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Solidarity and Student Engagement: A case study of academic social projects during COVID-19

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Abstract.

Challenges to maintain the engagement and quality of Brazilian education were seriously exacerbated during the COVID-19 pandemic. A question became relevant: would it be possible that projects, even with the distance of students, could maintain engagement and still contribute to society? The main objective of this research is to demonstrate a case study in a university in Belo Horizonte (a city with more than 3 million inhabitants) of two academic projects, which not only promoted the concentration of efforts of the participating students, but brought social results both for disseminating quality knowledge to society as well as social actions with media repercussions. The projects "Liga de Inventores" (development of inclusive games for children with special needs and elderly people) and "Transferência de Conhecimento" (content platform with knowledge generated on a scientific basis, with technical and social themes: from equipment maintenance to lectures on social issues such as: violence against women and discrimination), were developed during the years 2020 (second semester) and 2021, with the participation of more than 70 students per semester, totaling the participation of more than 180 students, resulted in different types of results, such as: inclusive games that were delivered to needy institutions, a content platform with more than 20 social and technical themes, 3 media repercussions and an award, two honorable mention awards in a higher education company with more than 300 thousand students and 27 associated institutions..

Keywords: Engagement, Teaching, COVID-19, Inclusive Games, Content Platform.

1. Introduction

The year 2020 was marked by the COVID-19 pandemic, which changed all forms of interaction and businesses that were active in society. One sector that had a demand with a real level of urgency was the education sector. The readjustment for the implementation of social distancing impacted important issues in Brazilian education at all levels, including the university (Sharma et al., 2020, Miller, 2021, Reimers, 2022).

However, contemporary Information Technology (IT), which has resources such as: Cloud Computing, High Speed Telecommunications, Social Networks, Smartphones, Mobile Applications; it was considered as a support resource for the maintenance of the services that society demands (Kalimullina et al., 2021).

In this scenario, higher education, as well as other market sectors, demanded the use of information technologies to disseminate content, classes with telepresence resources (video calls, audio, videos and podcasts), use of cloud computing resources, as well as other internet resources. Even with all these resources, there is no guarantee of student engagement or the quality of teaching and extension projects (Sunarto, 2021; Gopal et al., 2021).

Thus, this article has the general objective of demonstrating a case study of two extension projects, during the pandemic period, at a university in Belo Horizonte. The projects were carried out during the second half of 2020 and the year 2021. As specific objectives, it aims to demonstrate: the definition of projects, with their scope and way of conducting them; the results of the artifacts developed by the students, and; to analyze the engagement and the results that the projects and those involved presented.

Such an analysis is justified as an analytical contribution on the effects and possibilities of teaching that, like all sectors of society, demanded adaptations.

2. Material and Methods

For the description of this case study, it is plausible to describe the concepts and tools that were the basis of the projects carried out, in addition to the methodology for their application.

2.1 Concepts Evaluation

As already mentioned, the extension projects to be evaluated took place during the pandemic period, thus, they respected the process of social distancing and took place digitally for their elaboration and implementation (collaboratively and with virtual meetings). Meetings were held, respecting the current safety protocols for the prevention of COVID-19, for the manufacture of the physical elements that were produced.

The projects relied on the theoretical and practical concepts of:

- **Cloud Computing Platforms:** Cloud computing is a concept where data storage services of various formats, as well as programming resources and structures and systems and portals administration are available as a service. Many of these resources are free, which makes it possible to develop content and data storage platforms, even on a smaller scale, for projects that have low (or no) financial resources (Velte et al., 2010; Srivastava & Khan, 2018; Murphy & Rocchi, 2021).
- **Production of Digital Content and Social Networks:** the production of content was widespread in society, with resources such as Tik Tok, Facebook and others. It can be done both independently and by specialized companies. It is a resource widely used by the young audience, which covers a large part of university students. The content can be either an image, video or podcasts, which was favorable to various content developed by students. Social networks serve as a broad means of disseminating content from multiple perspectives. Its free access enables not only entertainment content, but also content with specific themes (Junior , 2021).

