

Pontoj Project Experience Report: Using Technology to Build Bridges for Fluency in English

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Abstract. *This paper presents an account of the experiences in an innovation project, entitled Pontoj: Building Bridges for Fluency in English. The purpose of this project was to provide learning opportunities for students to develop their language skills as well as their social and emotional competences, respecting their needs, interests and level of language proficiency. Learning opportunities were mediated through the use of digital technologies and emphasized active teaching methodologies. The project was developed over four months in one private school in Recife. Greater empowerment of teachers was seen in the use of technology in their classrooms. In addition, it was observed that the students, in general, were able to practice their knowledge in an interactive and engaging way. Reflections on the learned lessons point to future paths to the project.*

Resumo. *Este artigo apresenta um relato das experiências vivenciadas no âmbito do projeto de inovação, intitulado Pontoj: Construindo Pontes para a Fluência no Inglês. Tal projeto teve como objetivo proporcionar oportunidades de aprendizado para que o aluno desenvolva as habilidades linguísticas e suas competências socioemocionais, respeitando suas necessidades, interesses e nível de proficiência no idioma. As oportunidades de aprendizado foram mediadas pelo uso das tecnologias digitais e enfatizaram as metodologias ativas do ensino. O projeto foi desenvolvido ao longo de quatro meses em uma escola privada de Recife. Percebeu-se um maior empoderamento dos professores quanto ao uso das tecnologias em suas salas de aula. Ademais, observou-se que os alunos, no geral, puderam praticar seus conhecimentos de maneira interativa e engajadora. Reflexões sobre as lições aprendidas apontam futuros caminhos para o projeto.*

1. Introduction

Previous research has shown Brazilian's low level of proficiency in English language [Rodrigues 2016]. This is detrimental to the future career of young people seeking to enter the labor market. Nevertheless, the teaching of English language in regular education is organized by school year, which makes it difficult to work with students of different proficiency levels in the language. This is a challenge for students trying to achieve fluency in the new language.

This project aims to assist teachers and students in the context of regular education, providing alternatives for teaching students in a holistic, personalized and collaborative way through the use of digital technologies. We use the term technology to refer to digital technologies or the so-called “new technologies”. [Kenski 2007] explains that the term new technologies refers to:

“(...) processes and products related to knowledge from electronics, micro-electronics and telecommunications. These technologies are characterized by being evolutionary, that is, they are in permanent transformation. They are also characterized by having an immaterial basis, that is, they are not technologies materialized in machines and equipment. Its main area of action is virtual and its main raw material is information”.

These new technologies or new media as some authors call them can no longer be ignored. [Baker 2010] explains that teachers can no longer afford to ignore the presence of new media, such as the internet, television, music, or movies. Media literacy is, thus, an important topic to be integrated throughout the curriculum to enable students to have an opportunity to become actively engaged in learning.

Another important aspect is the development of 21st century skills. [Pellegrino and Hilton 2012] view 21st century skills as knowledge that can be transferred or applied in new situations. This transferable knowledge includes content knowledge in a domain and also procedural knowledge of how, why, and when to apply this knowledge to answer questions and solve problems. The latter dimension are often called “skills”. There are three broad domains of 21st century skills: cognitive, intrapersonal and interpersonal. Deeper learning and 21st century skills prepare young learners for adult success. Thus, the question that guides this work is: how can we motivate students to learn English in a holistic and authentic way using technology? This project used Design-Based Research to work together in partnership with teachers aiming to find practical solutions for more meaningful learning in their real classrooms. The project has been conducted for 2 years in two different schools in Recife, Pernambuco. This paper presents an account of the experiences throughout the first cycle in one of the schools.

2. Literature Review

Traditional teaching has been the object of complaint for both teachers and students for quite some time and [Camargo 2018] argue that technological advances often only bring a technological “coat” to what has been traditionally done. [Camargo 2018] also point out the ineffectiveness of this teaching based on the low performance of Brazilian education observed in educational tests. [Carbonell 2002] points out that the new citizenship requires new knowledge and a more active participation of the student. Hence, these premises suggest the importance of innovation in current education and, consequently, the development of new methodologies (i.e. change of practices and development of new strategies) that provide innovation and learning in a significant way.

