Engaging Japanese University Students in Online Project-Based Learning

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Abstract

The sudden switch to online learning during the coronavirus pandemic presented enormous challenges to universities. Ensuring that students are as motivated and engaged as possible in online learning environments depends heavily on course design and the technology used, both of which can be unfamiliar to students and teachers. This paper examines the use of online Project-Based Learning (PBL) as an approach to engaging students in teams across a 14-week course taught entirely online. 35 students created their own team business websites (in Japanese) to help other students during the pandemic. The data collected showed that students made great efforts to communicate with their teams and work on their projects both in and out of class time. They generally reported enjoyed undertaking the project and valued it mainly for helping them learn business management skills and for being able to communicate well with other students. However, issues with using the technology to complete projects and communicate within teams, a lack of effort by some team members, and confusion with how to spend time on projects were reported. A discussion of these factors and recommendations for further engaging students in online university course projects are given.

1. Introduction

The sudden switch to online teaching during the coronavirus pandemic has had an enormous impact on both teaching and learning. The means through which students communicate with their teachers and classmates has been completely altered, with opportunities for face-to-face interactions becoming less likely. Since 2020, this has left teachers with the difficult challenge of teaching courses online using technology which they have had little or no experience with. They have understandably found preparing courses very difficult compared to previous years and have reported low confidence in doing so (Stickney et al., 2019). In addition, questions have been asked about the effectiveness of online courses compared to face-to-face classes (Lee et al., 2019) with many students feeling dissatisfied with learning and socially isolated during lockdowns (Milman, 2020). More research is clearly needed to see how online learning can be adjusted to better meet the needs of learners facing such problems (Safi et al., 2020).

In 2021, online teaching has remained as the 'normal' way of life for Japanese universities (Ando, 2021). There is a clear need for coursework to be designed to help students connect with their classmates and teacher to help motivate and engage them as much as possible during challenging times. One approach to generating interactions and support for students online is Project-Based Learning. Having students work within teams can generate stronger social connections, which is considered fundamental to online learning, especially during emergency situations (Smoyer et al., 2020). Thus, designing online projects to motivate and engage students to interact with each other and complete course projects is currently an important area of research. This paper examines the ways in which students react to such online projects and how they may be further improved to help guide the use of such projects in the future to strengthen learning outcomes.

２．Background

2.1　Project-Based Learning (PBL)

One approach to helping students engage within their learning, both in and out of the classroom, is Project-Based Learning (PBL). During PBL, students interact with other class members in teams and learn new skills by 'working cooperatively to solve a problem' (Bender, 2012, p. 7). This problem can be one of many different things related to the intended learning on the course and should be the central focus of discussion between project team members. This student-centered approach to learning encourages teams to explore different solutions and approaches together and report on their team outcome at the end of a course.

PBL has been shown to help students manage their own learning autonomously and to learn important concepts while they complete projects (Warren, 2016). With the increased need for learning which can be done away from a physical classroom setting (since the start of the coronavirus pandemic), PBL can be a more flexible and independent approach to completing and submitting work, with less need for social gatherings as whole classes. Students can get feedback and support within their own project teams and learn new skills together without the need for a teacher to watch them every step of the way. In fact, the role of the teacher should be more of a 'facilitator' than 'teacher' and involve supporting students and offering guidance on completing their projects (Pascarella et al., 2005; Smith et al., 2005).

PBL has been shown to be an effective approach to learning and is adopted in a wide range of learning contexts (Mergendoller & Thomas, 2001). It has also been found to motivate and engage students within their learning (Bradford, 2005; Chiang & Lee, 2016). If students are unable to meet within classrooms on a regular basis, PBL is one approach which can keep students actively working towards goals set out by their teachers. As PBL may be a new concept for some teachers, the next section will explain fundamental elements for designing projects to engage students as much as possible.

