International Studies Perspectives (2020) **0**, 1–24

Digital Storytelling Project as a Way to Engage Students in Twenty-First Century Skills Learning

Aleksandra Lazareva
University of Agder
and
Gibran Cruz-Martinez
Institute of Public Goods and Policies, CSIC
Universidad Autónoma de Chile

Abstract: This paper is focused on the implications of a collaborative digital storytelling project on student engagement in the higher education context. The empirical study is conducted with an interdisciplinary group of bachelor students in a Nordic University ($N = 22$) and a university in Southern Europe ($N = 21$), and the data are collected through an online student survey. The results demonstrate that the digital storytelling project supported students' behavioral, emotional, and cognitive engagement. In general, the students had positive emotional experiences with the project. This assignment format was found less stressful than a frontal presentation in the classroom, allowing the students to express their perspectives more freely and confidently. The digital storytelling format also opened up for more creative ways to approach the task. It was important for the participants to have the project assignment split up in several checkpoints with feedback from the instructor. At the same time, the students suggested several areas for further improvement. Those are mainly related to the guidance on the use of technology and scripting the learning process within the small groups. Based on the results of the study, a range of practical implications for teaching practice is formulated.

Extracto: Este artículo se centra en las implicaciones de un proyecto colaborativo de narración digital en la participación de los estudiantes dentro del contexto de la educación universitaria. El estudio empírico se lleva a cabo con un grupo interdisciplinario de estudiantes de licenciatura de una universidad nórdica (N=22) y una universidad en el sur de Europa (N=21), y los datos se recopilan a través de una encuesta en línea para estudiantes. Los resultados demuestran que el proyecto de narración digital respaldó la participación conductual, emocional y cognitiva de los estudiantes. En general, los estudiantes tuvieron experiencias emocionales positivas con el proyecto. Este formato de tarea resultó menos estresante que una presentación al frente de la clase, lo que permitió que los estudiantes expresen sus perspectivas con mayor libertad y confianza. El formato de narración digital también dió lugar a formas más creativas de abordar el trabajo. Para los participantes fue importante dividir la tarea del proyecto en varias instancias de control con comentarios del profesor. Al mismo tiempo, los estudiantes sugirieron varias áreas en las que se debe mejorar aún más. La mayoría de ellas se relacionan principalmente con la orientación acerca del uso de tecnología y guiones en los procesos de aprendizaje dentro de grupos reducidos. En función de los

Lazareva, Aleksandra and Gibran Cruz-Martinez. (2020) Digital Storytelling Project as a Way to Engage Students in Twenty-First Century Skills Learning. *International Studies Perspectives*, doi: 10.1093/isp/ekaa017

resultados del estudio, se formuló una serie de implicaciones prácticas para el método de enseñanza.

Abstract: Cet article se concentre sur les implications d'un projet de narration numérique collaboratif sur l'engagement des étudiants dans le contexte de l'enseignement supérieur. Cette étude empirique a été menée via un groupe interdisciplinaire d'étudiants en licence dans une université d'Europe du nord (N=22) et une université d'Europe du sud (N=21), les données étant recueillies par le biais d'une enquête en ligne auprès des étudiants. Les résultats démontrent que ce projet de narration numérique a soutenu l'engagement cognitif, émotionnel et comportemental des étudiants. Les étudiants ont globalement vécu des expériences émotionnelles positives dans le cadre de ce projet. Ce format d'exercice a été jugé moins stressant qu'une présentation devant la classe et a permis aux étudiants d'exprimer leurs points de vue d'une manière plus libre et confiante. Le format de la narration numérique a aussi ouvert la voie à davantage de manières créatives d'approcher l'exercice. Il était important pour les participants que le projet qui leur était confié soit divisé en plusieurs points de contrôle avec commentaires du professeur. Dans le même temps, les étudiants ont suggéré plusieurs domaines à améliorer davantage. Ces suggestions concernent principalement les consignes d'utilisation de la technologie et l'orchestration du processus d'apprentissage en petits groupes. Toute une série d'implications pratiques pour la technique d'enseignement ont été formulées en se basant sur les résultats de l'étude.

Keywords: student engagement, WeVideo, digital storytelling, computer-supported collaborative learning (CSCL), collaboration script
Palabras clave: participación de los estudiantes, WeVideo, narración digital, aprendizaje colaborativo asistido por computadora (CSCL), guión de colaboración
Keywords: implication des étudiants, WeVideo, narration numérique, apprentissage collaboratif assisté par ordinateur, orchestration de la collaboration

Introduction

Learners achieve more when they work together compared to working individually. The application of collaborative and cooperative learning has been referred to as an "unusually strong psychological success story" (Johnson and Johnson 2009, 374). Students in a cooperative learning environment outperform students in a traditional learning environment. Kyndt et al. (2013) covers sixty-five studies carried out from 1995 onward, and reveals the positive effects of cooperative learning on student achievement and attitudes. These findings are in line with earlier meta-analyses in the field, which demonstrate that cooperative teams outperform individual learners on the various types of problem-solving (Qin, Johnson, and Johnson 1995) and promote greater academic achievement, better attitudes toward learning, and increased persistence in students (Bowen 2000).

Combining collaborative learning with modern technological advancements provide better opportunities for students' active knowledge construction through working on complex phenomena (Weinberger 2011). Some of the learning benefits include improved productivity, fostering of higher-order thinking skills, and student satisfaction with the learning experience (Resta and Laferrière 2007). Use of technology has also been found to contribute to students developing their skills as independent learners (Hafner and Miller 2011). Educational technology serves as a

source of authentic information and has been demonstrated to advance students' critical thinking skills (Lindquist and Long 2011). The integration of new media in the educational context plays an important role in promoting broadened access to socially embedded and interest-driven learning, linking the different contexts of learning (e.g., the home, school, community, and peer groups) together (Ito et al. 2013).[1]

It is crucial for students to develop "twenty-first century skills" such as the ability to collaborate, be critical and creative, and be able to use technologies for learning. This has become even more evident with the COVID-19 pandemic and the unexpected shifts toward online learning in university classrooms accustomed to traditional teacher-led teaching. The development of students' twenty-first century skills in a university classroom implies that students are active participants in the learning process and are able to use technology to improve their learning outcomes. Yet, collaborative learning and computer-supported collaborative learning (CSCL) may be challenging to carry out in higher education practice, as many students are used to traditional teacher-led approaches (Häkkinen et al. 2017).

The success of collaborative learning groups is conditional to the instructor's guidance strategies (van Leeuwen and Janssen 2019). It is crucial for the teacher to recognize the learning opportunities that become available for the students during the collaboration process and help students turn these opportunities into real moments of learning. The same is relevant for computer-supported collaboration. While CSCL can be characterized by multiple opportunities that are normally not available for students in a traditional classroom setting, many students may experience challenges as (computer-supported) collaboration can be motivationally and cognitively demanding (Weinberger 2011). Lack of appropriate guidance often leads to superficial participation and recent research has paid more attention to the scaffolding of collaborative learning (Zheng, Huang, and Yu 2014), i.e., providing complementary instructional support for guiding learners through tasks that exceed their current level of competence (Kobbe et al. 2007). A significant part of the CSCL research has focused on the role of the so-called collaboration scripts (Dillenbourg 2002; Kobbe et al. 2007).[2] Providing adequate support and facilitation is thus crucial to promote students' behavioral, emotional, and cognitive engagement (Fredricks, Blumfeld, and Paris 2004) in collaborative learning projects.

When linking CSCL and student engagement, previous research show how students acquire skills though collective interaction, although the pedagogical engagement of student remains a challenge (Adefila et al. 2020). While, higher education students are familiar with the use of smartphones, the internet, and other technological devices, research is needed to confirm if by incorporating them into a collaborative environment in a university classroom facilitates their engagement with the material they are expected to learn. Thus, in this paper, the issue of student engagement in a collaborative computer-supported learning assignment is problematized. Focusing on the implementation of a collaborative digital storytelling assignment in the context of a Latin American Studies class and an Introduction to Political Science class, the impact of the project on students' behavioral, emotional, and cognitive engagement is discussed, with a special focus on the role of the instruction (i.e., the collaboration script).

The empirical study is based on survey data from an interdisciplinary group of bachelor students at a Nordic University and South European University. The results demonstrate that the digital storytelling project had a positive effect on each

[1] A meta-analysis by Fu and Hwang (2018) on the use of mobile technology for collaborative learning demonstrate that mobile technology supports ubiquitous learning, promotes more interpersonal social interaction, facilitates context-based learning, develops self-regulated learning and self-reflection skills, as well as advances cross-cultural interaction.