Innovation is defined as doing new, renewing, changing the order of things, in other words, coming up with new ideas, or even applying an known idea in a new context [Camargo 2018]. The authors argue that new knowledge is created and disseminated through innovation. [Terra 2007] points out that everyone has the capacity to innovate and that innovation involves two fundamental elements: creativity and the production of new ideas, which must be able to be implemented and generate impact.

[Camargo 2018] point out that group work experience, more than one teacher in the class accompanying the execution of tasks, projects, solving real problems and case studies, if well conducted, can generate true pedagogical innovation. In short, innovation can come through practices that encourage active student participation. They argue that in spaces where the teacher assumes the centrality of the process and presents themselves as holders of all knowledge, it creates an environment where students are not able to actively participate and may be afraid of making mistakes and taking risks.

Much has been said recently about active methodologies, however, it is not by any means a new concept. The conceptual matrices of active methodologies date from the beginning of the twentieth century. As early as the 1930s, Dewey argued that learning occurs within the context of the student and that the function of education is to provide a permanent reconstruction of students' experiences articulated with life [Camargo 2018]. [Bacich and Moran 2017] define active methodologies as "*strategies focused on the effective participation of students in the construction of the learning process, in a flexible, interconnected and hybrid way*". [Camargo 2018] argue that active methodologies represent a pedagogical alternative capable of providing students with the ability to move autonomously, respectfully and critically through reality. Learning must start from the students' knowledge of the world and they must be active subjects in this construction. Thus, theory and practice must be integrated.

3. Methodology

Educational technologies are more than simply an independent variable in a study of student learning. Integrating them into the classroom can lead to substantial changes in social organization, student-teacher relationships, among other factors that cannot be investigated successfully by predictive research [Amiel and Reeves 2008]. Thus, researchers must make a commitment to conducting interventionist research in real-world and complex contexts such as schools [Amiel and Reeves 2008].

Design-based research (DBR) is, thus, a viable research alternative since it is an innovative approach that brings together the advantages of qualitative and quantitative methodologies while it focuses on the development of applications that can be carried out and effectively integrated into community social practices. DBR is defined as a "systematic study of designing, developing and evaluating educational interventions as solutions for complex problems in educational practice" [Plomp 2007]. DBR considers the diversity and specific properties of educational settings, but also what can be generalized and thus facilitate the resolution of other problems [Matta et al. 2014]. Its ultimate goal is to build a stronger connection between educational research and real-world problems [Amiel and Reeves 2008]. It calls for iterative cycles of study that lead to a better understanding of the process of intervention. If the intervention applied is not effective, it is possible to iterate until it becomes effective. Each iteration is a research cycle where the outcome is used as input for the next one [Sahasrabudhe et al. 2013].

It is composed of four cycles as detailed below [Amiel and Reeves 2008]:

1. *Analysis of practical problems by researchers and practitioners in collaboration:* It corresponds to the need and context analysis, which is done in the beginning. The practitioner is a valuable partner in establishing research questions and identifying problems that merit investigation. They are part of the process of the ne-

gotiation of research goals. This is followed by a literature review of the domain. It represents the basis for the formulation of a conceptual framework for the study and to the choice of principles to be applied for addressing the problem;

2. *Development of solutions informed by existing design principles and technological innovations:* This phase involves the creation of products or artifacts to address the problem, which are created based on the knowledge generated in the previous phase. The development of design principles undergoes a series of testing and refinement cycles. Data is collected systematically in order to re-define the problems, possible solutions, and the principles that might best address them;
3. *Iterative cycles of testing and refinement of solutions in practice:* This phase refers to the evaluation of the proposed intervention to see if it addresses the problems and gives the desired outcomes;
4. *Reflection to produce design principles and enhance solution implementation:* As data is re-examined and reflected upon, new designs are created and implemented, producing a continuous cycle of design-reflection-design. The outcomes of design-based research are a set of design principles or guidelines derived empirically and richly described, which can be implemented by others interested in studying similar settings and concerns.

4. Results

This section presents the results of our project following DBR's steps.

4.1. Analysis of practical problems

The school involved in the project is a private school located in a wealthy neighborhood of Recife, Pernambuco. The group is at Year 6 and is composed of 27 students. The teacher involved is an English Teacher who teachers twice a week in this group and she is also the second author of this paper. She is graduated in language teaching and holds a specialization degree in psychopedagogy. Her lessons last 50 minutes each. Students, in general, have a good level of English. 59% take private English courses. The group has mostly females as shown in Figure 1.