2.2 Designing Engaging Projects

In order to make projects engaging, several factors need to be designed for. Firstly, the *focus* of the project needs to be clear and motivating for students. PBL is most effective when it is designed around a 'driving question' (Krajcik & Shin, 2014; Larmer & Mergendoller, 2015) which students have a clear interest in answering. Choosing a focus which is relevant to the needs and/or interests of students will make them more likely to make greater efforts to undertake work (see Stroud, 2013a, 2013b). Projects should also be authentic and connected to real-world issues to help engage students more in them (Parker et al., 2013; Thomas, 2000). If students feel that the work they are doing can have a real effect on the world around them they will be more empowered and likely to want to achieve an outcome which can have some kind of relevance. In addition, projects which focus on helping improve the future careers of university students are seen as highly relevant and more motivating for them (Hârtescu, 2014).

Another important factor, which is connected to the focus of the project, is student *control*. As many students have different needs and interests, allowing them the freedom to choose some elements of their projects is key to ensure it motivates them as much as possible (such as how to design and present it). It is very hard for a teacher to know their students well enough to set projects topics which will match their current interests/needs and future ambitions, so it is best to allow some choices for students. Choices within learning can result in higher levels of engagement (see Egbert, 2003; Stroud 2013b) and should be allowed where possible. In addition, students who can communicate within teams to take control of their own projects have been found to engage more in them (Darling-Hammond et al., 2008; Ravitz 2010).

Project *goals* are another important design factor to engage students. PBL has an overall goal of developing life skills for students (such as working in teams, communication skills and leadership), where traditional learning has a goal of acquiring knowledge (Lipson et al., 2007). Teachers need to ensure that the goals of projects are clear at the start of courses, so that students can focus

on them and become engaged in reaching them (Klem & Connell 2004; Stroud 2017a). Moreover, deadlines for goals should be used within groups (set by either the teacher or teams themselves) to motivate students to work hard in and out of class to complete projects on time (Larmer, 2016). By making students accountable to their teams in this way, they are expected to engage in projects (both in and out of class time) which may be essential when they do not physically meet during lockdowns for example. Also, it is very important for students to reflect on their own work and get feedback from others (such as weekly comments on work done) to see if they are on track to achieve their project goals (Krajcik & Shin, 2014; Larmer & Mergendoller, 2015). This will keep them focused on completing projects and help them make any changes they need to for reaching their goals as projects progress.

Finally, designing projects to involve effective *team communication* is important for engaging students. The collaboration between students during projects is an important part of the learning which takes place with PBL (Grant, 2002). Teams become more motivated when they are given chances to have independent meetings/discussions and when they can share the role of leader (Zhou, Kolmos, & Nielsen, 2012). Empowering teams to communicate as much as possible with each other and have a 'voice' within teams is very motivating (Hickey, 2014) and needs to be a large part of the way teams spend their time during PBL online. The role of each team member also needs to be clearly defined at the start of projects (by either the teams themselves or with the help of the teacher). By having the role of 'congressperson' within a team for instance (see Parker at al., 2013 for this example), it is clearer to students how they should spend their time during projects, which will be motivating and more efficient, especially for online projects where students do not physically meet.

2.3 Challenges for Online Projects

Even though PBL has a clear place within courses to engage students, the fact that

many courses have been taught entirely online since the start of the coronavirus pandemic has presented many challenges for teachers and students. Firstly, as students may not be able to meet each other in person during online projects, difficulties with *technology* can exist. Students often report finding it much more difficult to effectively communicate in real-time with their teams when they are online as opposed to in a classroom (Naik et al., 2021). In addition, issues with the technology involved in communicating cause problems. Students can have trouble understanding how to use the technology required to speak with their teams and teacher, may not be able to afford equipment they need (such as computers), and may experience problems with their internet connection (see Gnanapragasam et al., 2021). These problems have become very familiar to teachers since 2020 and projects completed online need to address these as best as possible. Training for students on how to use technology required for project work is essential and teachers should try to support students experiencing problems with connecting with teams due to problems with the technology available.