[2] Dillenbourg (2002, 61) defines collaboration script as a "set of instructions prescribing how students should form groups, how they should interact and collaborate and how they should solve the problem".

of the three engagement types. Students had positive experiences with the project in general and found this assignment format much less stressful than a more common frontal presentation in the classroom. The digital storytelling format opened up for more creative ways to approach the task and allowed the participants to express their perspectives more freely and confidently. The participants appreciated having the project assignment split up in several checkpoints with feedback from the instructor. At the same time, several areas for further improvement are suggested based on student responses. Those are related to such aspects as the guidance on the use of technology and scripting the learning process within the small groups. Based on the results, a range of practical implications for teaching practice is formulated (see the Supplementary Information).

The paper is organized as follows. The second section presents the key concepts forming the theoretical framework for this study and introduces the hypotheses and the main research question. The method is presented in the third section, describing the procedure of the assignment, the survey tool used to collect the data, and the data analysis procedure. The fourth section presents the research findings and is followed by a discussion (Section "Discussion") of the video project's impact on students' engagement and suggestions for improving the assignment. The sixth section concludes the paper.

Theoretical Framework and Key Concepts

Student Engagement

It may be a challenging task to specify what the concept of student engagement entails, as it is rather often confused with such concepts as interest, emotions, and motivation (Järvelä and Renninger 2014). However, there is a difference. While motivation refers to the *psychological processes* that underlie energy, purpose, and durability of the action (and are thus difficult to see directly), engagement is the *visible manifestation of those processes* (Skinner and Pitzer 2012). Those "visible manifestations" can thus be helpful for the teacher when following up on the students. Student engagement is in general meant to be a practical concept, as its origin is based in attempts to improve student learning (Reschly and Christenson 2012).

Student engagement can be defined as a student's active involvement and commitment to mastering the knowledge and opposed to superficial participation and lack of interest (Newmann, Wehlage, and Lamborn 1992). Understanding what it is that affects student engagement is crucial for educators to choose suitable pedagogical approaches, design effective learning activities, and provide appropriate guidance.

This paper employs the three-part typology of student engagement suggested by Fredricks, Blumenfeld, and Paris (2004), which includes behavioral, emotional, and cognitive engagement. *Behavioral engagement* implies a student's participation and involvement in learning activities. For example, a student participating in a group discussion would mean that she is engaged behaviorally. However, it would not necessarily mean that the student is having positive attitudes to the assignment or participants of the learning process, nor would it necessarily imply that the student achieves a meaningful learning outcome through this activity. Therefore, it is important to talk about the other two types of engagement. *Emotional engagement* implies positive attitudes of a student to teachers, peers, and academic assignments in general. And, finally, *cognitive engagement* focuses on the investment and commitment a student puts in learning and mastering new knowledge and skills.

It is crucial to take into account all three types of student engagement. Attending to students' behavioral engagement may be a somewhat "easier" operation, as students participate willingly in the assignments that count toward the final grade or are a prerequisite to sit for the final exam. At the same time, it may be rather

simple to come up with activity most of the students would find fun or entertaining, but which would not necessarily contribute to students' cognitive engagement resulting in learning. Thus, ensuring all of the three dimensions of engagement in the students is crucial for an effective learning process.

Antecedents of engagement are multiple, and many of them come from the classroom context and are thus directly dependent on how the teacher organizes the teaching and learning process. For example, reaching a balance between structuring the classroom environment and supporting learner autonomy is crucial for student engagement (Fredricks, Blumenfeld, Paris 2004). At the same time, an engaging task should ideally be authentic, meaningful, relevant, and focused on problem-solving (Newmann, Wehlage, and Lamborn 1992). Collaboration skills need to be learned and practiced (Rummel and Spada 2005), and learners who do not have experience in collaborative learning need proper guidance in order to complete collaborative work successfully. Otherwise, there is a risk of collaborative learning scenarios turning out as frustrating and unsuccessful ones.

Computer-Supported Collaborative Learning (CSCL)

When different kinds of learning situations are labeled as collaborative it becomes challenging to discuss what effects collaborative learning has on students learning (Dillenbourg 1999). Therefore, it is important to clearly define how the terms "collaborative learning" and "CSCL" are understood in the frame of this research article.

Collaborative learning implies such an educational practice where interactions among peers represent the most important aspect of learning (Dillenbourg, Järvelä, and Fischer 2009), as opposed to the teacher passing the information over to the student. One could often notice that the terms "collaborative" and "cooperative" are used interchangeably (e.g., Sung, Yang, and Lee 2017). While it is natural that work is split among the different partners in both collaborative and cooperative learning situations, the key difference is in the nature of this division. In cooperative learning, tasks would be more independent, while in collaborative learning tasks are still highly interwoven and imply the participants monitoring each other. In collaborative learning, the focus is on the mutual engagement of group members with the aim to reach a solution together (Roschelle and Teasley 1995). In addition, the division of labor is less stable in collaboration (e.g., the roles may change) (Dillenbourg 1999).

Taking a starting point in the definition of collaborative learning, the concept of CSCL can be defined. In CSCL, knowledge is also considered an interactional achievement (Stahl, Koschmann, and Suthers 2006), but the key point here is the focus on joint meaning-making practices mediated by technology (Stahl, Koschmann, and Suthers 2006). It is important to note that the role of technology is not only in enabling the communication and collaboration processes, but actually in improving and facilitating the group learning processes, helping participants have effective interactions (Resta and Laferrière 2007; Dillenbourg, Järvelä, and Fischer 2009). Technologies used for collaborative learning have to provide learners with the opportunity to engage in a joint task, communicate effectively, share resources, receive support for effective collaboration, engage in co-construction, regulate their learning, and build communities (Jeong and Hmelo-Silver 2016).

It has been empirically proved that collaboration scripts have a great potential in supporting CSCL learners (e.g., Wichmann and Rummel 2013; Popov et al. 2014). A recent meta-analysis on collaboration scripts (Vogel et al. 2017) demonstrates that learning with scripts has a strong positive effect on collaboration when compared to unscripted CSCL. Students acquire effective collaborative learning skills when they are repeatedly supported by scripts (Vogel et al. 2017). A number of challenges have been identified in collaboration scripting research, for example, over-scripting,

i.e., providing too rigid structure (Dillenbourg 2002) which may lead to overload for learners (Kollar, Fischer, and Slotta 2007) and make them avoid using the script whatsoever (Popov et al. 2014), and "collision" with students' already established strategies used in collaborative learning situations—"internal scripts" (Kollar, Fischer, and Slotta 2007).

Finally, for the purpose of this article, it is also important to make a distinction between (1) collaborative situations where collaboration is happening face-to-face and the partners share the same physical location while being supported by technological artifacts and (2) situations where communication in itself is computer-mediated (synchronously or asynchronously) and participants are located in different physical spaces. Research presented in this article is primarily based on the first scenario.

Digital Storytelling

Robin (2008, 222) defines digital storytelling as an activity allowing "computer users to become creative storytellers through the traditional process of selecting a topic, conducting some research, writing a script, and developing an interesting story." The steps in the digital storytelling activity can be combined with different kinds of multimedia, such as graphics, audio, video clips, and music. Digital storytelling can be described through seven key elements: point of view, a dramatic question, emotional content, using the gift of your voice, the power of soundtrack, economy (i.e., using just enough content to tell the story without overloading the viewer), and pacing. Generally, digital stories can be categorized into three groups: personal narratives, stories that inform or instruct, and stories that examine historical events (Robin 2008).

Digital storytelling is perfectly suited for a constructivist classroom where students are to construct their own meaning (Robin 2016). Digital storytelling approach has been found to facilitate student engagement, reflection for learning, and project-based learning (Barrett 2006). Giving students the task to create their own digital stories addresses the issue of developing twenty-first century skills (Robin 2008), such as critical thinking and information and technological literacy (Yang and Wu 2012; Niemi and Multisilta 2016; Kotluk and Kocakaya 2017). Thus, it is a powerful technology-enhanced learning method (Wu and Chen 2020).

Although digital storytelling has been applied in education for two to three decades, there is still a limited amount of systematic reviews on what has been achieved in this field (Wu and Chen 2020). The first attempt may have been a recent review by Wu and Chen (2020), where they review fifty-seven studies on educational digital storytelling to conclude that digital storytelling activity may also be helpful for learners in overcoming language difficulties. Their review suggests that multimodal expressions make fluent communication possible even if the choice of words is not appropriate. The focus is often on orchestrating meanings of images, music, captions, and other formats. The mechanical aspect of language is usually not emphasized by the facilitators. Instead of pointing out grammatical errors, the facilitators emphasize the generation of ideas.

Hypothesis and Research Question

On the basis of the introduced key concepts and earlier research work, the main research question is formulated to guide the qualitative inquiry: Is a digital storytelling project an effective way to engage university students in computer-supported collaboration?