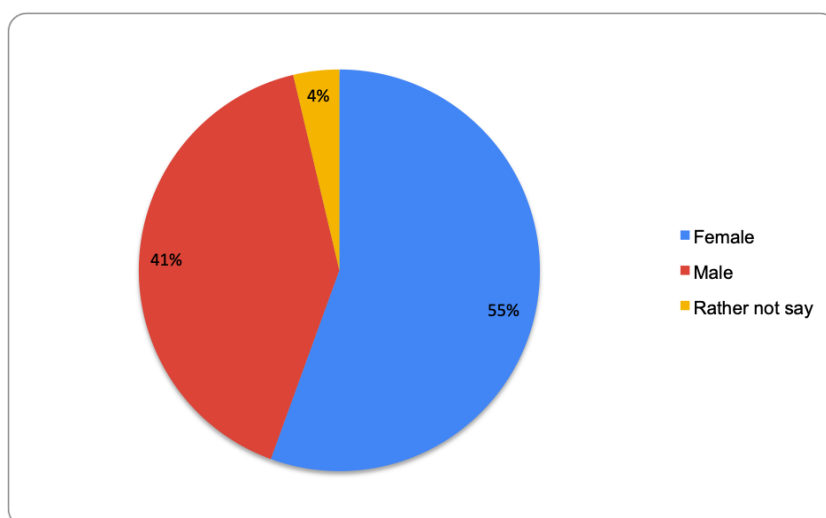


Figure 1. Students according to their gender.

Most of them practice English outside school through private tutors or courses and their homework. Other frequent source for practice is through conversations with family and friends as well as movies and TV series as illustrated in Figure 2.

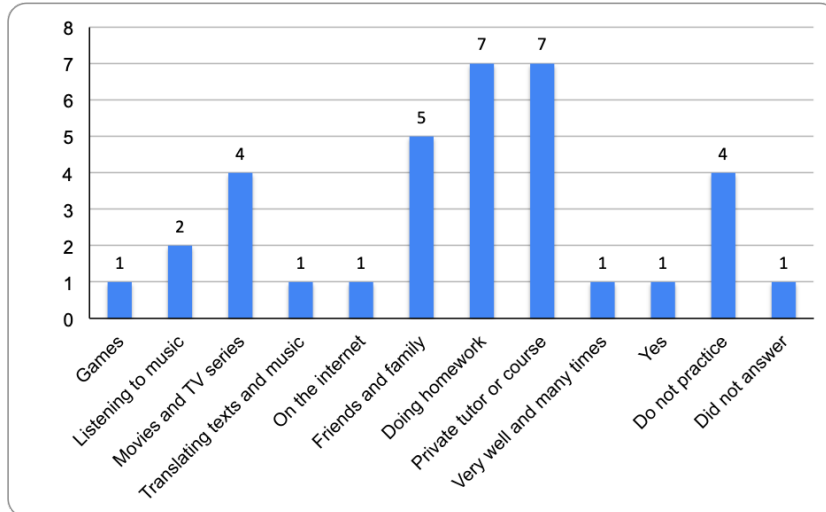


Figure 2. Students according to how they practice English outside school.

Most of them want to learn English to travel abroad as can be seen in Figure 3.

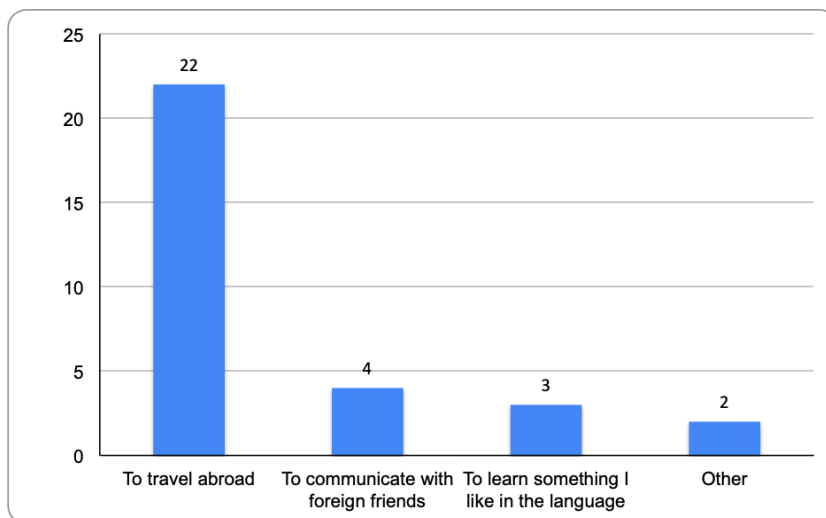


Figure 3. Students according to why they want to learn English.