Another challenge for online PBL is the selection of the most appropriate *online platform* for projects to be created on (a collaborative website for example). This should be something that the teacher has enough knowledge about the help support students and provide feedback on their progress in order for projects to reach their goals (Joia & Lorenzo, 2021). If teachers are unfamiliar with platforms themselves, they should seek out support for learning how to use them, and use as much time as they can spare to practice completing example projects with them. Also, online platforms which are interesting to students and easy for teams to collaborate with to build project pages or websites for example (such as Wiki Pages or Google Sites) can engage students more in working together (Biasutti & EL-Deghaidy, 2015; Chu et al., 2017; Hamid & Mansor, 2012).

Inner-team relationships can also create a challenge for projects completed online, especially if students have never met other team members face-to-face before (sometimes the case during the coronavirus pandemic). During online

team meetings, not being familiar with other team members may create more hesitancy for students to share their opinions with each other and act as a 'barrier' to open communication (Stroud, 2017b). In addition, students can find it harder to stay focused on classwork when it is done online (Naik et al., 2021) and may feel less motivated to take part in communicating with or getting to know their team. Online projects have also shown a tendency for some team members to become 'lazy' within projects (Adams et al., 2015) with students avoiding meetings or just not speaking up in them at all. Thus, online projects may need to incorporate some kind of 'get-to-know' style exchanges between group members (or at least chances to communicate away from online class time) to strength relationships and engagement in projects.

３．Method

3.1　Research questions

The study within this paper focused on the following four research questions:

RQ1. What are Japanese university students' overall perceptions of a 14-week online business start-up project?

RQ2. How do students report spending their time engaging in the project out-of-class each week?

RQ3. What do the students report as the strong points of the project?

RQ4. What do the students report as the weak points of the project?

3.2　Participants

35 Japanese second and third-year students studying in a 14-week seminar course within the Economics department of a Japanese university took part in the study. The course was not specifically focused on learning English (but rather business leadership and management skills). However, levels of English were generally very low, with most of the students being unable to exchange more than a few sim-

ple sentences with each other or the teacher. It is also important to note that most of the students had never met the other class members face-to-face (due to the classes being online during the coronavirus pandemic).

3.3   Project procedure

Every step of the 14-week project discussed below was completed entirely online without the teacher ever meeting any student face-to-face during that time. Students were not asked to meet face-to-face either and were instructed to communicate about their projects online with each other (using any language and however they wished to). Table 1 gives an overview of the procedure.

Table 1. Project procedure

Week 1 (Project Preparation Stage with Teacher)	Teacher introduced project **schedule and Google Sites** usage
	Students put into **groups of 4-5 members** (decided by the teacher by mixing gender and years to help students to get to know each other)
	Project **overview** given as: *Work with your team to create and manage an online Google Sites 'business'. It should be designed to help your classmates and other university students in Japan during the coronavirus pandemic*
	Eight goals of the project explained as *Improving your future employment chances by improving skills related to (1) business leadership and management, (2) business start-up, (3) teamwork and communication, (4) using online tools, (5) advertising, (6) marketing, (7) business and self-analysis, and (8) English presentation and reporting skills*
	First team **breakout room meetings** (Zoom) to decide business focus, roles, and meeting schedules
	Students submitted **English reports** of weekly work done to the teacher
	Teacher gave **feedback on /suggestions for** work reported
Weeks 2-4 (Autonomous Project Design Stage)	**Team online meetings** (without the teacher, outside of class time following students' own schedules)
	Teacher attended team breakout room meetings (Zoom) during classes to support projects
	Teams performed a **customer analysis** of their business
	Teams set their **business goals**
	Teams designed their (free) service and **website layout**
	Students submitted **English reports** of weekly work done to the teacher
	Teacher gave **feedback** on and suggestions for work reported

