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Project-Based Learning and English Language Speaking Skills with Students of a Higher Technological Institution

Aprendizaje basado en proyectos y destrezas orales del idioma inglés con estudiantes de una institución tecnológica de educación superior

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Abstract

Developing speaking skills is the main objective of the English language, but the biggest challenge. Mostly, English classes are based on teacher-centered methods, so students are involved in language contexts. In this regard, this study aims to analyze the relationship between Project-based Learning (PBL) and English language speaking skills with students of 4th level in a higher technological institution from November 2025 to April 2026. To do so, the literature was studied to deeply understand the Project-based Learning teaching method, and some studies concerning this topic. Regarding the intervention, students worked during four months on a project, integrating English and other subjects' knowledge. At the end of this academic period, a satisfaction questionnaire and an oral exam were administered. This study was based on the quantitative approach. The results show a good level of satisfaction and a satisfactory spoken English level, so it was found that there is a relationship between the two variables, but it is not strong. To conclude, there is a statistically significant relationship between students' satisfaction with PBL and English language speaking level, but not enough to indicate that student satisfaction is the absolute factor related to the level of oral skills.

Keywords: educational projects; language skills; learning processes; teaching methods

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Resumen

El principal objetivo y mayor reto del idioma inglés es desarrollar la destreza oral. Sin embargo, las clases de inglés se basan en métodos centrados en el docente; por tanto, los estudiantes no se involucran en contextos de práctica del idioma. En este sentido, el objetivo de este estudio es analizar la relación entre el Aprendizaje Basado en Proyectos (ABP) y la destreza oral del idioma inglés con estudiantes de cuarto nivel de un instituto tecnológico superior en el período académico noviembre 2025 – abril 2026. Para ello, se analizó la literatura para comprender de manera sustancial el ABP, así como los estudios relacionados con el tema. Acerca de la intervención, los estudiantes trabajaron durante cuatro meses en un proyecto, integrando tanto conocimientos de inglés como de otras asignaturas. Al final de este período, se aplicó un cuestionario de satisfacción y un examen oral. El estudio se desarrolló con base en el método cuantitativo. Los resultados muestran un buen grado de satisfacción y un nivel satisfactorio de destreza oral, es decir, se identificó una relación entre las variables, pero esta no es fuerte. En conclusión, la relación entre las variables no es suficiente para indicar que la satisfacción estudiantil es el factor determinante relacionado con el nivel de destrezas orales.

Palabras clave: destrezas del idioma; métodos de enseñanza; procesos de aprendizaje; proyectos educativos

Introduction

Worldwide, education is recognized as a fundamental means to reduce inequality among human beings. Concerning this, having well-prepared professionals who possess not only technical knowledge but also strong competencies in foreign languages, particularly English as a global language, is essential to respond to current social and labor demands. However, most countries where English is not the main language struggle with reaching English proficiency.

Regarding English language learning, Cronquist and Fiszbein (2017) assert that “most Latin American countries have not yet developed a cohesive strategy to regulate English programs in universities or the English proficiency levels among college students” (p. 20). This means that there is no clear way to address English learning in higher technological institutions.

In higher education, the institutions are mostly intended to provide students with hard and soft skills, but it is not easy when traditional teaching methods are still predominant in classrooms. Higher institutions must give students the opportunity to participate in problem-solving, but in their professional contexts (Guo et al., 2020).



Furthermore, about English proficiency, speaking skills are the main objective of an English class, and the greatest challenge at the same time. Nowadays, English classes are still mostly addressed through a teacher-centered teaching method; that is why students do not reach a reasonable and required English level before getting their degrees in higher education, so they lack some extraordinary job opportunities. Concerning this educational issue, there is a significant number of student-centered teaching methods that help them to build significant learning and enjoy that process, while having a desirable teaching environment. One of those methods is Project-based Learning, which grants students on learning to think, discover, choose, decide, and create, rather than just being a passive receiver of teachers' information. This results in developing critical thinking skills and reaching a better understanding of the subject (Astawa et al., 2017; Beckett & Slater, 2019; Cronquist & Fiszbein, 2017; Song et al., 2024).