In order to answer the research question, the discussion will explore the implications a digital storytelling may have for students' emotional, cognitive, and behavioral types of engagement. The following hypothesis is formulated: The scripted

collaborative digital storytelling video project has a positive effect on emotional, cognitive, and behavioral student engagement.

Method

Context of the Study

The empirical research involves two studies. The original study (onward the alpha study) takes place in a Nordic University and the second study (onward the beta study) takes place in a South European University.

The alpha study was conducted with an interdisciplinary group of Bachelor Degree students at the Faculty of Social Sciences in a Nordic University. The students were following either a development studies Bachelor's program or a one-year Spanish Studies program. The course, Introduction to Latin American Studies, is organized in twelve face-to-face lecture sessions (three hours each) and twelve group work sessions (two hours each). The university learning management system (LMS) Canvas was used to distribute the course material (i.e., course outline, plan for lectures, reading list), communicate with the students, and to hand in the assignments.

The Introduction to Latin American Studies course is mandatory for the majority of students enrolled in the course. Being one of the three courses in the Department of Global Development and Planning taught in English at the undergraduate level, it was a popular choice for international exchange students. The course is intended to provide students with a broad overview of some of the essential characteristics of Latin American history, politics, economics, and social conditions with the purpose of enabling students to understand and analyze current development processes in the region and in a global context.

The beta study was conducted to test the reproducibility of the original results in a different country. The beta study was conducted with a group of freshman Bachelor Degree students at the Faculty of International Relations in a South European University. The forty-two students were enrolled in a double major in International Relations and Business Administration. The mandatory course, Introduction to Political Science, consists of thirty face-to-face sessions (eighty minutes each). This course also involved using an LMS, in this case Blackboard, to distribute the course material, communicate with students, and hand in the assignments.

The Introduction to Political Science course aims to provide students with a core background in the central topics of contemporary political science, including the epistemology and methodology of political science, political ideologies, (non)democratic regimes, social system, political institutions, interest groups, political parties, elections, public policy, political economy, and international relations. One of the co-authors was the lecturer in both courses.

Procedure of the Learning Assignment

The assignment was designed taking into account earlier research on (1) student engagement and its antecedents, (2) collaboration scripting, and (3) digital storytelling.

In the alpha study, students had to complete two group assignments as a prerequisite to taking the final exam. The first six group work sessions were focused on a collaborative digital storytelling project and the last six to prepare a face-to-face presentation. Students in the beta study also were to complete the collaborative digital storytelling project and the face-to-face group presentation to sit for the final exam. However, an important difference was that these two assignments accounted for a percentage in the final grade. The video project accounted for 25 percent of the final grade, and the face-to-face presentation accounted for 20 percent. In contrast

to the alpha study, there were no programmed group work sessions. Students met and completed the tasks in their preferred time and place.

The video project involved the use of technology to create a three to five minute long video on a subject chosen by each group and related to the course outline (i.e., (post)colonial history, social policy, alternatives to development, electoral studies, social stratification, and gender). Instructions were provided in the face-to-face lectures and were available in the LMS. Students were organized in groups consisting of three to five participants. Students had the opportunity to form their own group. Only a minority chose to do so in the alpha study, while a majority formed their own groups in the beta study. Students without groups were randomly assigned to groups by the lecturer.

The groups prepared the video project in four steps: forming groups, choosing the object of study, elaborating the script, and the final submission. These steps served as a collaboration script supporting the students during their learning process:

1. The first step was to create groups, familiarize with the concept of storytelling and learn the basics of the video-making software (i.e., WeVideo). The lecturer introduced digital storytelling and the WeVideo software in one of the lectures. Online tutorials were also made available. Students could choose to use other software to create videos if the resulting videos could be downloaded. Students had seven days to complete this task in the alpha study and four days in the beta study.
2. The second step was to choose and develop the idea for the digital storytelling project. Students were encouraged to share interests and experiences related to the subject in order to find a common interest. For this task, each group sent one to two sentences via the LMS describing the idea of the digital storytelling project. Students disposed seven days to fulfill this task in the alpha study and four days in the beta study. Individual feedback was provided to each group.
3. Conducting the research and elaborating the script was the third step. Students were encouraged to use academic materials available at the university library and repository. For this task, each group created a storyboard with ideas, images, references, footage available on the web, and methods to present the results. Students had fourteen days to prepare the third task in the alpha study and fifteen days in the beta study. The preliminary script was submitted via the LMS and individual feedback was also provided at this step.
4. The final task was to submit the video project including the reference list. Students had twenty-eight days to translate the storyboard and script into the final video in the alpha study, and nine days in the beta study.

On the contrary, there was no step-by-step guidance for the face-to-face presentation. In contrast to the digital storytelling project, the lecturer submitted a list of potential topics that could be used for the face-to-face presentation. At the same time, the groups had the freedom to propose another topic for their presentation as long as it complemented the course outline. Students made face-to-face presentations during the last three weeks of the course in the alpha study and the last two weeks in the beta study. Each group had fifteen minutes for the presentation and fifteen minutes for the discussion. Each group also had the responsibility to act as a discussant for another group. The main task of the discussant was to highlight the strengths and weaknesses of the presentation and ask two or three questions to ignite the debate in the classroom.

The time allowed for preparing the presentation was seven weeks in the alpha study and either twenty-four or thirty-one days in the beta study (depending on the

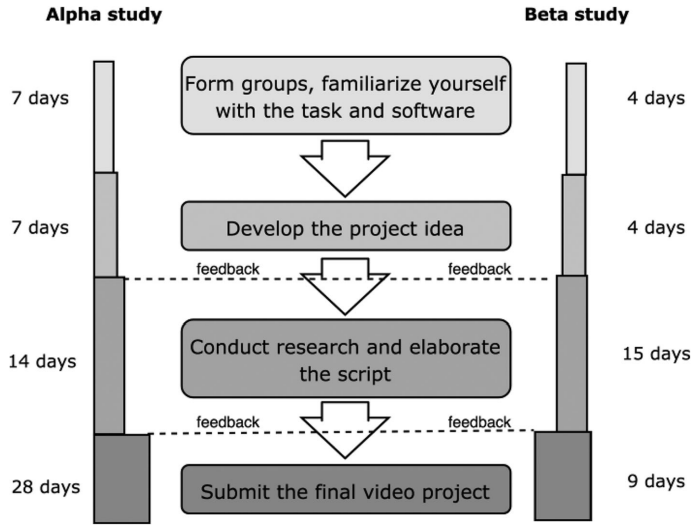

Figure 1. Procedure of the assignment in the alpha study.

group). The videos and PowerPoint slides were made available to everyone in the LMS. The groups prepared the video project in both studies following the same four steps. However, students had less time to prepare both tasks in the beta study. The teaching term in the alpha study lasted from August to December, while in the beta study it went from October to December.

Figure 1 summarizes the procedure of the assignment. The key principles the assignment can be formulated are follows: (1) indicate a specific amount of checkpoints and script student activity for each step, (2) provide feedback to students after each checkpoint, (3) guide students on the use of technology by introducing short tutorial videos and going through the functionality in the lecture, and (4) final videos should be three to five minutes long, as shorter videos would not allow students to elaborate on their ideas, while videos exceeding five minutes could easily become too long.

Survey Tool

Based on the concept of student engagement, a survey was designed to evaluate the impact of the digital storytelling assignment on student engagement. The survey in the alpha study was administered in the last lecture using SurveyXact, while in the beta study the link to the survey was shared online in the last lecture using Google forms. Twenty-two out of the forty students (55 percent) who finished all the requirements of the course in the alpha study participated in the survey. Twenty-one out of the forty-two students (50 percent) who finished all the requirements of the course in the beta study participated in the survey.

The survey tool was constructed to measure students' behavioral, emotional, and cognitive engagement. The survey questions and layout were constructed by the authors of the paper, as there was no suitable survey available fitting the purpose of the study. The Cronbach's alpha for the complete set of questions is 0.81, which indicates a high level of internal consistency (Nunnally 1978; Field 2018). Thus, the questionnaire as a whole is considered a reliable tool to measure student engagement. Nonetheless, Cronbach's alpha's results must be taken with caution due to (1) a very small number of participants, which affects the alpha score, (2) the mix of negatively and positively stated statements in the alpha and beta studies, and (3)

the fact that the statements were operationalized as an indicator of a specific student engagement; however, as stated earlier in the paper, the frontiers between one type of engagement and the other are diffused.

Earlier research on survey development was used to guide the construction of the survey. The questions were organized under three sub-topics providing a short description in each of them (Lietz 2010)—the background information, the Likert-scale questions set, and a number of open questions. The questions related to the background information were placed at the beginning of the survey to establish the feeling of trust between the researcher and the survey participants (Andrews, Nonnecke, and Preece 2003).

In the first part of the survey, students were asked questions related to their background, namely, their age and gender. These data are not shown here, but the sample of respondents followed the age and gender structure of the class.