Weeks 5-10 (Autonomous Project Development Stage)	**Team online meetings** (without the teacher, outside of class time following students' own schedules)
	Teacher attended team breakout room meetings (Zoom) during classes to support projects
	Teams **developed websites** (Google Sites)
	Teams **marketed/advertised** their business to other project teams
	Teams **exchanged feedback** on websites/business ideas
	Students submitted **English reports** of weekly work done to the teacher
	Teacher gave **feedback** on and suggestions for weekly reports
Weeks 11-13 (Autonomous Project Presentation Preparation Stage)	**Team online meetings** (without the teacher, outside of class time following students' own schedules)
	Teacher attended team breakout room meetings (Zoom) during classes to support projects
	Teams analyzed their **business successes/failures**
	Teams analyzed their **teamwork successes/failures**
	Teams prepared for their final English presentation
	Students submitted **English reports** of weekly work done to the teacher
	Teacher gave **feedback** on and suggestions for work reported
Week 14 (Presentations)	Team **final English presentations** (online)
	Student survey completed in Japanese (see Appendix for English version)
	Final assessment made by the teacher based on weekly reports and final presentations

During the first week, the teacher helped set up teams and outline the overview and eight goals of the project for students. This helped clarify the purpose, value and expectations of the project. The content and skills of the project were matched as closely as possible to the current real-world needs of the students. Projects were focused on helping each other during the coronavirus pandemic, improving chances of employment after graduating (including using English to present), and learning how to use interesting and useful online tools for building a business. As discussed in sections 2.2 and 2.3 above, designing projects in this way was expected to improve the motivation and engagement of the students across the course.

During Weeks 2-13, project teams met online both during the weekly seminar classes and at any other times they decided to themselves. Team meetings

were considered an important element of the project for engaging the students in their projects. As discussed in sections 2.2 and 2.3 above, engaging projects provide students with chances to get to know each other, exchange opinions, have control and choices within projects, and the ability to support each other when using new technology/platforms.

Table 1 shows specific details of the tasks undertaken by the teams across the project. Teams went through stages of designing their projects together (Weeks 2-4), developing them (Weeks 5-10), and preparing their presentations together (Weeks 11-13). Students reported on their weekly work to the teacher and received feedback and suggestions on their individual and team progress.

In Week 14, each team presented the outcome of their projects online to the teacher and other groups (in English for approximately 15-20 minutes each). During these presentations, teams explained their final business design and website, explained the successes/failures of their business and teamwork in creating it, and any other lessons they felt they have learned. Other teams had to ask at least one question each after each presentation. The teacher gave feedback to each group and highlighted the key skills again (the eight project goals in Table 1) which each team should take away from the project for their future careers.

3.4 Data collection and analysis

In the final week of the course, students completed a four-part survey in Japanese (see the appendix for an English version) to analyze their feelings towards the project and their overall engagement in it.

The first part addressed RQ1 by asking students about their overall impressions of the project in terms of their motivation, confidence, enjoyment doing it, enjoyment working with their team, and enjoyment working online. Students scored each from 1 (not at all) to 6 (very) and mean and standard deviation values were calculated.

The second part addressed RQ2 by asking students to give details of how

often and for how long they spent meeting with their team and working alone on their projects each week. Rather than mean values, the number of responses for each time bracket were summarized to give a rough overall picture of the time commitment reported by the class (as the students were unlikely to be able to give exact time they spent working each week).

The third part of the survey used open-ended questions to address RQ3 and RQ4 by asking students to detail strong and weak points about the project. Students could give up to three answers for each (with as much detail as they liked). The data was analyzed using a Thematic Analysis approach (Braun & Clarke, 2006). All the responses were first read several times and then coded. Common themes were then decided among the codes and categories of responses were determined. Responses were then put under those categories to create a clearer overall picture of the most significant feedback from the students.