- **Gamification for Teaching and Assistance in Treatment:** the use of games for teaching and assistance in medical treatments is a reality. So concepts for the elaboration of rules, design, implementation, target audience, ways of playing and expected results were used to conduct the projects (Barbosa & Amaral, 2021; Souza et al., 2021)
- **3D printing:** some of the games are physical, like puzzles and magnets. Thus, the 3D printing process was used, a technology in which objects are printed, with their composition material being defined by the type of filament (which would be the "ink" for a paper print) that is used (Kumar et al., 2019)
- **Social Impact Themes:** Social impact themes are often portrayed with a certain lack of care in their analysis. There are several types of issues that guide the daily life of society, such as: racial slurs, discrimination based on sexual options, domestic violence; in addition to these, some that include actions related to health, such as: pink october (campaign against breast cancer), blue november (against prostate cancer) among others. It is not a simple task to mention or debate these topics, and they should be part of the student's repertoire, since he will not only be a professional who will work only in his area of expertise, but he will also be a citizen who will live with the issues of its society (McCabe et al., 2019; Moreira, 2019; Pereira et al., 2021).

2.2 Methodology

The methodology to be analyzed has two aspects. Firstly, there is the project definition methodology, which is managed by the university that offers the projects. The other bias relies on the methodology of the projects themselves, with their conduct and products generated. The project implementation process has the following steps, according to the premises of the institution where the students are enrolled:

- **Project application by dedicated professors:** dedicated professors need to submit their projects, and after a curation process, they are selected for implementation. Projects must contain: name, objectives, vacancies, methodology, justification and possible results.
- **Publication of vacancies available to university students:** on the platform that manages student data and content, vacancies for student registration are published. This application can be focused on a specific course (Engineering, Medicine or others) or be interdisciplinary.
- **Enrollment of students in the project through the university's platform:** the student enrolls in the specific project to participate in the current semester.
- **Teachers lead the project:** at this moment it is the process of executing the proposed project.
- **The results are presented in the form of a 5-minute pitch and delivered as a report to the university:** at this moment, it is shown not only to the university, but to the company that maintains the intuition, the results and they are evaluated for awards.

With this premise, three results are demonstrated in this research:

- **The implementation of the projects proposed by the teachers:** in this research, two implemented projects will be demonstrated, as well as their objectives, methodologies, enrolled students;
- **Presentation of the results obtained by the projects:** here are some results obtained by the students, which appear as the artifacts developed, such as platforms for the dissemination of results, logos, games, social networks of the projects, dissemination projects, lectures and so on.
- **Critical analysis of the development of the project:** will be described and analyzed: student engagement and repercussions in media and social networks.

Such results are described below.

3. Results

The description of the results follows a presentation of the implementation of the projects, an analysis of the generated contents and then a critical evaluation of the generated impacts.

3.1 Project Implementation

The project proposals were aligned as follows:

i. **Project 1**
   a. **Name:** Knowledge Transfer and Iteration with Society (in Portuguese: *Transferência de Conhecimento e Iteração com a Sociedade*)
   b. **Objective:** Creation of content, such as Podcasts and Videos, to clarify doubts about the daily life of society, in addition to representing school reinforcement and dissemination of the profession, providing interaction and assistance in expression and teaching.
   c. **Estimate of Results:** Platforms with content with technical/academic quality for society, made by academics from different courses.

ii. **Project 2**
   a. **Name:** The UniBH Inventors League (*in portuguese: Liga de Inventores do UniBH*)
   b. **Objective:** creation of inclusive games for children, adolescents and elderly people with difficulties in learning, in motor coordination, with attention deficit, audiovisual and autism. Students develop the games that will be made in the LAB design and delivered to institutions such as shelters, day care centers, APAE and nursing homes.
   c. **Results Estimation:** Games that could contribute to the comfort and well-being of people with some type of special need.

The application process was done online through the platform used by the university. Its implementation process relied on the protocols that were defined by government agents to combat the spread of COVID-19. Thus, the projects had meetings with digital meetings with the students, except for the moments of making the physical games (which had all the protection available in the assembly environments). The participating students came from all

the courses available at the college, such as engineering, technology, courses in the health area, management and others.