Theoretical framework

Project-based Learning has its background in the progressive pedagogy promoted by John Dewey, who proposed a student-centered approach to education; this would engage students as active participants in the teaching-learning process, so that the method also promotes interest and motivation (Miller et al., 2021). Project-based Learning is a student-centered and collaborative approach since it encourages students to solve a real problem from their contexts by proposing a product while involving them in the responsibility of their own learning process (Al-Kamzari & Alias, 2025).

Project-Based Learning elements

Implementing this method requires teachers and institutions to be prepared enough to avoid wasting time on projects that just involve hands-on activities and making learning "fun". To succeed when implementing the method in the class, a project should respond to these elements: A) a challenging problem to drive the investigation. B) Sustained inquiry to find enough information. C) Student voice and choice to freely choose a problem, how to do the research, and the resources to present a final product. D) Critique and Revision to give feedback properly during the process. E) Public product to encourage students to do rigorous work to present a final product to an audience where they demonstrate what they can do (Boss & Larmer, 2018).

As it is shown, the application of the class method could sound and be considered as simple as just assigning a project where students may develop some products, but with no clear purpose. The success of Project-based Learning requires a clear intention of involving subject knowledge, students' commitment to their learning process, their teamwork skills, and teachers' clear guidance, among others.



Project-Based Learning benefits

When implementing PBL in classes, students develop autonomy in the learning process. They learn to set objectives and manage time, to develop problem-solving skills, and understand theory better by practicing in their real-world environments, which also turns into an opportunity to get ready for their professional challenges in the future. Moreover, Project-based Learning gives students the opportunity of peer learning in different fields by working on projects, likewise, learning the importance of diverse perspectives as it happens in job environments. Another benefit is that students are involved in real work scenarios, which benefits them by gaining experience in such problems or challenges. In addition, students develop projects based on their interests and concerns, showing authenticity to solve problems; during the process, they think deeply about how to improve when working on projects to achieve their goals (Evenddy et al., 2023).

Speaking skills

Implementing Project-based Learning in English classes aims to improve communication skills. Speaking is very important in both the first and second languages. Being able to speak in any language not only means producing words through the mouth but also communicating a message effectively. The speaking skills might be considered the most important among the different skills when learning a second or a foreign language since learners become the speakers of the language (Leong & Ahmadi, 2017).

By means of succeeding in teaching speaking skills, instead of still developing classes with traditional methods, it is advisable to have communicative sessions with meaningful contexts where students actively participate and have the opportunity to become more fluent than accurate in the target language (Sharma, 2024).

Speaking sub-skills

Speaking skills imply the development of certain sub-skills in order to become a good speaker of a language. Those sub-skills are A) Grammar: the correct use of grammar in communication avoids misunderstanding of the intended message. B) Vocabulary: when English language learners have a great knowledge of vocabulary to communicate, it will be easier to express their ideas and to respond in a conversation. C) Pronunciation: it is fundamental to master pronunciation since if a letter in a word is mispronounced, it can result in a totally different word, causing misunderstanding and miscommunication. D) Fluency: it is achieved when students enhance their grammar,



vocabulary, and pronunciation knowledge so that they can effectively communicate, being confident when speaking, instead of facing hesitation (Anggraini, 2022; Hans & Hans, 2017; NR et al., 2022).

There has been research on this topic, and as in everything, there are some key aspects in order to ensure its success. For instance, in research in a college in Tanzania, the authors found that to effectively transform the teaching process in higher institutions, it is necessary for more than just one teacher's effort. Moreover, there is evidence of students' positive reception of this method; for example, in a study at a university in Thailand, the results say that all informants had positive opinions towards Project-based Learning using English presentation. In addition, in a study at the Technical University of Babahoyo, an improvement in communication is shown. (Díaz-López et al., 2025; Saimon et al., 2023; Sirisrimangkorn, 2021)

Once having introduced some concepts about Project-based Learning, and some findings about its application in language acquisition, there is a clear need to seek more information that really demonstrates its benefits on English-speaking skills. To support this claim, the literature related to English language teaching reports several methods that English language teachers employ to reinforce communicative competence. Nevertheless, those actions have not been enough to solve the poor English language competency among learners (Bakar et al., 2019).