4　Results and discussion

4.1　Student overall project perceptions (RQ1)

The data from the first part of the student survey revealed overall positive feelings towards the project work undertaken (See Table 2 below). On a range of 1 (not at all) to 6 (very), students scored several factors related to their engagement in it (see the Appendix for a full list of the questions asked). The 35 students generally reported feeling *motivated* (M = 4.80, SD = 0.80) to complete their projects, as well as *enjoying doing the projects* (M = 5.00, SD = 0.77) and *enjoy working in their teams* (M = 5.60, SD = 0.74). Lower scores were reported by the students for *confidence* to complete projects (M = 4.06, SD = 0.87) and for enjoyment doing the projects *online* (M = 4.06, SD = 1.33).

Table 2. Summary of Responses for Student Perceptions of the Project (N=35)

	How motivated were you during the project?	How confident were you during the project?	How enjoyable was the project?	How enjoyable was it working with your team?	How enjoyable was it doing the project online?
1 (not all all)	0	0	0	0	0
2	0	2	0	0	5
3	3	5	1	1	8
4	6	18	7	2	8
5	21	9	18	7	8
6 (very)	5	1	9	25	6
MEAN	4.80	4.06	5.00	5.60	4.06
SD	0.80	0.87	0.77	0.74	1.33

Although the project can be said to have engaged the students at a pleasing level for the teacher, issues with their confidence and enjoyment doing them online need to be considered within the project design and support provided to ensure students are engaged. This is especially true when there are little/no opportunities to meet with the class or teacher face-to-face (as in the case of this study). These issues will be explored further in sections 4.3 and 4.4 below.

4.2 Out-of-class engagement (RQ2)

Table 3 shows a summary of how engaged the students reported being in their project work outside of class time across the 14-week course. In terms of team meetings/interactions, it can be seen that the vast majority of students spoke with other team members once a week out of class time (30 out of 35) and spoke for between 30 minutes and two hours each time. Many of the students reported working on their project on two different days per week (25 out of 35) often for about one to two hours each day (20 out of 35).

Although this data was self-reported, it did generally match the volume of work done that students reported to the teacher each week (in their English reports). As the course was one of many that the students were undertaking at the university at that time (most/all of which were online), the fact that the

Table 3. Student Project Engagement (N=35)

Days/week students talked TO THEIR TEAM	No. of students	Days/week students worked ALONE on projects	No. of students
Never	0	Never	0
1 day	30	1 day	8
2 days	5	2 days	25
3 days	0	3 days	2
More than 3 days	0	More than 3 days	0
Time students spoke IN TEAMS each time	**No. of students**	**Time students worked ALONE on project each time**	**No. of students**
Up to 30 minutes	0	Up to 30 minutes	1
30 minutes to 1 hour	22	30 minutes to 1 hour	7
1-2 hours	12	1-2 hours	20
2-3 hours	1	2-3 hours	7
3-4 hours	0	3-4 hours	0
More than 4 hours	0	More than 4 hours	0

teams were continuously scheduling and holding weekly meetings away from class and talking for periods of up to two hours each time, was encouraging. As interaction between team members can bring so many benefits during PBL (see Sections 2.1 and 2.2 again), replicating this level of out-of-class engagement is highly desirable for other online courses, especially those which require students to interact to learn and have challenges getting students to communicate with each other. The strong points for the projects reported by the students in the next section will help explore more specific design elements of PBL which could help with this.

4.3 Project strong points (RQ3)

Table 4 shows a summary of the main strong points which the students reported about the project. After the thematic analysis was complete (see section 3.4 again for details), the categories were ordered in Table 4 with the category mentioned most often at the top. Eight main categories were found and will now be explained and discussed.