The school organizes yearly a science fair, in which they involve the entire school in a full day of presentations for the parents and the community. The major theme was chosen in a teachers’ meeting. They discussed about the importance of diversity in Brazil as well as cultural diversity and language from diverse cultures. As Brazilian Culture is composed by a multitude of cultures and ethnicities, the proposed theme is “a diversity called Brazil”. The English teacher was responsible for organizing the project for the School Science Fair with the students. Part of the English lessons were used for this purpose. At first, the researcher who is also the first author of this paper presented the project to the teacher who happily engaged with it. The researcher observed her lessons

for 2 weeks to understand how they were usually conducted and what were the teacher and student's needs. After this step, the teacher and the researcher decided to focus on the School Science Fair as the teacher involved was the leader of the project for this group. Her main goal was to connect this project to her own lessons smoothly and engage students in a meaningful learning experience.

4.2. Development of solutions

The teacher and the researcher had meetings both online and face to face to organize the steps to be taken throughout the project. The researcher provided the teacher with technological training in order to help her use the selected tools. Some of the tools explored were: Google Documents, Google Forms e Kahoot. After the meetings, the teacher was invited to fill out a form¹ evaluating it in order to help further improvements.

The didactic project was thought from a problem-situation, which considered the time available and the didactic content to be worked with the group. The objective was to articulate what students should learn (didactic purposes) and the culmination (social purposes). Taking these premises into account, the teachers from the school got together to discuss proposed themes based on the students' reality. Teachers observed the difficulties of students in dealing with the diversity among them, whether linguistic, religious, musical, and others. There were situations in which students got into conflict in the classroom for not respecting this diversity. Thus, the teachers proposed the general theme: A diversity called Brazil. The goal was to investigate the theme and reflect about diversity. As a culmination, the students presented the project at the School Science Fair, which brought together the entire school community.

As the English teacher was the main person responsible for conducting this project with the Year 6 group, a focus on linguistic variety in Brazil was chosen as a sub-theme together with students during a brainstorm session. This way she could discuss the role of diverse languages, such as English as a "Língua Franca" play in our language.

4.3. Implementation of the Solution

The implementation of the project lasted from August to November, 2018. Every lesson the teacher would devote a portion of it to work on the project (usually around 20-30 minutes). After the sub-theme was defined, students were encouraged to reflect on what they would like to present at the Science Fair. Many ideas came up at this point, such as creating a dictionary, doing a performance and a quizz. As students did not converge to one unique idea, they were encouraged to do a Pitch, i.e., a short presentation of their ideas to the group and later on vote on the best idea to be developed for the project. This was an important step to engage them in group work and help them develop their presentation skills. After no final consensus has been achieved, we have decided to combine their ideas into a Jeopardy Game similar to Who Wants to Be a Millionaire? This game would involve the quizz as well as a performance as students would need to play different roles, such as presenters, give hints, among others. The dictionaries would be the prize for the winners of the game.

In order to make that happen, the researcher and the teacher decided to introduce the tool Kahoot, as it is a a game-based learning platform that enables the creation of

¹Evaluation form <https://rb.gy/zlbsuo>.

multiple choice quizzes. The teacher used this resource in her lessons, which caught students attention and helped them become familiar with the tool. The teacher had access to a computer in the classroom and students were able to play the game by using their own smartphones.

Students were divided into five groups representing each region of Brazil (i.e: Norte, Sul, Nordeste, Sudeste and Centro-Oeste). Each group had to present questions related to linguistic varieties of the regions they represented. Students created their own questions and the teacher reviewed them throughout the lessons as shown in Figure 4 (a).



Figure 4. Students preparing their questions for Kahoot (a) and students practicing their game with peers (b).