This study aims to answer the question: What is the relationship between Project-based Learning and English-speaking skills with students of 4th level in a higher technological institution, November 2025-April 2026, academic period? Moreover, to have a comprehensive study, from the general question come these three sub-questions: What is the level of students' satisfaction regarding Project-based Learning implementation in English classes? What is the level of English Language Speaking skills in project-based learning classes? And, what is the correlation between the level of students' satisfaction in Project-based Learning and English Language Speaking Skills?

These research results are relevant for English professors and higher institutions; there is necessary and proven information regarding speaking skills development, and about students' perceptions of Project-based Learning. This could turn into a guide on how to approach students in a better way, so they really reach English proficiency. It is also important because it is a study in higher education in Ecuador, with students of technical careers developing a project aiming to solve an issue related to their professional field.



Methodology

This research was conducted in a private higher technological institute in Ibarra, Imbabura, involving the careers of Medical Emergencies, Nursing, Physiotherapy, Early Childhood Education, Elementary Education, Business Intelligence, and Digital Marketing; during the academic period November 2025 – April 2026.

Research approach

This work was based on the quantitative approach to make possible to determine students' satisfaction regarding Project-based Learning implementation into English classes. The quantitative approach was also applied to measure the students' English-speaking skills level after the application of a sequence based on the Project-based Learning method. This research approach helped to provide the necessary data, so it is possible to answer the main objective, which is to analyze the relationship between Project-based Learning and English Language Speaking Skills. This decision was supported by the following other research works, for instance, a study conducted in a college in China by Zhong et al. (2025) to investigate EFL students' engagement in project-based speaking activities, which utilized surveys to determine the satisfaction level and tests to evaluate speaking.

Type and design of research

The research design is non-experimental, and the types of research for this study were the cross-sectional, since it was applied at a specific moment, and the correlational to determine the level of association between the independent variable, Project-based Learning, and the dependent variable, English-speaking skills, without manipulating them. About the implementation of the method, students worked on a project from December 2025 to March 2026, which consisted of designing an application based on their careers and the needs they identified during their internship time. Students had the opportunity to decide if they wanted to work in pairs or on their own, and to choose the necessary resources to develop their project. During the process, they received feedback from the teacher, and they were encouraged to reflect and be aware of the importance of the product they were creating. At the end of the process, they presented their products to the class. After that, they were invited to answer a questionnaire related to their satisfaction with the method.

Research setting and participants

Respecting the research subjects, for this study's purposes, the population consisted of a total of 243 students; however, 50 were absent. Therefore, it was determined that a convenience cluster sample of 193 students was formed by five groups (4A – 4B – 4C-



4D – 4E) who were in the last English level. The decision to work with a convenience cluster was due to the fact that not all legally enrolled students regularly attended during the semester, and others dropped out, so including all students would have resulted in a bias for the research. Below is an illustration to show the determination of the research participants.

Table 1
Determination of the research participants

Class	N° enrolled students	N° absentees	Convenience cluster
Class A	22	4	18
Class B	57	8	49
Class C	23	5	18
Class D	67	14	53
Class E	74	19	55
Convenience cluster total			193

Data collection sources and techniques

Taking into account the first specific objective, a survey was designed with the instrument of a questionnaire, which allowed to collect data related to the students’ satisfaction with the Project-based Learning implementation in English classes. This instrument consisted of ten questions, five for each of the two dimensions. The questionnaire included informed consent to ensure the students’ freedom to participate; the answers for each question were established according to a Likert scale, and it was administered through Google Forms. To ensure the rigor of the data collection process, a variable operationalization matrix was developed, and the questionnaire was adjusted according to the suggestions of three English teachers who are experts in the Project-based Learning method and research projects, who carried out the instrument validation process. The suggestions were basically on the scale since at first three levels were proposed, but experts suggested five, and the pertinence of two questions regarding the objective.

Regarding the second specific objective, a speaking achievement test was designed, which consisted of the project presentation. This aimed to evaluate the students’ English language speaking skills; for this purpose, it was considered an adaptation of the Cambridge speaking rubric at the A2 level. The variable operationalization matrix, the questionnaire, and the speaking rubric are available on this repository as [PBL variables matrix-instruments-data](#).