Table 4. Summary of Reported Project Strong Points

No. of responses	Category	Example responses	Recommendation for teachers
17	**Learning business thinking / planning skills**	*"I was able to experience the way of thinking and how to proceed in doing a real business", "I was able to know the contents and methods of business."*	*Connect content to student future careers after graduation to generate more motivation.*
9	**Learning team management skills**	*"Formulating management strategies", "My knowledge about managing a team has increased a lot during the project."*	*Design projects to promote management and leadership skills within teams.*
7	**Having clear team roles**	*"Since roles were clear within the project, each person was able to take responsibility", "Everyone was aware of their role and could work well."*	*Take time to generate and allocate project roles for team members at the start of projects.*
6	**Bonding with team members**	*"It was good to be able to work in a team together", "I made friends with the members of my group."*	*Allow adequate time for teams to talk and bond online.*
6	**Having useful online team meetings**	*"I was able to exchange opinions firmly in meetings", "The meetings were helpful and fun."*	*Provide teams with regular meeting opportunities to communicate about the progress of their projects.*
6	**Having clear team goals**	*"We were able to meet our goals in creating our own page", "The goals were very clear to us."*	*Ensure that clear and realistic project goals are in place at the start and throughout the project.*
5	**Getting useful feedback within team**	*"It was easy to improve thanks to the feedback in our team", "There was a nice environment in which each member exchanged feedback from various angles."*	*Encourage feedback among team members on the work they are undertaking in their separate roles.*
4	**Getting useful feedback from outside of team**	*"It was very helpful because the teacher presented me with website help and ideas", "It was motivating to receive feedback from other groups and give feedback to them at the middle point of the project."*	*Provide teams with regular feedback and create chances for other teams or sources to also give feedback on the project work.*

The strong point reported most often by students was that the project helped them develop *business thinking and planning skills* (17 responses). The students clearly enjoyed learning about how to create and develop an online business, even if it was not a real one. The skills they learned were certainly applicable to starting a business of their own after graduation and this connec-

tion to the real world needs of the students was clearly motivating (Hârtescu, 2014; Parker et al., 2013; Stroud, 2013a, 2013b; Thomas, 2000). With engaging students online being a challenge for teachers at present, business-focused projects which empower students to go beyond university classrooms to develop their future career skills and interests are recommended.

The next four most mentioned strong points for the project were all related to communication within teams. They were learning about *team management skills* (9 responses), *having clear team roles* (7 responses), *bonding with the team* (6 responses) and *having useful online team meetings* (6 responses). The students clearly enjoyed working in teams online to get to know each other and for learning how to work effectively as teams by dividing up the workload to complete projects. Asking the students to meet with their teams as much as they could outside of class time each week (which many reported doing for between 30 minutes and two hours once a week in the previous set of results) was essential for helping them become engaged. It is important for online projects to encourage as much talking time (such as meetings) as possible between team members to help them feel more connected and for learning about teamwork (Grant, 2002). Students being given chances to run projects themselves is also important for engaging them, as it creates opportunities for them to practice establishing roles and leadership skills within teams (Hickey, 2014; Parker et al., 2013; Zhou et al., 2012). Allowing students to take control of their teamwork and development of their own projects over time is also recommended as it clearly creates a more engaged and productive team environment (Darling-Hammond et al., 2008; Egbert, 2003; Ravitz 2010; Stroud 2013b), even when teams need to communicate with each other entirely online.

The next most mentioned strong point was the projects *having clear team goals* (6 responses). At the start of the course, the teacher took time to explain eight specific goals for the project (see Table 1 again) to ensure that students understood the value of putting effort into their project. This was done to engage them as much as possible (Klem & Connell 2004; Krajcik & Shin, 2014;

Larmer, 2016; Larmer & Mergendoller, 2015; Stroud 2017a) and clearly had an important impact. It is recommended that all online projects undertake this important step, as communication about goals between students, teachers and within teams themselves is much more challenging online than in a face-to-face environment. If students do not understand the reasons why they are undertaking work from the beginning, it is less likely that they will commit great efforts to finishing projects.

The final two strong points mentioned by students were both related to *getting feedback*. Some students reported finding it helpful to get feedback about project work from both inside their team (5 responses) and from outside their team (4 responses). Again, this highlights the importance of encouraging as much talk time within teams as possible for online projects and empowering students to have a 'voice' to openly and honestly express their opinions with each other (Hickey, 2014). Feedback can help guide students to improve work and is also motivating to make more effort to do so (Krajcik & Shin, 2014; Larmer & Mergendoller, 2015). Teachers should also try to motivate teams by helping them gain feedback from other sources (especially if projects are online), such as other teams, other classes, friends, family and even experts of the project topics if possible.