The second part included ten Likert-scale statements that students were to evaluate on a scale from 1 to 7 (1–"completely disagree" and 7–"completely agree"). Four of the Likert-scale questions in the survey refer to cognitive engagement, three refer to emotional engagement, and three refer to behavioral engagement. Likert-scale questions 3, 4, and 8 involve an explicit comparison between a traditional PowerPoint presentation and a video project involving a tight collaborative learning process to produce the final product. In addition, the students were asked if they were more confident using English in their video projects than in face-to-face classroom presentations.

Finally, the third part included open questions for students to reflect on:

1. What did you like about the video project (most)?
2. What were the things you didn't like about it?
3. What would you change to make the task more engaging?
4. Do you have any other suggestions?

Open questions allow collecting alternatives implications of the video project related to asynchronicity (i.e., allowing more than one students to be able to work at the same time in the project from different geographical locations thanks to technology and the internet) and feedback on how to make the collaborative tasks more engaging. In the third open question, students were provided with a list of six options (i.e., more time to prepare the video, more guidance on the use of technology, clearer instructions on the task, work in smaller groups, work in larger groups, an assigned leader for each group), and they were allowed to mark as many options as they wanted to. Questions 1, 2, and 4 in this section were open field questions.

Table 1 shows the Likert-scale questions of the alpha and beta study. Each of the questions was aimed to measure one of the three types of student engagement (i.e., behavioral, cognitive, and emotional). The types of engagement are closely interrelated. However, for the purposes of the analysis and discussion, the authors of the paper have discussed and agreed on the key type that was intended to be measured by each of the items.

1. **Cognitive engagement** (questions 2, 3, 6, 10). These questions focused on students having the opportunity to improve their understanding of the subject, which can be achieved by presenting learning material in a different format than text (Q2) and discussing different perspectives on the subject openly (Q3). In addition, following a script is meant to help students avoid extra coordination efforts, allowing them to invest their effort in the learning task itself (Q6). Being able to access the project space from anywhere and anytime is also assumed to open up for more opportunities for the students to bring a contribution in the project if compared to scheduled face-to-face sessions (Q10).

Table 1. Likert-scale questions in the alpha and the beta study (in the same order these were presented to the students in the survey)

#	Question (alpha study in a Nordic University)	Question (beta study in a South European University)	Type of engagement
1	I enjoyed collaborating with classmates on the video project	*I didnĺ enjoy collaborating on the video project with classmates*	Emotional
2	It will be easy for me to revise this topic with the videos when I prepare for the final exam	It will be easy for me to revise this topic with the videos when I prepare for the final exam	Cognitive
3	I was more confident to share my opinions in the video than in the face-to-face presentations	*I was more confident to share my opinions in the face-to-face (PowerPoint) presentations than in the video*	Cognitive
4	It was more interesting to prepare the video than a usual PowerPoint presentation	*It was more interesting to prepare the PowerPoint presentation than the video*	Emotional
5	I like to have access to my classmates' videos on Canvas	I like to have access to my classmates' videos on the Blackboard web page	Behavioral
6	Multiple steps (form group; idea; script; final video) made it easier for me to accomplish the project	Multiple steps (form group; idea; script; final video) made it easier for me to accomplish the project	Cognitive
7	WeVideo is good to support team projects	The software we used to create the video is good to support team projects	Behavioral
8	The video project allowed more creativity than a PowerPoint presentation	*The PowerPoint presentation allowed more creativity than a video project*	Behavioral
9	I like to have the video as an output of my work	*I don't like to have the video as an output of my work*	Emotional
10	It made it easier for me to work on the task in WeVideo because I could access it from anywhere at anytime	–	Cognitive

Note: See in italics survey questions that were modified for the beta study following the suggestions of one of the reviewers. Question 10 was eliminated in the beta study because WeVideo was not mandatory.

2. **Emotional engagement** (questions 1, 4, 9). These questions directly attend to the emotional dimension of engagement, that is, whether the students experienced positive feelings and satisfaction with the learning experience. Students were asked whether they enjoyed collaborating with classmates (Q1) and whether they found the digital storytelling activity more interesting than a traditional PowerPoint presentation (Q4). In addition, they were asked whether having a video as a final product of their work was a satisfying experience (Q9).
3. **Behavioral engagement** (questions 5, 7, 8). These questions attend to the issues that directly affect the students' initiating learning episodes. For example, having easy access to the learning materials is meant for the students to utilize those materials more frequently (Q5). The same goes for the use of the technology—easy access to the project space and the opportunity to contribute are expected to result in students initiating the activity more frequently (Q7). Finally, opening up for more alternative ways to address the task is expected to involve students in the learning activity more easily (Q8).

The survey questions in the alpha study are short, simple, and formulated as positive statements. Statements in a positively structured survey aim to prevent

respondent inattention and confusion (Converse and Presser 1986). However, this might guide the respondents to answer positively on every statement (see Choi and Pak 2005). Having positive statements might increase the acquiescence bias if the respondents tend to agree with most statements in the Likert-scale questionnaire (Van Sonderen, Sanderman, Coyne 2013). To reduce the acquiescent response bias one might include a mix of positively and negatively worded statements in the questionnaire to force students to have a mix of agreements and disagreements. Nevertheless, Qasem and Gul (2014) along with Lewis and Sauro (2009) and Solís Salazar (2015) showed evidence that this strategy of combining positively and negatively worded statements creates problems of criterion-related validity, lowers the internal reliability of the study, and distort the factor structure/construction of the data set.

Originally, this research was conceived as a single case study with positively stated questions. Nonetheless, following comments and suggestions from a blind reviewers, the original study was replicated modifying five of the survey questions either by rewording as negative statements or by switching the comparison made in the statement. This allowed confirming if the impact of the digital storytelling project on student engagement is artificial due to acquiescent response bias or not.

Data Analysis

Due to a small number of respondents in the alpha and beta study, the aim of the analysis was not to draw statistical generalizations, but instead, focus on a more analytical approach. The results are shown on average for each sample of students in the Nordic and South European University. Nonetheless, the results must be interpreted with caution and a number of limitations should be borne in mind. Thus, local factors may have influenced the results. With a small population size (i.e., forty students), the sample size should be thirty-seven students to be able to have a 95 percent confidence interval and a margin of error of 5 percent. With the twenty-two respondents in the original study, the margin of error increases to 15 percent. The lack of a control group, due to ethical reasons for having different evaluation criteria for students in the same course, and of a randomized sample imply the inability to generalize the research findings. Future research could overcome these limitations easily if the research is conducted in several sections of the course. For example, a professor teaching international relations to three different groups might use a control group along with two treatment groups with two different treatments (i.e., a video project and a traditional PowerPoint presentation). By default, more groups would also translate to a bigger population and the issues with the sample size would be reduced, although not completely resolved if most students do not participate as respondents in the survey.

The second part of the survey (i.e., Likert-scale questions) was used to obtain an aggregated view of students' perceptions of the digital storytelling project. The third part of the survey was approached with a more qualitative perspective. Quotes from student responses are included in the Results and Discussion sections of the paper. Quotations are coded with a combination of the respondent number and the university of origin (e.g., R01N is the first respondent from the alpha study at the Nordic University).

Results

Likert-Scale Questions

Table 2 presents the descriptive statistics and study students' responses to the second part of the survey in the alpha and beta studies. In sum, the digital storytelling project had positive effects on the three types of student engagement (hypothesis

Table 2. Descriptive statistics of alpha and beta studies

Alpha study										
	I enjoyed collaborating with classmates on the video project	It will be easy for me to revise this topic with the videos when I prepare for the final exam	I was more confident to share my opinions in the video than in the face-to-face presentations	It was more interesting to prepare the video than a usual PowerPoint presentation	I like to have access to my classmates' videos on Canvas	It made it easier for me to work on the task in WeVideo because I could access it from anywhere at anytime	Multiple steps (form group; idea; script; final video) made it easier for me to accomplish the project	WeVideo is good to support team projects	The video project allowed more creativity than a PowerPoint presentation	I like to have the video as an output of my work
Mean	5.91	5.32	4.73	5.45	6.64	5.27	5.95	4.86	6.23	4.82
Median	6.00	5.00	5.00	6.00	7.00	6.00	7.00	5.00	6.50	5.00
Standard deviation	1.15	1.32	2.10	1.84	0.79	1.72	1.62	1.39	0.97	1.89
N	22	22	22	22	22	22	22	22	22	22
Beta study	(Scorings of statements 1, 3, 4, 8, and 9 are reversed for comparability purposes with the alpha study)									
	I didn't enjoy collaborating on the video project with classmates	It will be easy for me to revise this topic with the videos when I prepare for the final exam	I was more confident to share my opinions in the face-to-face (PowerPoint) presentations than in the video	It was more interesting to prepare the PowerPoint presentation than the video	I like to have access to my classmates videos on the IE Blackboard webpage	Multiple steps (form group; idea; script; final video) made it easier for me to accomplish the project	The software we used to create the video is good to support team projects	The PowerPoint presentation allowed more creativity than a video project	I dońt like to have the video as an output of my work	
Mean	6.00	3.33	4.29	4.57	5.76	6.05	5.19	5.19	5.52	
Median	6.00	3.00	4.00	5.00	6.00	7.00	5.00	5.00	6.00	
Standard deviation	1.38	1.49	1.68	1.80	1.09	1.50	1.63	1.33	1.66	
N	21	21	21	21	21	21	21	21	21	

confirmed, although as previously mentioned, the readers must recognize the limitations of a small-*n* study).