Data analysis

After collecting data with the proposed instruments, the questionnaire answers were treated to obtain a suitable and organized database. The student’s satisfaction with Project-based Learning was analyzed through descriptive statistics representing data in tables showing the frequency of each indicator in the two dimensions. The speaking test scores were analyzed through the JAMOVI program to apply the inferential statistics to identify the relationship between Project-based Learning and English Language Speaking Skills. The correlation between the two variables was calculated through the nonparametric measurement Spearman, since satisfaction is a qualitative ordinal variable, and the speaking skills scores are a quantitative variable. The database is available on this repository: PBL variables matrix-instruments-data

Results

After the Project-based Learning method implementation phase, and once the data were obtained through the instruments that were described in the methodology, this section presents the main findings related to each specific objective of the study. In this regard, the results refer to the satisfaction level within Project-based Learning, the English language speaking skills level, and the possible relationship between these two variables. By means of a better understanding through illustrations, the findings are presented in tables and figures.

Objective 1: To determine the level of students’ satisfaction regarding Project-based Learning implementation in English classes.

Table 2

Students’ satisfaction about Project-based Learning Elements

SATISFACTION LEVEL	PROJECT DESIGN ELEMENTS				
	Challenge (%)	Research (%)	Student Voice (%)	Revision (%)	Public Product (%)
Totally disagree	2.6	2.6	2.1	3.6	1.6
Disagree	0.5	0.0	0.0	0.0	2.1
Neither agree nor disagree	3.1	5.2	5.2	7.3	11.9
Agree	44.6	48.7	34.2	35.2	38.3
Totally agree	49.2	43.5	58.5	53.9	46.1
TOTAL	100	100	100	100	100



Table 2 shows the results of the questionnaire regarding the indicators of the dimension Project design elements. The results show that above 80 % of the participants agree or totally agree, evidencing a general good level of satisfaction among students. Among the five indicators, inside satisfaction, “Challenge” reached the greatest acceptance, with a total of 93.8 %, and immediately after, the indicators “Student Voice” and “Research” with 92.7 % and 92.2 % correspondingly. On the other hand, it is important to highlight the number of students who did not feel any acceptance or rejection, so their answers were neutral in reference to the indicator “Public product”, reaching 11.9 %.

Table 3
Students’ satisfaction with Project-Based Learning Benefits

SATISFA- CTION LEVEL	PBL BENEFITS				
	Engagement (%)	Inter-Collaboration (%)	Problem-solving (%)	Reflection (%)	Authenticity (%)
Totally disagree	2.1	1.6	2.1	1.6	2.1
Disagree	0.5	0.0	1.0	0.5	0.0
Neither agree nor disagree	8.3	14.0	10.9	9.3	7.3
Agree	44.0	45.1	43.5	40.4	37.8
Totally agree	45.1	39.4	42.5	48.2	52.8
TOTAL	100	100	100	100	100

Table 3 shows the results regarding the five indicators of the dimension Project-based Learning benefits, which are also used to determine the students’ satisfaction. The data evidence quite good acceptance since again more than 80 % of participants’ answers were distributed in “agree” and “totally agree”. Considering the indicators, “Authenticity” was the one that reached the greatest number of answers showing agreement with 90.6 %, this is followed by the indicators “Engagement” and “Reflection” with 89.1 % and 88.6 % correspondingly. Nevertheless, it is necessary to point out the number of students whose answers were neutral; in this regard, the highest percentage was 14 % in the “Interdisciplinary collaboration” indicator.

Summarizing the results regarding students’ satisfaction with Project-based Learning, the data indicate that 89.1 % showed positive acceptance, but there was also a percentage of students (8.2 %) whose answers were neither in favor nor against.



Objective 2: To evaluate the level of English Language Speaking Skills in Project-based Learning classes.

Table 4
Oral exam results – speaking sub-skills

	Vocabulary	Grammar	Pronunciation	Fluency
Mean	2.06	2.05	1.89	1.95
Median	2.00	2.00	2.00	2.00
Mode	2.50	2.50	1.50	1.50
SD	0.435	0.425	0.420	0.419

Note: In the oral exam, the scale was excellent (2.5), satisfactory (2), and needs improvement (1.5). The maximum was 2.5, and the minimum was 1.5 for each sub-skill. The total speaking score was out of 10.