In order to foster their learning and exchange of ideas with the real world, two Google Innovators from different regions in Brazil were invited to record videos answering some of student's questions regarding linguistic variety. These videos were shown to students as illustrated in Figure 5.

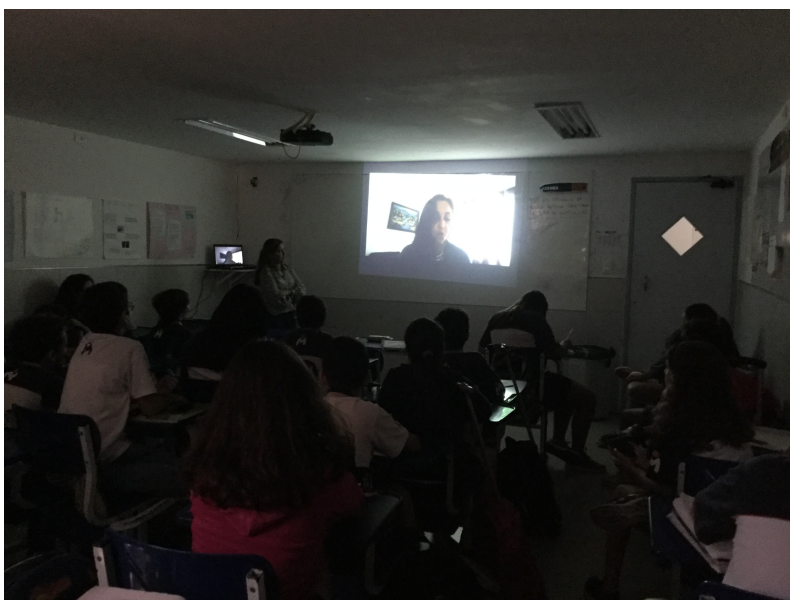


Figure 5. Invited guest talking about Linguistic Varieties in the Southeast of Brazil.

Students created their own Kahoot in groups² and were supervised by the teachers and the researcher. All the groups had the opportunity to present their kahoots to the

²Example of a Kahoot created by one of the groups <https://rb.gy/u3nggk>.

entire group to practice their presentations and receive feedback as displayed in Figure 4 (b). The groups were also responsible for creating the dictionaries that were handed out as prizes for the winners of the game as shown in Figure 6.

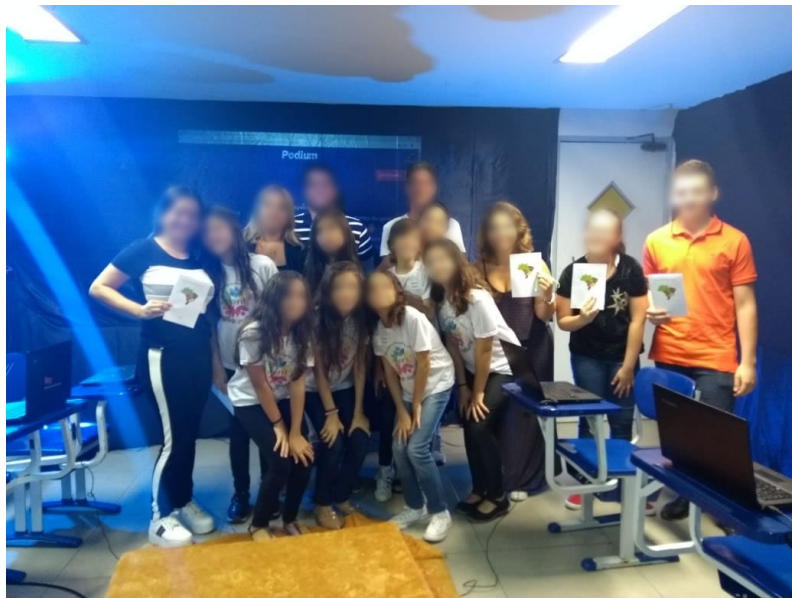


Figure 6. Winners receiving their dictionary prize in the Science Fair.

Students were also encouraged to create a script for the presentation as well as to decide among themselves the roles each of them would play at the final presentation. Since the beginning of the project, the teacher shared the rubric³ with the students so they would know how they were going to be evaluated. The teachers supervised all the process and made sure to help them solve any conflicts regarding team work.