Over 54 percent of the sample responded "completely agree," "mostly agree," or "somewhat agree" on all ten survey questions in the alpha study. The average scores on the statements related to the emotional engagement was 5.4 out of 7, while those related to the cognitive and behavioral engagement received an average score of 5.6 (i.e., on average, students somewhat agree that the video project had a positive effect on their emotional engagement and mostly agree on the positive effects on the cognitive and behavioral engagement).

These results from the Nordic University are confirmed in the beta study at a South European University. After paraphrasing five of the statements, on average, the video project had positive effects on the three types of student engagement (in contrast to the alpha study, average scores are not presented in this case because of the mix of positively and negatively stated questions).

The number of students that somewhat, mostly, or completely agree to the four statements that were repeated identically (questions 2, 5, 6 and 7 in table 1) remained above 60 percent in both studies (78.4 percent in the alpha study and 64.3 percent in the beta study). To control and confirm the potential acquiescence bias in the alpha study by having all positively stated questions, we decided to paraphrase five of the survey questions to negatively stated questions in the beta study (questions 1, 3, 4, 8, and 9 in table 1). Seventy-four percent of the students in the alpha study somewhat, mostly, or completely agree to the five statements, while 68.6 percent of students in the beta study answered "completely disagree," "mostly disagree," or "somewhat disagree" to negatively stated questions. In sum, both sets of questions—the identical questions and the ones changed to negative statements—demonstrated a reduction in the share of students agreeing on the positive impact of collaborative storytelling projects. However, this reduction was smaller in the negatively stated questions than in the positively stated questions. Therefore, not only the impact of the storytelling project remained significantly relevant for student engagement when using negative statements, but also these results do not appear to be a consequence of the acquiescence bias (See table 3).

The standard deviation scores in table 2 indicate a relatively low variation (coefficient of variation < 1), indicating that student scores are consistent through the sample and do not spread above and below the mean. Readers should be careful when interpreting the negatively stated questions in the beta study, as scorings of statements 1, 3, 4, 8, and 9 are reversed for comparability purposes with the alpha study. Therefore, these five statements should be read with the statements in the alpha study.

Fourteen students in the alpha study made their video projects in English and the remaining in Spanish as it was allowed in the Latin American Studies class. In contrast, all students in the beta study made their videos in English as it was mandatory. Twenty-nine percent of respondents felt more confident to use English in the videos than in the face-to-face presentation in both the alpha and beta study, whereas 64 percent felt the same about both in the alpha study and 62 percent felt the same way about both in the beta study. While these results do not seem illustrative, students' responses to the open-ended questions demonstrate that the video project was a useful tool to avoid the stress related to face-to-face presentations.

- **R07.N**: I don't like to stand in front of people, talking, so for me a movie was a better solution than an oral PowerPoint presentation.
- **R19.N**: It was a good way to start the year, working in groups but without the nerves you have before a presentation!
- **R09.SE:** I came to class with everything done and could pay more attention to the videos because I wasn't nervous about presenting.

Table 3. Comparative overview of responses: Identical versus paraphrased questions in alpha and beta study

Identical questions in both studies					
Alpha study	*N* (somewhat, mostly or completely agree)	Percent (somewhat, mostly or completely agree)	Beta study	*N* (somewhat, mostly or completely agree)	Percent (somewhat, mostly or completely agree)
WeVideo is good to support team projects	13	59.09 percent	The software we used to create the video is good to support team projects	15	71.43 percent
I like to have access to my classmates' videos on Canvas	21	95.45 percent	I like to have access to my classmates' videos on the Blackboard webpage	17	80.95 percent
Multiple steps (form group; idea; script; final video) made it easier for me to accomplish the project	18	81.82 percent	Multiple steps (form group; idea; script; final video) made it easier for me to accomplish the project	18	85.71 percent
It will be easy for me to revise this topic with the videos when I prepare for the final exam	17	77.27 percent	It will be easy for me to revise this topic with the videos when I prepare for the final exam	4	19.05 percent
Average		**78.41** percent			**64.29** percent
Questions changed as negatively stated statements in the beta study					
Alpha study	*N* (somewhat, mostly or completely agree)	Percent (somewhat, mostly or completely agree)	Beta study	*N* (somewhat, mostly or completely disagree)	Percent (somewhat, mostly or completely disagree)
The video project allowed more creativity than a PowerPoint presentation	20	90.91 percent	The PowerPoint presentation allowed more creativity than a video project	15	71.43 percent
I was more confident to share my opinions in the video than in the face-to-face presentations	12	54.55 percent	I was more confident to share my opinions in the face-to-face (PowerPoint) presentations than in the video	10	47.62 percent
I like to have the video as an output of my work	14	63.64 percent	I don't like to have the video as an output of my work	14	66.67 percent
It was more interesting to prepare the video than a usual PowerPoint presentation	17	77.27 percent	It was more interesting to prepare the PowerPoint presentation than the video	13	61.90 percent
I enjoyed collaborating with classmates on the video project	19	86.36 percent	I didn't enjoy collaborating on the video project with classmates	20	95.24 percent
Average		**74.55** percent			**68.57** percent

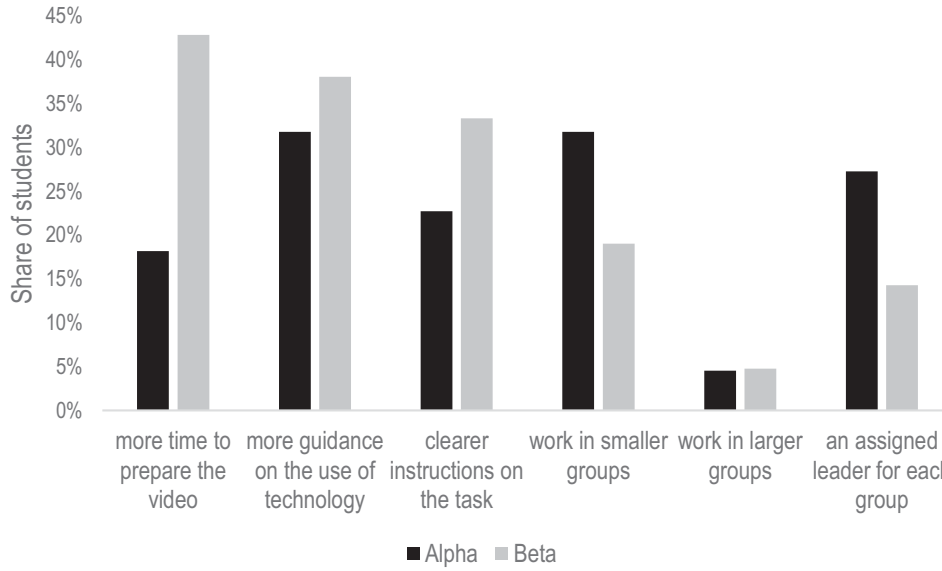

Figure 2. What would you change to make the task more engaging?

The results shown in the open-ended questions go in line with earlier research. As learning experience using video projects occurs in a less hostile environment, it contributes to increasing learners' self-confidence (Ting 2013). It also goes in line with the perspectives presented in a recent meta-analysis on digital storytelling (Wu and Chen 2020), suggesting that this activity may be helpful in overcoming language difficulties, as the focus is switched from the mechanical aspect of language to generation of ideas and orchestrating meanings of various formats.

Open-Ended Questions

Students' reflections in the open-ended questions show the aspects of the assignments they liked the most and the least. Creativity and fun were the two aspects most frequently highlighted by students in the alpha study as positive aspects. More than a third of the respondents mentioned these two traits directly in their responses. Majority of the students in the beta study highlighted creativity and innovation as the two things they like the most about the video projects.

One negative aspect of the assignment stood out above the others in both studies. The most popular response in the alpha and beta studies relates to the "inconvenience" of learning new software and the video-editing process rather than investing that time in learning new material and conducting the research for the task. Students in the beta study also mentioned they did not like their group because of issues concerning the division of labor and the presence of "free riders." These results are discussed in more detail from the perspective of students' cognitive engagement in section "Cognitive Engagement".