3.2 Developed Content

With a temporal analysis, since they were projects that lasted 1 year and 6 months, it can be summarized that the UNIBH League of Inventors project addressed a different audience in each of its semesters:

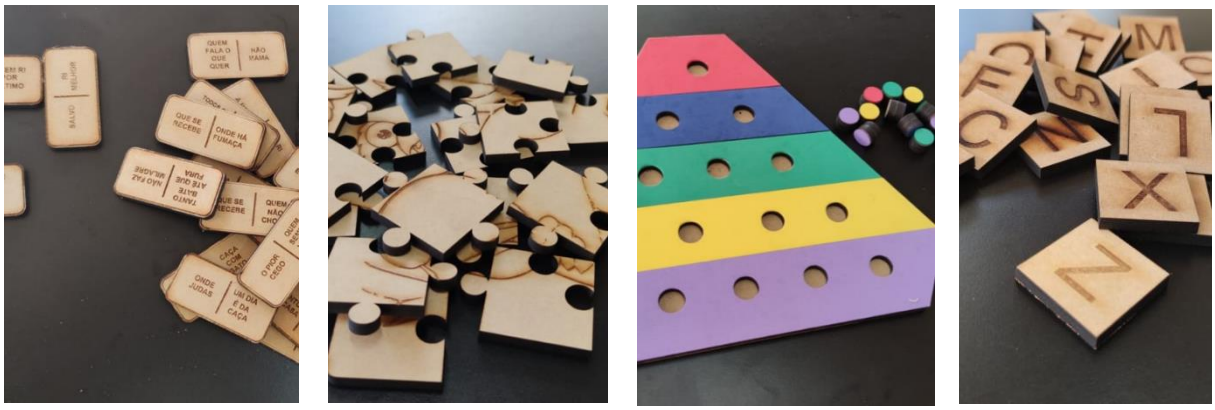
- 2020/2: development of an online magazine of games about professions for visually impaired children who communicate through sign language. 3 kits were also developed with 10 games for children with motor and cognitive difficulties.
- 2021/1: development of 3 kits containing 11 games for children with autism.
- 2021/2: development of 3 kits containing 12 games/each for the elderly in shelters.

The Knowledge Transfer and Interaction with Society project also sought to address sensitive topics for citizens in each of the semesters, students developed videos and podcasts with the following themes:

- 2020/2: Gender and Race Equality, 33 videos.
- 2021/1: Pandemic and home office, 21 videos.
- 2021/2: Fake News, 8 videos.

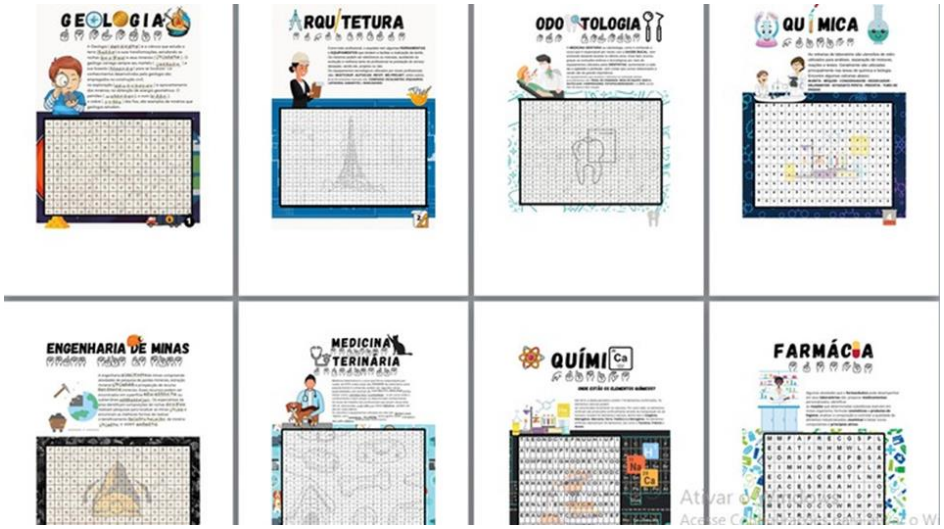
In the three semesters of the Liga de Inventores extension project, a total of 33 different games were developed (Figure 1) and donated to six partner institutions, among them: Casa de Acolhimento de Crianças de Belo Horizonte, APAE – Sabará, Institudo Educacional Ebenézer – Betim, Poverty Support Society – Home for the Elderly Recanto da Saudade, Instituto Geriatric Afonso Pena (IGAP) and Home for the Elderly São Jerônimo of the São Vicente de Paulo Society. The online magazine produced (Figure 2) contains 15 different activities and was made available as a PDF file.

Figure 1: Games produced by members of the UNIBH Inventors League.



