph. One student (purple) concludes the paragraph with a phrase (“su influencia” [its influence]) that provides closure to an idea introduced by the other student (blue) previously (“También, los arcos estaban en otras estructuras en las ciudades, y es posible que...” [Also, the arches were in other structures in the cities, and it is possible that...]). The first student (purple) also adds the present subjunctive ending “-en” (“representen” [they represent]) to establish agreement (“...es posible que representen un símbolo de su influencia” [...it is possible that they represent a symbol of their influence]). Once again, the result is a coherent phrase that is grammatically correct. As shown in Figures 7 and 8, the corrections made demonstrate a mastery of grammatical skills and the collaboration of students for the benefit of the group.

Similar indications of student team learning are evident in screenshots of Google Docs version histories from asynchronous 331 in the spring of 2021. As in the cases of versions histories from the fall of 2019 (Figures 7 and 8), Figures 9 and 10 exhibit instances of collaboration during the composition of group essays.

As shown in Figure 9, each of the students collaborating makes a change to text entered earlier by other students. One student (green) adds a phrase (“Las similitudes revelan que la cultura” [The similarities reveal that the culture]), which the other student (pink) modifies by adding the plural marker -s (“las culturas” [the cultures]), and by inserting the correct verbal form (“influyeron” [they influenced]). The resulting phrase achieves grammatical agreement (“Las similitudes revelan que las culturas influyeron...” [The similarities reveal that the cultures influenced...]).

Figure 10 also shows students working together online to correct text entered previously by other students. One student (green) adds a phrase (“Estas características” [These characteristics]) that expands on the conclusion of the previous sentence (“...tienen muchos detalles y belleza” [...they have many details and are beautiful]). The second student (blue) adds the correct third person plural marker -n (“reflejan” [they reflect]). The result is a coherent and grammatically correct transition between sentences (“...tienen muchos detalles y belleza. Estas características reflejan que...” [...they have many details and are beautiful. These characteristics reflect that...]).

It merits pointing out that other errors involving grammatical agreement contained in Figure 10 were corrected by members of the group before the final version of the group essay was submitted (“la gente” [the people] was changed to “los residentes” [the residents] to create the phrase “los residentes de estas ciudades son muy hábiles” [the residents of these cities are very skillful], and “estaba” [it was] was changed to “estaban” [they were] to create the phrase “y las comunidades de estas ciudades estaban” [the communities in



Figures 11 and 12 both demonstrate that all five members of the groups involved worked simultaneously on the final versions of their group essays. The group of five colored dots on the top right that is highlighted in blue in each figure represents contributions made during approximately the final 30 min of the

The simultaneous collaborations among 5 students depicted in Figures 11 and 12 exemplify the aforementioned process described by Johnson et al. [8], according to which “individuals seek outcomes that are beneficial to themselves and beneficial to all other group members [87].” In this regard, it is instructive to underscore that the different colored text in Figures 11 and 12 contains text that had been entered previously by group members who are represented by all of the unhighlighted single dots on the right of each figure beneath the highlighted groups of five dots, and in one case, as shown in Figure 12, by two



The Google Docs version histories from group essays completed during the fall of 2019 and the spring of 2021 demonstrate that student team learning can occur similarly regardless of whether an online activity takes place in the classroom or in an asynchronous course. On both occasions, the group essays were written 5 weeks after the semesters had begun, which gave in person and

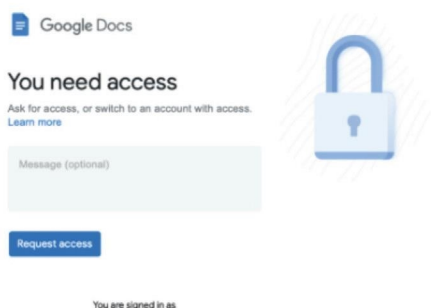
During the 5 weeks prior to the composition of the Google Docs group essay, groups in the fall of 2019 developed the collaborative skills that drive student team learning as they worked in the classroom to assimilate new material immediately after it had been presented by the instructor. This simultaneous proximity to new material by all members

Required group work

At the beginning of the course, each student will receive by email a link to a Google Doc that will be shared throughout the course with the same group of students chosen by the instructor. Contact information for the members of the group may be found within the Google Doc by clicking the "Share" button. The majority of assignments can only be submitted for grading by uploading a link to this Google Doc as will be explained further on in this introductory *Módulo*.

You must use your University of Tennessee Google account (NOT your personal Google account) to participate in Google Docs group collaborations. In order to assure that you are connected to your group Google Doc, click the "Colaboraciones" link in the list on the left (this list is visible on a laptop computer when viewing the Canvas course site). The "Colaboraciones" link will direct you to your group Google Doc link. If you do not see a group Google Doc link after clicking "Colaboraciones," you should contact the instructor at the email address below. You can also access your group Google Doc by clicking the "Google Drive" link in the list on the left (this list is visible on a laptop computer when viewing the Canvas course site). The "Google Drive" link may be easier to access than the "Colaboraciones" link on some devices. The "Google Drive" link will direct you to your University of Tennessee Google account page, where you will be able to access your group Google Doc.