Students were asked to choose from the list of six options what they would like to change to make the assignment more engaging (as many options as they want, but at least one). The top three suggestions in the alpha study (with over a quarter of respondents in each one) are having more guidance on the use of technology, working in smaller groups, and having an assigned leader for each of the groups (see black bar in figure 2). These results are in line with the top responses the participants mentioned in the open-ended questions when asked about the things they did not like about the video project.

The gray bar in figure 2 shows the results of the same multiple-choice question, but in the beta study at a South European University. The same multiple-choice question was used as a measure to keep the study as close as the original one. More guidance on the use of technology was the only option to appear in the top three in both the studies. Forty-three percent of the students considered that they needed more time to prepare the video, and a third of respondents would have liked to have clearer instructions on the task. Students in the original study had fifty-six days to prepare the video project, while students in the replication study only had thirty-two days; this was due to a shorter teaching term in the South European University. This might explain why this option was not considered in the alpha study, while it was the top suggestion to modify in the beta study.

Finally, the last open-ended question was the only voluntary question. When asked for any other suggestions, only a third of the sample responded in the alpha study and 18 percent in the beta study. The most popular response in the alpha study suggested increasing the weight of the assignment in the final grade. Based on this suggestion, the two collaborative tasks were included as part of the grade in the beta study. The remaining suggestions in the alpha study were to be able to use the full version of the WeVideo software, to allow students to work individually on the task, and to show more examples of video projects that could serve as a model for students. In the beta study, respondents were concerned with the groups, suggested having discussants assigned to the videos when showing them in class, and requested more time. The fifth section of the paper provides more discussion around some of these aspects from the point of view of student engagement.

- **R06.N**: It's already creative enough to create a video in our project, but it will be better to put a mark on our result to build the motivation in the making of the video.
- **R04.SE**: I know time is a limitation, but making people create groups from the start wasn't very efficient since we really didn't know each other. The video project is a good idea, but maybe sharing the script to all students can be helpful to follow along. Also, do the same thing we did with the PowerPoint presentations of having one group assigned another group to ask questions to.

Discussion

In this section, each of the engagement types is discussed in more detail. The section also offers a discussion on how the assignment could be potentially improved based on student survey responses. Student quotes are included to support the discussion.

Behavioral Engagement

From the point of view of behavioral engagement, the digital storytelling project opened up for more creative ways to approach the task. In addition, the chosen online video editor was a good support for the team project. Finally, the results of the video project were made easily accessible on the LMS, and students appreciated having easy access to the work of their peers.

Earlier research demonstrates that students prefer to use online search engines for learning material instead of looking for resources in the library (McCoy 2011). Results of this research go in line with that, suggesting that opening up for more alternative ways to contribute to the task makes it easier for the students to initiate the learning episode. When asked about what they like about the storytelling project, the students mentioned:

- **R17.N:** [The video project] allowed us to try teamwork in another way than the usual PowerPoint.
- **R06.SE**: The possibility of being creative (e.g., adding testimonies of people)
- **R18.SE:** The synergy of the group and the fact that each one of us had their own role. I personally really enjoyed making the video. I like the fact that we had a new way of presenting, though it was challenging.
- **R21.SE**: It was an interesting and original way to express our opinions. Through this format, we have way more instruments to use such as music, subtitles, videos, which we can use in order to communicate emotions, and it is always the best way to make people pay attention to what you are presenting (. . .). Moreover, the fact that you give us the chance to choose our topic was great because everyone has chosen a subject that they like which necessarily makes them more involved in the project.

At the same time, using the free version of software also resulted in some challenges, which potentially could impede students' behavioral engagement in the task:

- **R22.N**: The WeVideo doesn't allow us to collaborate with other members of the group if we use the free version. My group had problems when one member made changes while another one was logged in, so the changes were not saved.

Emotional Engagement

From the perspective of emotional engagement, students enjoyed preparing the digital storytelling project overall and considered this assignment more interesting than the face-to-face presentation. It was also rewarding for the students to have a video as the final output of their work. The students mostly had positive experiences of working with their classmates. However, as mentioned in section "Open-Ended Questions," some students had some negative experiences as well, such as free riding. These are addressed directly in section "Cognitive Engagement".

According to students' perceptions, this task was different from what they have done before in school or previous courses at the university:

- **R12.N**: I liked collaborating with the other members of the group. I liked investigating the chosen topic and learning more about it. Having a video project also allows for more creativity, which is fun.
- **R16.N**: I liked to learn how to work with the software and actually make a video which I couldn't before this task.
- **R05.SE**: Different way of presenting a project, it is innovative as well as more fun to create.

While educational technology may have a positive impact on learners' motivational engagement (Ang and Wang 2006), the implementation of educational technology in the learning process has always to be grounded in a solid pedagogical justification (Ang and Wang 2006); otherwise, it may become a source of distraction or confusion for the learners. For example, Wu and Chen (2020) warn about the "novelty effect" that might affect research results in studies implementing novel technology in the classroom. When novel technology is introduced in the classroom, students may increase their attention and effort in response. Such a "novelty effect" might be causing positive outcomes in student engagement. Therefore, longitudinal studies should be considered to confirm that the combination of collaboration with technology in the learning process is the factors behind the increase in student engagement and not the "novelty effect."

Cognitive Engagement

Finally, the video assignment demonstrated to be beneficial for students' cognitive engagement as it allowed them to express their opinions more confidently thus acknowledging more alternative perspectives. Moreover, the students in the alpha study considered the digital storytelling project as a resourceful output for preparing for the final exam.

The video format also allowed students to craft the expression of their thoughts and ideas more carefully. The digital storytelling project was seen as less stressful than the face-to-face presentation. This may be an especially important aspect in the context of a multicultural learning environment. When asked about what they like about the storytelling project, the students mentioned:

- **R18.N**: We can describe the topic more closely because during the presentation it can happen that because of the stress, our explanation is not so understandable and sometimes some important things are forgotten.
- **R06.SE**: The degree of attention people exercised toward a video (more than a presentation)
- **R20.SE**: Learning about new topics from the point of views of my colleagues and classmates.

Working on the task step-by-step made it easier for the students to accomplish the project successfully. As discussed in the second section, effective collaboration may happen spontaneously, but usually, this does not happen (Strijbos, Martens, and Jochems 2004). In case of this digital storytelling project, splitting the assignment into several steps and providing students with feedback after each step resulted in increased student engagement. Thus, it can be concluded that in general this script helped students coordinate their efforts and pay the focus to the learning assignment instead of coordination and management activities.

Yet, clearer instructions on the task was a popular suggestion from the students to improve the assignment. This suggests that having a more elaborated step-by-step guidance would be beneficial. The lecturer provided instructions on the video project during the first day of class and afterward in a workshop (1.5 hours in the alpha study and 45 minutes in the beta study). Instructions were also available in the LMS. As attendance to the lectures was not mandatory in the Nordic University, making an explanatory video available to everyone in the LMS with visuals and clearer instructions could help solve this limitation. Making a list of relevant potential research topics could facilitate developing the project idea (i.e., step 2). Making a storyboard in class or recording one to make it available online could expedite the planning process as students would be able to fully exploit the benefits of previsualizing the video project as a set of images, videos, ideas, and scripts. Finally, providing examples of storytelling videos made by peers in other universities, as some respondents suggested in the survey responses, could give students ideas on the topics to research and animation techniques to deliver their story. Another alternative would be to invite experts on storytelling and the video-making software and organize a longer workshop.

Some student responses to the open-ended questions indicate that more micro-scripting (i.e., scripting the processes within the small group) would be beneficial as well. Students from the alpha study believed that working in smaller groups and assigning a group leader would be beneficial. Students from the beta study reported some free-riding group members and believed that a more detailed task instruction would be beneficial. Earlier research found that students believe an assigned leader would contribute to the dynamics of the group processes (Lazareva 2017). Moreover, there have been studies reporting on positive results for student learning

outcomes when different roles were assigned in a group (Olesova, Slavin, and Lim 2016).

- **R12.N**: I prefer working alone, because many times I have done my part of the work, and the other members haven't. And that leads to me "wasting my time" waiting for them to finish their part. I think it would've taken less time if I worked alone.
- **R21.SE**: I think even if everyone has to work on the script . . . it still is just one person who works on the video editing, and if others think it is not a lot, in fact, it is.

As mentioned in section "Open-Ended Questions", students expressed concern regarding the need to invest time in mastering the software instead of focusing on the task right away. That could potentially impede students' cognitive engagement when it comes to the subject of the learning task itself.

- **R11.N**: I found that the editing took a lot of time that could have been used to improve the content.
- **R19.N**: Well, learning the new program and organizing the video takes time! So, a lot of the focus and time goes to that and not studying and researching.