Source: (Authors, 2022)

Figure 2: Magazine of activities for children in Brazilian sign language.



Source: (Authors, 2022)

In the Knowledge Transfer and Interaction with Society extension project, 66 videos were developed (in Figure 3), and published on the Instagram channel @promovendoconhecimento, with 3680 views. Some of the topics covered were: 1) Violence against children; 2) Vaccine: creation, testing and use; 3) Natural cosmetics; 4) PIX; 5) Citizen income; 6) Literacy at Home; 7) Remedies: tests and evidence; 8) Fires: causes and consequences; 9) Fake News; 10) Distance learning; 11) Environmental Licensing; 12) Ecological alternatives to menstruation; 13) TDH; 14) Differences between veganism and vegetarianism; 15) Postpartum depression; 16) Dysthanasia; 17) The importance of the Technical Responsible in the work; 18) Autism; 19) Nomophobia; 20) Home Office; 21) Inclusion and; 22) Memes: care and legislation.

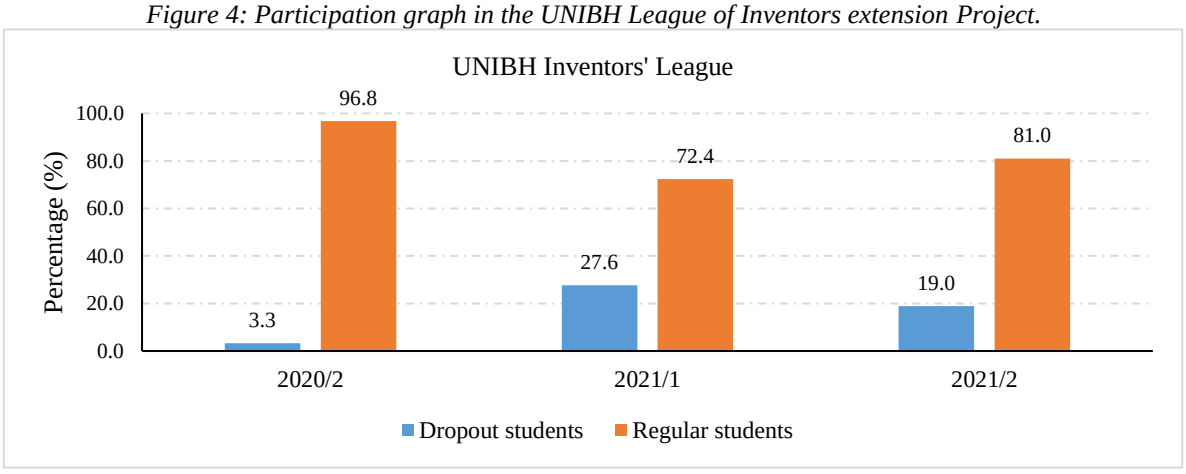
Figure 3: Catalog of videos produced in the extension project Knowledge Transfer and Interaction with Society..

Source: (Authors, 2022)

3.3 Student impact and engagement.

The Liga de Inventores UNIBH extension project in its first semester (2020/2), Figure 4, had 31 subscribers and only 3.3% did not complete the semester, in the first half of 2021, 76 registrations were obtained and 21 withdrew and in the second semester of 2021: 47 students finished the project and 11 dropped out.

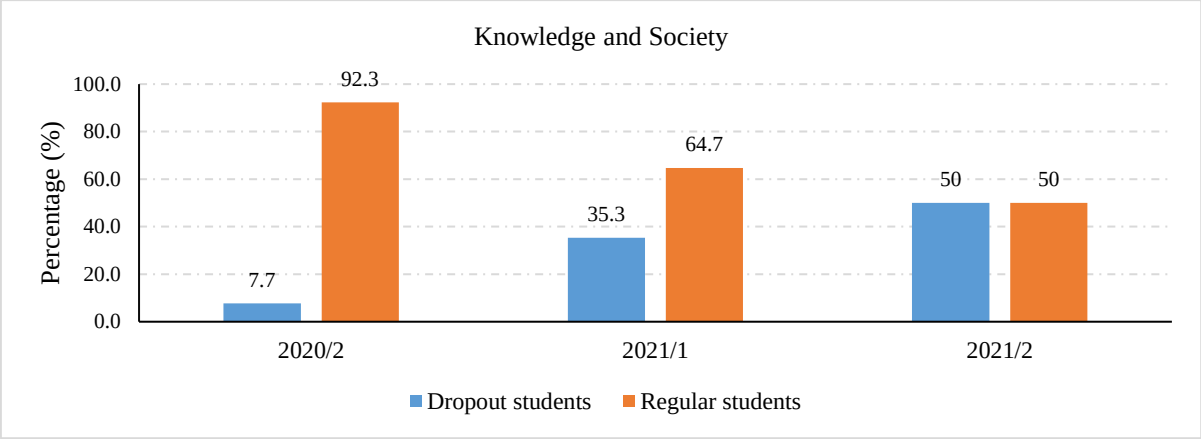
Figure 4: Participation graph in the UNIBH League of Inventors extension Project.