In Table 4, which is about the oral exam results, two marked differences stood out among the four sub-skills that comprise speaking skills. Students tended to achieve higher scores in the sub-skills “Vocabulary” and “Grammar”, the means were 2.06 and 2.05, respectively, resulting in a satisfactory level, while “Pronunciation” and “Fluency” showed a relatively lower average with 1.89 and 1.95, respectively, but this was not considered a poor score as it remained very close to the satisfactory level. The standard deviation average of 0.40 shows that most scores were close to the mean, which indicates a similar performance in the oral exam among all the students.

Table 5
Average speaking score per class out of 10

Class	Mode	Median	Mean
4A	7.5	7.5	8.11
4B	6	7.5	7.79
4C	10	8.25	8.19
4D	10	8	8.11
4E	6	8	7.81
General Average Score	6	8	7.95

Moreover, in Table 5, regarding the scores, the average was calculated out of 10 per class, and it was found that there are no significant differences between the five courses. However, there is a difference in the individual scores with the most frequency per class, where students from the classes 4C and 4D mostly had 10 in the speaking exam, while the ones from the 4B and 4E classes mostly had a score of 6 out of 10.



To sum up the speaking scores data, after the implementation of PBL in English classes, most of the students who participated in this study reached a satisfactory speaking level, especially in the speaking sub-skills “Vocabulary” and Grammar.

Objective 3: To correlate the level of students’ satisfaction in Project-based Learning and the level of English Language Speaking Skills.

For this purpose, these hypotheses were established:

H0: There is no relationship between the level of English-speaking skills and students’ satisfaction in PBL.

H1: There is a relationship between the level of English-speaking skills and students’ satisfaction in PBL.

Table 6
Correlation between the satisfaction and speaking scores.

	Speaking skill level test	
	Rho of Spearman	0.192**
Satisfaction level	gl	191
	valor p	0.007

Note: * p < 0.05; ** p < 0.01; *** p < 0.001

In Table 6, considering the data for the students’ level of satisfaction and English-speaking skills, based on the Spearman’s rank correlation coefficient result $r_s = 0.192$, the null hypothesis was rejected, and the alternative was approved. It means that there is a relationship between the level of English-speaking skills and students’ satisfaction in PBL. However, since Spearman’s rank is close to zero, this relationship is weak, indicating that when one variable increases, the other tends to increase by a smaller amount. The p-value = 0.007, indicating that this correlation is not random.



Table 7
Significant correlations among satisfaction sub-dimensions and speaking sub-skills

		Vocabulary	Grammar	Pronunciation	Fluency
Revision	Rho of Spearman	0.147*	0.186**	0.192**	0.159*
	valor p	0.042	0.010	0.008	0.027
Problem-solving	Rho of Spearman	0.254***	0.225**	0.203**	0.212**
	valor p	<.001	0.002	0.005	0.003
Reflection	Rho of Spearman	0.190**	0.183*	0.138	0.172*
	valor p	0.008	0.011	0.056	0.017

Note: * p < 0.05; ** p < 0.01; *** p < 0.001

Finally, Table 8 shows the most statistically significant correlation among the students' satisfaction indicators and speaking sub-skills. All reported correlations are positive but weak, which means that as satisfaction in "Revision", "Problem-Solving," and "Reflection" increases, students' performance in speaking sub-skills also tends to improve. The most important relationship is between "Problem-solving" and "Vocabulary".

Summarizing the correlation results, the existence of a statistically significant relationship between the two variables is even though it is weak.

Discussions

This study aimed to analyze the relationship between Project-based Learning and English Language Speaking Skills with students of the 4th level in a higher technological institution, during the academic period November 2025-April 2026. The interest in this topic was due to the clear need to improve the English language speaking level in students. The results about the satisfaction show positive acceptance by most students. Regarding speaking skills, the average score among the different classes places students at the satisfactory level. Respecting the correlation between students' satisfaction and speaking skills level, there is a statistically significant relationship, but it is a little weak.