Interestingly, none of the students mentioned learning English presentation skills as a strong point for the project. Although the course was not focused specifically on this (but rather on business leadership), it surprised the teacher to not get this feedback. It was the belief of the teacher that the students did enjoy and value learning English skills related to creating businesses, but the data could not show this. The students were not asked any follow-up questions regarding this, and it is discussed as a limitation to this study later on.

4.4 Project weak points (RQ4)

The final part of the student survey gathered responses related to things that the students felt were weak about the project and that needed to be improved for sim-

ilar online projects in the future. As with the previous section, a thematic analysis was used to create main categories of responses. Table 5 shows a summary of the seven main categories formed, with the most mentioned at the top of the table. These will now be explained and possible solutions discussed to further improve student enjoyment and confidence during online projects (both of which were scored lower than other engagement factors in Table 2).

Table 5. Summary of Reported Project Weak Points

No. of responses	Category	Example responses	Recommendation for teachers
13	Website platform limitations	"There were limits to what I could do on Google Sites", ""Since it was created on a Google site, I feel that what I wanted to do was limited."	Set simple design goals for the website and/or allow students to find their own platform to create it if they wish.
11	Poor team member efforts	"Even though I was working as a team, there was a poor participation rate from others", "I often did extra work, even for non-working members."	Have students write weekly reports about the work they have undertaken each week with goals for the following week. In addition, have them check the reports with the teacher or team manager if time is available.
10	Online team communication problems	"All discussions were online, so it was a little difficult to communicate", "It was sometimes hard to communicate because everything was discussed online."	Ensure that students are trained to use the available software (Zoom, etc) to communicate as easily as possible (using share-screen functions, etc).
10	Too much free time during project	"The project was so long that I didn't have to do as much in the second half", "My team had a website completed early on, so there wasn't as much to do at the end."	Introduce new team goals and work at different stages throughout the project, rather than all of them at the start.
4	Difficulties in division of roles	"The roles such as 'Website Manager' that I was assigned at the beginning disappeared at the end, and everyone did it", "We divided the roles, but it didn't make much sense."	Give suggested team role titles to teams and allow teams to decide their own roles (and change them as time progresses).
4	Limited feedback on website	"Since the website was only viewed by other teams in the class, the feedback was limited."	Create chances for the teams to share and get feedback on their websites from other classes, friends, family, etc.
3	Confusion in focus of learning	"Sometimes I didn't know whether to focus on learning website skills or business skills."	Create and regularly review a list of clear learning goals for the project.

The most mentioned weak point for the project was the *limitations of the website platform* (13 responses). Students felt that they wanted to design their websites in ways that the platform did not allow which frustrated them in creating the exact business image they wanted to. *Google Sites* was selected by the teacher as it was judged to be an easy platform to learn to use, it provided the teacher with chances to access each team's website and provide feedback, and was already connected to the email accounts of the students (Gmail). Although this certainly saved time during the projects for both the teacher and students (allowing more time for team discussions, etc), giving students a free choice of platform to use may also be a good way to engage them more in future online projects. If students can freely choose the online platform that they want to use to present their business, they will most likely be more interested and make greater efforts to complete projects (Biasutti & EL-Deghaidy, 2015; Chu et al., 2017; Hamid & Mansor, 2012), compared to being limited to the teacher's preference of platform. The teacher should also try to get acquainted with the platform selections of the students as quickly as possible, to make it possible for them to provide important feedback and advice to students (Joia & Lorenzo, 2021).