Source: (Authors, 2022)

The Knowledge Transfer and Interaction with Society extension project, Figure 5, had in 2020/1 with: 27 subscribers with approximately 8% of dropouts. In 2021/1: 68 entries and 35.3% dropouts. Already in 2021/2: 36 subscribers and 50% dropouts.

Figure 5: Participation graph in the Knowledge Transfer and Interaction with Society extension Project.



Source: (Authors, 2022)

The variation in numbers is justified by the increase in options for extension projects in the catalog of the ANIMA teaching group. The Liga de Inventores UNIBH extension project had repercussions with publications in the Boletim Avante Social (Figure 6), in the Exclusive Magazine (Figure 7), on the UNIBH Blog (Figure 8), and on the BH Eventos website (Figure 9).

The professors responsible for the project had honorable mentions with the project in two semesters at the Anima Research & Extension Exhibition: 2020/2 (*Mostra de Pesquisa & Extensão Ânima*), Figure 10 and 2021/1, Figure 11.

Figure 6: Publication of the Forward Social Bulletin.

Source: (Avante Social, 2021)

Figure 7: Exclusive Magazine Publication.

Source: (Revista Exclusive, 2021)

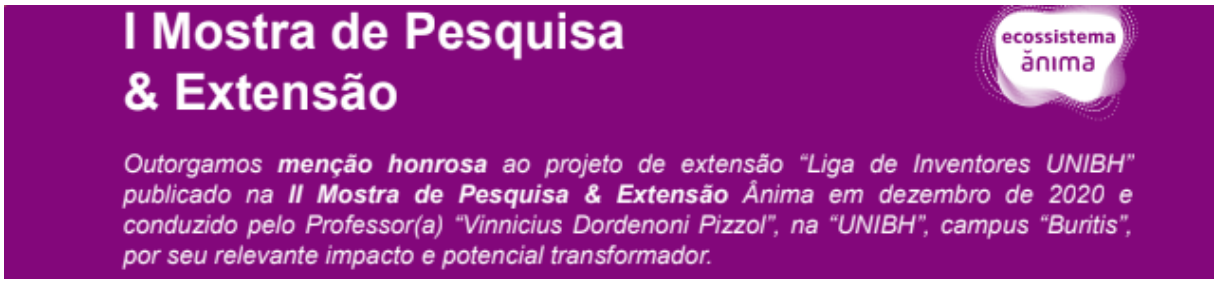
Figure 8: UNIBH Blog Post.

Source: (UNIBH Blog, 2021)

Figure 9: BH Eventos publication.

Source: (BH Notícias, 2021)

Figure 10: Menção honrosa I Mostra de Pesquisa & Extensão Ânima.(Menção honrosa I Mostra de Pesquisa & Extensão Ânima).



Source: (Authors, 2022)

Figure 11: Honorable mention II Anima Research & Extension Show (Menção honrosa II Mostra de Pesquisa & Extensão Ânima).

Source: (Authors, 2022)

4. Conclusion

Teaching has always had challenges to maintain engagement and connect knowledge with the demands of society. During the COVID-19 pandemic, this demand was heightened.

It was evident that the use of technology resources was indispensable for meeting students and conducting activities for the projects. However, engagement proved to be a complex issue: while in one of the projects, it was possible to maintain and even recover engagement in certain periods, the other project had a continuous decline over the semesters.

Even with such challenges, it is worth noting the considerable impact on society that such projects have brought. Even with such challenges, quality products and relevant interactions with an audience with real demands for attention were delivered, with an evaluation and positive returns on the actions taken.

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