It should also be mentioned that in the alpha study, the students' videos were made available online but not discussed in class. These students reflected that they would like to watch the videos in class to be able to discuss the arguments and the process of video making. This goes in line with research on digital storytelling which argues that showing the video outputs to peers is a critical and essential part of the learning process in a collaborative video project, as it enables "a safe and empowering space for cross-cultural collaboration and learning" in the classroom (Benmayor 2008, 188). Following this suggestion, a session to watch and discuss the videos and its content was assigned for the beta study. Students enjoyed watching the videos in class, asked questions to their peers on the cases being presented, practiced the role of being a discussant, and it allowed the lecturer to deepen concepts and theories.

The final point worth mentioning is the nature of group composition. Earlier research has demonstrated that random group assignment contributes to more "knowledge spillovers" outside the group than self-selected student groups that normally are based on friendships and similar cultural background (Rienties, Alcott, and Jindal-Snape 2014). Thus, random group assignment could potentially contribute more to the cognitive engagement of the students.

Conclusion

The present study reports on a positive experience of implementing a collaborative digital storytelling video project in a Latin American Studies class and in an Introduction to Political Science class. Student insights were collected through an online survey, and the results demonstrate that the task had a positive impact on students' behavioral, emotional, and cognitive engagement.

The digital storytelling project offered students various alternative ways to approach the task, thus contributing to their behavioral engagement. The software, in general, offered good support for team projects. The participants also appreciated having easy access to their peers' work. Students' emotional engagement was also supported, as they had mainly positive experiences working with their peers, found the project assignment fun, and enjoyed working on it more than on a more common PowerPoint presentation format. Finally, the digital storytelling project had a positive impact on students' cognitive engagement as they felt they could express their perspectives more confidently. Working on a video made them work more on

crafting their thoughts carefully and comprehensively. At the same time, this work was perceived as much less stressful than doing a presentation in front of the class.

An important part of the assignment was a step-by-step guidance from the instructor with feedback after each of the checkpoints. This allowed students to focus on the learning assignment instead of putting the effort into the management and organization issues.

At the same time, the student insights also shed light on the aspects of the task that could be improved. More guidance on the use of technology was pointed out by many of the respondents. This aspect is crucial, as putting the effort into learning the new software may impede students' cognitive engagement in the actual content of the task. Student insights also suggest that scripting the processes on a micro-level (i.e., within the small group) could also be beneficial. Assigning the leader along with other specified roles could help students avoid such negative group effects as free riding or lurking.

Thus, a number of practical recommendations for the implementation of a digital storytelling project can be formulated on the basis of this research: (1) thorough initial guidance on the use of technology, (2) random assignment of students into relatively small groups with an assigned leader and other roles if relevant, (3) division of the project into several checkpoint tasks with step-by-step guidance (i.e., script) provided to students and formative feedback after each step, ensuring adequate time is given to students in each step, and (4) demonstration of the final video products in class to make it possible for the students to discuss and reflect.

This research provides an exploratory thesis that needs further research. Storytelling combined with group work and technology has shown to improve student engagement in this study. Replication of research results in other settings (e.g., discipline-oriented courses, other countries) is needed. Experimental research could confirm the impact of scripting processes within the small groups (e.g., role assignment) on student engagement. Also, further research could incorporate a focus group session to delve more into the potential effects of the digital storytelling task on student engagement and obtain data for further qualitative analysis. Importantly, future research should also look into the effects of the digital storytelling activity on students' learning outcomes, for example, by evaluating the quality of students' line of reasoning in the exam essays and comparing the results with the control group following a more common frontal presentation format. Investigating the learning outcomes in terms of collaboration skills and digital literacy would also be valuable.

There are multiple definitions of twenty-first century skills, which make it difficult to clearly enumerate them. As mentioned in the Introduction section, twenty-first century skills often include the ability to communicate and collaborate, find and critically evaluate information, interpret messages from a global perspective, and, importantly, the ability to use technology to improve learning and performance (Robin 2008). The results discussed in this paper demonstrate that a collaborative digital storytelling project covers multiple components of the twenty-first century skill set and has an immense potential to contribute to their development in university students in an engaging way.

Supplementary Information

Supplementary information is available at the *ISAISP* data archive.

Acknowledgments

The authors would like to thank the students at the Nordic and South European Universities for their active participation in this project. They also thank four anonymous reviewers and participants of the workshop "Beyond Descriptions and Good

Practices: Empirical Effects of Active Learning Environments on Political Science Students' Learning Outcomes" in the 2018 ECPR Joint Sessions, who provided much appreciated comments on earlier drafts of this manuscript. The authors acknowledge the support of the publication fee by the CSIC Open Access Publication Support Initiative through its Unit of Information Resources for Research (URICI). Shortcomings, of course, remain our responsibility.

References

Adefila, A., J. Opie, S. Ball, and P. Bluteau. 2020. "Students' Engagement and Learning Experiences Using Virtual Patient Simulation in a Computer Supported Collaborative Learning Environment." *Innovations in Education and Teaching International* 57 (1): 50–61.

Andrews, D., B. Nonnecke, and J. Preece. 2003. "Conducting Research on the Internet: Online Survey Design, Development and Implementation Guidelines." *International Journal of Human-Computer Interaction* 16: 185–210.

Ang, K.H., and Q. Wang. 2006. "A Case Study of Engaging Primary School Students in Learning Science by Using Active Worlds." In R. Philip, A. Voerman, & J. Dalziel (Eds.), Proceedings of the first international LAMS conference 2006: Designing the Future of Learning, 6–8 December 2006 (pp. 5–14). Sydney: LAMS Foundation.

Barrett, H. 2006. "Researching and Evaluating Digital Storytelling as a Deep Learning Tool." In Society for Information Technology & Teacher Education International Conference, 647–54, Association for the Advancement of Computing in Education (AACE).

Benmayor, R. 2008. "Digital Storytelling as a Signature Pedagogy for the New Humanities." *Arts and Humanities in Higher Education* 7: 188–204.

Bowen, C.W. 2000. "A Quantitative Literature Review of Cooperative Learning Effects on High School and College Chemistry Achievement." *Journal of Chemical Education* 77 (1): 116.

Choi, B.C.K., and A.W.P. Pak. 2005. "Peer Reviewed: A Catalog of Biases in Questionnaires." *Preventing Chronic Disease* 2 (1): 1–13.

Converse,, J.M., and S. Presser. 1986. *Survey Questions: Handcrafting the Standardized Questionnaire*. London: Sage Publications.

Dillenbourg, P. 1999. "What Do You Mean by Collaborative Learning?" In *Collaborative-Learning: Cognitive and Computational Approaches*, edited by P. Dillenbourg, 1–19. Oxford: Elsevier.

———. 2002. "Over-scripting CSCL: The Risks of Blending Collaborative Learning with Instructional Design." In *Three worlds of CSCL: Can We Support CSCL?*, edited by P. A. Kirschner, 61–91. Heerlen: Open Universiteit Nederland.

Dillenbourg, P., S. Järvelä, and F. Fischer. 2009. "The Evolution of Research on Computer-Supported Collaborative Learning: From Design to Orchestration." In *Technology-Enhanced Learning: Principles and Products*, edited by N. Balacheff, S. Ludvigsen, T. de Jong, A. Lazonder and S. Barnes, 3–19. Dordrecht: Springer.

Field, A. 2018. *Discovering Statistics Using IBM SPSS Statistics*. London: Sage.

Fredricks, J.A., P.C. Blumenfeld, and A.H. Paris. 2004. "School Engagement: Potential of the Concept, State of the Evidence." *Review of Educational Research* 74 (1): 59–109.

Fu, Q.K., and G.J. Hwang. 2018. "Trends in Mobile Technology-Supported Collaborative Learning: A Systematic Review of Journal Publications from 2007 to 2016." *Computers & Education* 119: 129–43.

Hafner, C.A., and L. Miller. 2011. "Fostering Learner Autonomy in English for Science: A Collaborative Digital Video Project in a Technological Learning Environment." *Language Learning & Technology: A Refereed Journal for Second and Foreign Language Educators* 15 (3): 68–86.

Häkkinen, P., S. Järvelä, K. Mäkitalo-Siegl, A. Ahonen, P. Näykki, and T. Valtonen. 2017. "Preparing Teacher–Students for Twenty-First-Century Learning Practices (PREP 21): A Framework for Enhancing Collaborative Problem-Solving and Strategic Learning Skills." *Teachers and Teaching* 23 (1): 25–41.

Ito, M., Kris Gutierrez, Sonia Livingstone, Bill Penuel, Jean Rhodes, Katie Salen, Juliet Schor, Julian Sefton-Green, and S. Craig Watkins. 2013. *Connected Learning: An Agenda for Research and Design*. Irvine, CA: Digital Media and Learning Research Hub.