The next most mentioned weak point was *poor efforts by some team members* in completing project (11 responses). As the course was completed entirely online, issues arose with some team members not completing work on time, or spending less time than other team members on tasks. Online projects can have issues with 'lazy' students (Adams et al., 2015) and can often experience less focus from students compared to face-to-face courses (Naik et al., 2021). Without the ability for students to meet each other in an actual classroom each week, a lack of accountability and less bonding occurring between members of a team can act as a 'barrier' to communication (see Stroud, 2017b) and result in some students contributing less than others. It is recommended that the teacher encourages teams to use a system for holding each team member accountable for their work done each week (perhaps with presentations of what

they did to the other team members who then give feedback on that work), as well as individual reports to the teacher. This may not solve the issue of 'lazy' students, but can directly address the problem and is likely to result in more overall engagement.

Another project weak point mentioned by many students was *problems with team communication online* (10 responses). Clearly, exchanging and explaining opinions to others is likely to be more difficult for students in an online environment compared to being face-to-face in a classroom (Naik et al., 2021). In addition, the use of the internet can cause issues with some students having less access to adequate equipment or internet connections than others (Gnanapragasam et al., 2021), causing further frustration when trying to work together on projects in real-time. Teachers should try to assist students with this by helping train them as best as they can to use the available technology (Zoom for example) and any useful functions for communicating with teams (share screen functions for instance).

Three more weak points mentioned for the project were related to the use of individual time. Students reported having *too much free time* (10 responses), difficulty in *dividing up roles* to utilize time well (4 responses) and confusion about *what their focus of learning should be* (3 responses). Even though allowing students freedom of choices for their projects is recommended, more guidance/checks of work undertaken and progress may have been required to keep them engaged in work over time. Many of the students reported finishing work early and then not having as much work to do. Although there is always something to do to help a business grow, the introduction of new individual goals and deadlines on a weekly basis (as opposed to goals for a whole course) may help. Team managers could take on this responsibility and learn more about team motivation themselves. It would also allow teams to change their goals, roles and focuses over time on a more regular basis to create a greater sense of direction and purpose for projects.

A final reported weak point was the *limited feedback* received from outside

６．Limitations and future research

There were three main limitations to the study which require further research. Firstly, it was difficult for the teacher to know exactly what work students were doing each week out of class time. Weekly reports submitted to the teacher, self-reported surveys and teacher observations of changes to websites were the only sources of data. It may be advisable to have students audio/video record and submit meetings, for example, in future studies of projects like this one, but that also runs the risk of taking away control and autonomy (both found to be positive elements to online PBL in this study and others).

Secondly, the impact of the project on learning English presentation skills was unclear. Although this was only one of eight goals of the project, future studies could directly address this by asking students specific questions about the effect of the project on their ability to use English.

The third limitation was the lack of follow-up to the open-ended questions about the strong and weak points for the project (see Tables 4 and 5 again). In future research, follow-up interviews with students would help expand upon the responses they gave to help clarify ways in which projects can be more engaging online.

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Appendix

Student survey (English version)

Part 1

Please score the following from 1 (not at all) to 6 (very) for how true they were for your project:

How motivated were you during the project?

How confident were you during the project?

How enjoyable was the project?

How enjoyable was it working with your team?

How enjoyable was it doing the project online?

Part 2

How many days per week did you TALK TO YOUR TEAM?

Never / 1 day / 2 days / 3 days / More than 3 days

HOW LONG did you TALK TO YOUR TEAM each time?

Up to 30 minutes / 30 minutes to 1 hour / 1-2 hours / 2-3 hours / 3-4 hours / More than 4 hours

How many days per week did you work ALONE on your project?

Never / 1 day / 2 days / 3 days / More than 3 days

HOW LONG did you work ALONE on your project each time?

Up to 30 minutes / 30 minutes to 1 hour / 1-2 hours / 2-3 hours / 3-4 hours / More than 4 hours

Part 3

Please describe up to three STRONG points about the project. Please give as much detail as you can about WHY they were strong points.

Part 4

Please describe up to three WEAK points about the project. Please give as much

detail as you can about WHY they were weak points.