4.4. Evaluation

By the end of the activities, students were requested to fill out a form in order to evaluate their experience throughout the project. When asked to evaluate their learning experience in the project, most of them evaluated it positively (numbers 4 and 5), as displayed in Figure 7. When asked about their favorite activity, 59% considered the activities using Kahoot their favorite. When asked about their least favorite activity, 14% complained about the activities. 14% did not report least favorite activities. Some mentioned the activities (i.e. homework) were very long. 11%, i.e., 3 students, mentioned the Science Fair. One student mentioned that it got confused and there were a lot of changing things.

These results suggest that although students enjoyed the use of technology in the lessons, especially, Kahoot; they seemed sometimes overwhelmed with the amount of activities to be done in class and in the Science Fair. It was also observed the need to focus on managing student's group work and workload in general as well as to make sure students really understand the instructions given in order to avoid frustration.

As regards the participating teacher, she also demonstrated a positive evaluation of the trainings provided. When asked for comments, critics or suggestions, she answered

³Rubric of the project <https://rb.gy/04udrf>.

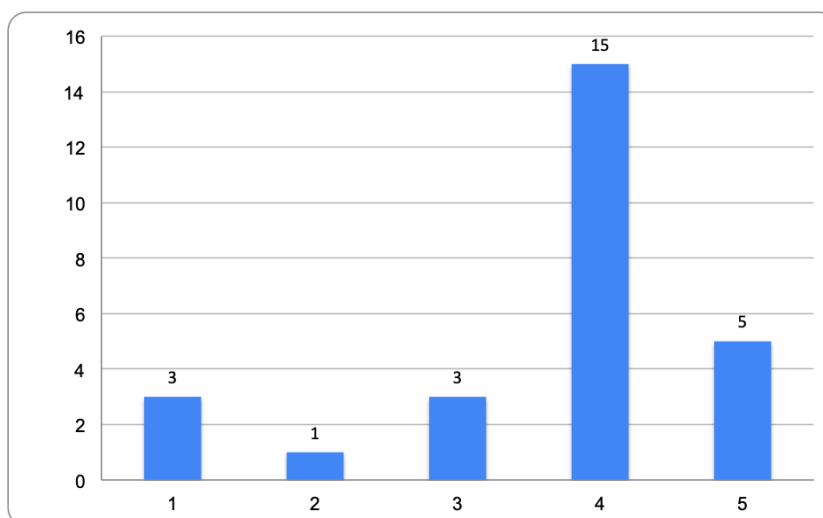


Figure 7. How do you evaluate your learning in the activities developed this semester with the use of technology?

the following: “*The researcher is solicitous and attentive to the needs of teachers and students. She is giving excellent support to the project by bringing innovative and functional ideas.*”.

4.5. Documentation and Reflection to Produce Design Principles

The analysis of the results made some general principles very evident. These principles must be followed in future cycles of the project:

- Technology can be used to focus on 21st century skills, such as empathy and collaboration, not just on content;
- Researchers and trainers must be mindful of student’s as well as teacher’s cognitive overload and excess work;
- Continuous training must be short, concise and available on demand.

5. Conclusion

This work has shown that the use of technology can provide a meaningful learning experience aligned with pedagogical curriculum. The learning experience developed emphasized active teaching methodologies. They were designed in partnership with the teacher and students themselves. Students were able to practice their knowledge in an interactive and engaging way. Greater empowerment of teachers was seen in the use of technology in their classrooms throughout the training and the development of the project.

The project was evaluated positively by students and teachers. Students enjoyed the use of technology in the lessons. Nevertheless, they seemed sometimes overwhelmed with the amount of activities to be done in class and in the Science Fair. Some principles were noted for the next cycles of the project, such as: (a) the importance of including 21st century skills in the goals concerning technology use as most problems were related to group dynamics; (b) the need to be mindful of student’s and teacher’s cognitive overload - technology should be integrated as part of the lesson not as something extra as this might overwhelm users; and (c) the importance of continuous training to be short, concise and available on demand due to changing needs of teachers and lack of time.

As future works, we intend to incorporate these lessons learned into future cycles and develop training material for teachers that consider these lessons while helping them incorporate technology in meaningful ways in the classroom.

6. Acknowledgements

The authors would like to thank the Google Innovators community, the mentorship of Susan Gaer as well as the teachers and students involved in the project.

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