If you are not able to access your group Google Doc by any of the above methods, you may see a message similar to the screen shot below, in which a student is asked to request access.



In this case, please click the "Request access" button and the instructor will admit you to your group Google Doc.

A group of students will work together throughout the course to submit on its Google Doc all group assignments, which include sets of answers to questions on readings or videos as well as two group essays. It is expected that all students will complete all readings, view all videos and photos, and answer all questions prior to collaborating on their Google Docs to submit one set of answers for the group per assignment and prior to composing group essays (*trabajos escritos*). Cooperation to reach consensus as to which answers constitute the group answers, and to prepare for and complete the composition of two essays, will be crucial and the responsibility of each group member. All members of a group receive the same grade for each group assignment submitted. Group assignments must be completed by the deadlines indicated on the *Programa del curso*. Late work will not be accepted.

A group's Google Doc will be monitored by the instructor, who will be able to see when and by whom iterations to the Google Doc are made and if work is being distributed and completed in an equitable manner among group members. At the end of the course, each student will receive an individual class participation grade based on their participation in Google Docs group assignments. Examples of the manners by which students may record such participation are included further on in this introductory *Módulo*.

FIGURE 13: Instructions for group work in asynchronous Spanish 331.

of a group was not a feature of asynchronous 331. During the 5 weeks prior to the composition of the Google Docs group essay in asynchronous 331, new material was presented online without the intervention of an instructor, and the time between which students received new material and collaborated on Google Docs to complete assignments depended entirely on the members of the group. In this context, the wide range of times that entries were made in asynchronous 331 to group Google Docs documents, the platform by which all group assignments were submitted during the spring of 2021, confirmed a benefit of unrestricted online access to course material: groups can be given sufficient time in advance to submit assignments so as to allow group members to collaborate when their schedules permit, including during the evening or on the weekend.

Like flexible access to new material, a major difference between asynchronous 331 and classroom 331 is the lack of interaction between the instructor and the students. Students can arrange Zoom meetings with the instructor in asynchronous 331, but they must learn to work in groups on their own, which highlights the advantage of a Wizard of Oz approach that is exemplified by the endings to the two novels being considered. *Nineteen Eighty-Four* concludes with the complete submission to Big Brother by the protagonist, Winston Smith, who reaches this state after having been destroyed emotionally at the Ministry of Love. *The Wonderful Wizard of Oz* ends with Dorothy learning to rely on herself and her peers, rather than the Wizard, to achieve her goal of returning home. In this same spirit, students working together asynchronously must ensure that all members of the group receive and assimilate new material in order to achieve the goal of completing assignments in an equitable manner. This feature of online learning undoubtedly contributes to the same development of “interactive group behaviors” and “leadership” and “problem-solving abilities” that scholars have observed among students working in groups in the classroom. Moreover, studies have revealed the importance to students of the type of flipped learning approach that can form the foundation of an asynchronous course. For example, in one study by Louhab et al. [11] published in 2018, “students showed a high degree of acceptance (83%) concerning the use of the flipped classroom method compared to the traditional classroom [2629]”. In a study published the following year, Louhab et al. [12] reported that “most of the learners [61]” preferred a flipped classroom.

Shifting the responsibility for organizing group work to students is accomplished in asynchronous 331 by explicit instructions, which are available on the Canvas course home page, as shown in Figure 13. In particular, these instructions underscore that “cooperation to reach consensus as to which answers constitute the group answers, and to prepare for and complete the composition of two essays, will be crucial and the responsibility of each group member (Figure 13).”

In asynchronous 331, students must rely on the instructions in Figure 13, rather than on a Big Brother instructor, to initiate online communication with other group members

and to collaborate on the completion of assignments. Since students in asynchronous 331 never interact with an instructor in the classroom, the onus of collaboration is placed completely on their ability to interact within their groups.

Asynchronous 331 has attracted increased enrollment since the spring of 2021, and group work continues to be conducted on Google Docs. In light of the importance that is lent to the assessment of learning outcomes at universities worldwide, utilizing Google Docs (or a similar platform) as confirmation of effective student team learning can serve as convincing evidence for faculty and administrators advocating for greater resources. Online coursework may never substitute in some ways for work in the classroom, but the present study reveals that group work done online can be just as effective pedagogically with respect to student team learning.

Data Availability

The Google Docs version history data used to support the findings of this study are included within the article.

Disclosure

This article is a revised and updated version of a paper, “Online Student Team Learning,” presented in July, 2022, at the 26th Amsterdam International Conference on Economics, Education, Humanities and Social Sciences, https://eirai.org/images/proceedings_pdf/EAP0722407.pdf.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this paper.

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