Järvelä, S., and K.A. Renninger. 2014. "Designing for Learning: Engagement, Interest, and Motivation." In *The Cambridge Handbook of the Learning Sciences*, 2nd ed., edited by K. Sawyer. Cambridge: Cambridge University Press.

JEONG, H., AND C.E. HMELO-SILVER. 2016. "Seven Affordances of Computer-Supported Collaborative Learning: How to Support Collaborative Learning? How Can Technologies Help." *Educational Psychologist* 51: 247–65.

JOHNSON, D.W., AND R.T. JOHNSON. 2009. An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning." *Educational researcher* 38 (5): 365–79.

KOBBE, L., A. WEINBERGER, P. DILLENBOURG, A. HARRER, R. HÄMÄLÄINEN, P. HÄKKINEN, AND F. FISCHER. 2007. Specifying Computer-Supported Collaboration Scripts." *Computer-Supported Collaborative Learning* 2: 211–24.

KOLLAR, I., F. FISCHER, AND J.D. SLOTTA. 2007. "Internal and External Scripts in Computer-Supported Collaborative Inquiry Learning." *Learning and Instruction* 17: 708–21.

KOTLUK, N., AND S. KOCAKAYA. 2017. "The Effect of Creating Digital Storytelling on Secondary School Students' Academic Achievement, Self Efficacy Perceptions and Attitudes toward Physics." *International Journal of Research in Education and Science* 3 (1): 218–27.

KYNDT, E., E. RAES, B. LISMONT, F. TIMMERS, E. CASCALLAR, AND F. DOCHY. 2013. "A Meta-Analysis of the Effects of Face-to-Face Cooperative Learning. Do Recent Studies Falsify or Verify Earlier Findings." *Educational Research Review* 10: 133–49.

LAZAREVA, A. 2017. "Facilitating Synchronous Collaborative Writing with a Collaboration Script." In *Information Systems Development: Advances in Methods, Tools and Management (ISD2017 Proceedings)*, edited by N. Paspallis, M. Raspopoulos, C. Barry, M. Lang, H. Linger and C. Schneider. Larnaca: University of Central Lancashire Cyprus.

LEWIS, J.R., AND J. SAURO. 2009. "The Factor Structure of the System Usability Scale." In *Human Centered Design, HCII 2009*, edited by M. Kurosu, 94–103. Berlin: Springer-Verlag. - Luis M. Lozano.

LIETZ, P. 2010. "Research into Questionnaire Design." *International Journal of Market Research* 52 (2): 249–72.

LINDQUIST, T., AND H. LONG. 2011. "How Can Educational Technology Facilitate Student Engagement with Online Primary Sources? A User Needs Assessment." *Library Hi Tech* 29 (2): 224–41.

MCCOY, S. 2011. "Pedagogic Truth in the Age of YouTube." *Journal of Singing* 67 (5): 549–50.

NEWMANN, F., G.G. WEHLAGE, AND S.D. LAMBORN. 1992. "The Significance and Sources of Student Engagement." In *Student Engagement and Achievement in American Secondary Schools*, edited by F. Newmann, 11–39. New York: Teachers College Press.

NIEMI, H., AND J. MULTISILTA. 2016. "Digital Storytelling Promoting Twenty-First Century Skills and Student Engagement." *Technology, Pedagogy and Education* 25 (4): 451–68.

NUNNALLY, J.C. 1978. *Psychometric Theory*, 2nd ed. New York: McGraw-Hill.

OLESOVA, L., M. SLAVIN, AND J. LIM 2016. "Exploring the Effect of Scripted Roles on Cognitive Presence in Asynchronous Online Discussions." *Online Learning* 20 (4): 34–53.

QASEM, N., AND A. GUL. 2014. "Effect of Items Direction (Positive or Negative) on the Factorial Construction and Criterion Related Validity in Likert Scale." *Khazar Journal of Humanities and Social Sciences* 17 (3): 77–84.

QIN, Z., D.W. JOHNSON, AND R.T. JOHNSON. 1995. "Cooperative versus Competitive Efforts and Problem Solving." *Review of educational Research* 65 (2): 129–43.

POPOV, V., H.J. BIEMANS, A.N. KUZNETSOV, AND M. MULDER. 2014. "Use of an Interculturally Enriched Collaboration Script in Computer-Supported Collaborative Learning in Higher Education." *Technology, Pedagogy and Education* 23: 349–74.

RESCHLY, A.L., AND S.L. CHRISTENSON. 2012. "Jingle, Jangle, and Conceptual Haziness: Evolution and Future Directions of the Engagement Construct." In *Handbook of Research on Student Engagement*, edited by S.L. Christenson, A.L. Reschly and C. Wylie, 3–19. New York: Springer.

RESTA, P., AND T. LAFERRIÈRE. 2007. "Technology in Support of Collaborative Learning." *Educational Psychology Review* 19: 65–83.

RIENTIES, B., P. ALCOTT, AND D. JINDAL-SNAPE. 2014. "To Let Students Self-Select or Not: That is the Question for Teachers of Culturally Diverse Groups." *Journal of Studies in International Education* 18 (1): 64–83.

ROBIN, B.R. 2008. "Digital Storytelling: A Powerful Technology Tool for the 21st Century Classroom." *Theory into Practice* 47 (3): 220–28.

———. 2016. "The Power of Digital Storytelling to Support Teaching and Learning." *Digital Education Review* 30: 17–29.

ROSCHELLE, J., AND S.D. TEASLEY. 1995. "The Construction of Shared Knowledge in Collaborative Problem Solving." In *Computer Supported Collaborative Learning*, edited by C. O'Malley. 69–97. Berlin: Springer.

RUMMEL, N., AND H. SPADA. 2005. "Learning to Collaborative: An Instructional Approach to Promoting Collaborative Problem Solving in Computer-Mediated Settings." *Journal of the Learning Sciences* 14: 201–41.

Skinner, E.A., and J.R. Pitzer. 2012. "Developmental Dynamics of Student Engagement, Coping, and Everyday Resilience." In *Handbook of Research on Student Engagement*, edited by S. Christenson, A. Reschly and C. Wylie, 21–44. Boston, MA: Springer.

Solís Salazar, M. 2015. "The Dilemma of Combining Positive and Negative Items in Scales." *Psicothema* 27 (2): 192–99.

Stahl, G., T. Koschmann, and D. Suthers. 2006. "Computer-Supported Collaborative Learning: An Historical Perspective." In *Cambridge Handbook of the Learning Sciences*, edited by R.K. Sawyer, 409–26. Cambridge: Cambridge University Press.

Strijbos, J.-W., R.L. Martens, and W.M.G. Jochems. 2004. "Designing for Interaction: Six Steps to Designing Computer-Supported Group-Based Learning." *Computers & Education* 42: 403–24.

Sung, Y.T., J.M. Yang, and H.Y. Lee. 2017. "The Effects of Mobile-Computer-Supported Collaborative Learning: Meta-Analysis and Critical Synthesis." *Review of Educational Research* 87 (4): 768–805.

Ting, N.C. 2013. "Classroom Video Project: An Investigation on Students' Perception." *Procedia - Social and Behavioral Sciences* 90: 441–48.

Van Leeuwen, A., and J. Janssen. 2019. "A Systematic Review of Teacher Guidance during Collaborative Learning in Primary and Secondary Education." *Educational Research Review* 27: 71–89.

Van Sonderen, E., R. Sanderman, and J.C. Coyne. 2013. "Ineffectiveness of Reverse Wording of Questionnaire Items: Let's Learn from Cows in the Rain." *PLoS One* 8 (7): e68967.

Vogel, F., C. Wecker, I. Kollar, and F. Fischer. 2017. "Socio-Cognitive Scaffolding with Computer-Supported Collaboration Scripts: A Meta-Analysis." *Educational Psychology Review* 29: 477–511.

Weinberger, A. 2011. "Principles of Transactive Computer-Supported Collaboration Scripts." *Nordic Journal of Digital Literacy* 6: 189–202.

Wichmann, A., and N. Rummel. 2013. "Improving Revision in Wiki-based Writing: Coordination Pays off." *Computers & Education* 62: 262–70.

Wu, J., and D.-T.V. Chen. 2020. "A Systematic Review of Educational Digital Storytelling." *Computers & Education* 147: 103786.

Yang, Y.T.C., and W.C.I. Wu. 2012. "Digital Storytelling for Enhancing Student Academic Achievement, Critical Thinking, and Learning Motivation: A Year-Long Experimental Study." *Computers & Education* 59 (2): 339–52.

Zheng, L., R. Huang, and J. Yu. 2014. "Identifying Computer-Supported Collaborative Learning (CSCL) Research in Selected Journals Published from 2003 to 2012: A Content Analysis of Research Topics and Issues." *Educational Technology & Society* 17: 335–51.