Regarding the first sub-question: What is the level of students' satisfaction regarding Project-based Learning implementation in English classes? Most students indicated a high level of satisfaction. Among the satisfaction indicators about which students were asked, "Challenge" and "Authenticity" stand out with the highest level



of satisfaction. About these indicators, according to the literature review, it means that students show a positive attitude searching for a project topic, which implies a real problem as well as involving students' interests and concerns to propose something new regarding their community or professional contexts. These results align with the study conducted by Sirisrimangkorn (2021), which found that students were satisfied with the implementation of the Project-Based Learning method, as they felt actively involved in contexts where they learned and used the language.

Furthermore, students also gave a positive rating to the indicators related to "Student Voice," "Research," "Engagement," and "Reflection," which means that they are pleased to have the chance to demonstrate their knowledge using their preferences, doing research, showing a high level of commitment, and also thinking deeply while working on their projects. These study results line up with the findings of a study conducted in a college in China by Zhong et al. (2025), where students highlighted "Engagement" as the main indicator of significant pleasure and satisfaction when being involved in projects. Essentially, high satisfaction means that students feel more comfortable and perceive improvement in their learning process with PBL tasks, as they are involved in real-world contexts using the English language.

Concerning the second sub-question: What is the level of English Language Speaking skills in project-based learning classes? The fact of having a mean of 7.95 out of 10 in the oral exam is the result of having been working on a significant project, with a clear purpose, so that students reflected all the time about what they were creating, and they became aware of the importance of their final products. This is in line with these studies, Díaz-López et al. (2025); Saimon et al. (2023), where they found that speaking scores were enhanced since students were in continuous language exposure while developing a project. The two differences between the four sub-skills are the invested time working on the project and the revision. Therefore, as students were working, checking, and doing some changes in their products, they were able to practice more and master grammar and vocabulary. Meanwhile, pronunciation and fluency required more preparedness from the students.

About the third sub-question: What is the correlation between the level of students' satisfaction in Project-based Learning and English Language Speaking Skills? The correlation between the two variables is positive but moderate; it means that while the level of students' satisfaction increases, the students' speaking level shows a small growth. About this result, it seems that satisfaction should not be studied as a unique factor related to speaking skills level. These results are similar to the ones founded on a study conducted by Mandala and Hardi (2025), where the authors found that almost half of the participants did not show significant variation in the oral performance even though there was a good level of satisfaction. The authors indicate



possible affecting factors like individual confidence, experience with the language, or access to study resources. Furthermore, Dewi Mirah Setia et al. (2019) mention low learner autonomy as another factor that might not allow for better development of oral English performance. This comparison helps to sum up the understanding that speaking skills development implies more than being satisfied with a teaching method.

Conclusions

There is a great level of satisfaction among students about Project-based Learning in English. This can be interpreted as an advisable way to work, aiming to make students feel more involved in the target language contexts, and allowing them to think deeply about any real issue to contribute to a solution, so they can integrate their knowledge concerning English and other subjects.

The oral test scores indicate a reasonable level of spoken English. Although the grades are not excellent, the general average allows us to conclude that there is at least a satisfactory level, mostly in vocabulary and grammar mastery, as well as speaking sub-skills. This is because students worked continuously researching about the topics of their projects, likewise making some changes, corrections, and adjustments. However, pronunciation and fluency as speaking sub-skills still need to be improved through practice with teachers' guidance and individually. Time is a factor that should be considered when developing classes with Project-based Learning, so that it is possible to make students do one or two rehearsal presentations to make them gain confidence to talk in public, as well as give them some recommendations about pronunciation and fluency.

There is a statistically significant relationship between students' satisfaction with PBL and English language speaking level, but not enough to demonstrate that it truly influences when speaking in English. It means, although students can feel comfortable in English classes based on Project-based Learning, and demonstrate positive acceptance and satisfaction with that teaching method, speaking skills development implies more than students' satisfaction.

At this point, it is necessary to refer to the limitations of this work, despite the results showing that PBL is associated with speaking skills; the variable satisfaction should not be studied in isolation from other possible external variables out of the researcher's control, such as public speaking anxiety or intrinsic motivation. In future studies, it would be advisable to explore other factors apart from satisfaction that might influence oral performance. It would also be significant to conduct new research that involves assessing the oral skills before and after the implementation of the teaching method; moreover, applying interviews to know about what other factors are related to students' oral performance in English based on students' thoughts.



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Sobre los autores

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Conflict of interest

The authors declare no conflicts of interest.

Author's contributions

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