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How Does Involvement In Student Associations Contribute To The Development Of An Engineer's Skills? Example Of Magiepoly: Raising Awareness Of Gender Equality Through Games.

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**HOW DOES COMMITMENT IN STUDENT ASSOCIATIONS
CONTRIBUTE TO THE DEVELOPMENT OF AN ENGINEER'S
SKILLS? EXAMPLE OF MAGIEPOLY: RAISING AWARENESS OF
GENDER EQUALITY THROUGH GAMES.**

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ABSTRACT

Some engineering students get involved in student associations during their studies. They develop multiple skills such as: leadership and management, communication, project management, supervision and transmission of knowledge, service to others, etc. However, they are not always aware of it.

Helphi, a student association of EPF Engineering School, was responsible for organising an afterwork event to be held on International Women's Rights Day. As student members were brainstorming, the idea of a board game, both informative and entertaining came up: MagiePoly was born. MagiePoly is a game, inspired by a well-known board game, which aims to raise awareness of gender inequalities.

During their studies, engineering students have access to an eportfolio, but they do not always have the habit of using it to identify how they develop their skills, what they need to improve or how their career plans could evolve. Students also attend an introductory course on the research process. It is within the framework of this course that students co-write with their teacher an article on the acquisition of engineering skills through involvement in student associations.

This article describes how the creation of MagiePoly has contributed to the engineering students' skills and how the realisation of a project have been key to the motivation, commitment and success of these students.

1 INTRODUCTION

Student engineers at EPF Engineering School are trained to be aware and face society's challenges, technological issues, and organisational changes to come. During their academic studies, students carry out a variety of technical projects or innovation challenges. These projects prepare students for their professional career, as they collaboratively solve engineering problems.

As commitment is a key value for EPF Engineering School, student engineers should be committed to the school's life. This commitment can be made in a variety of ways in extra-curricular activities and will enable to develop some of the following skills: leadership and management, communication, project management, supervision and transmission of knowledge, service to others, etc.

Some engineering students get involved in student associations during their studies. Helphi, a student association of EPF Engineering School, was responsible for organising an afterwork event to be held on International Women's Rights Day. As student members were brainstorming, the idea of a board game, both informative and entertaining came up: MagiePoly was born. MagiePoly is a game, inspired by a well-known board game, which aims to raise awareness of gender inequalities.

During their studies, engineering students have access to an eportfolio, but they do not always have the habit of using it to identify how they develop their skills, what they need to improve or how their career plans could evolve. As the MagiePoly's creators were not aware of the skills they developed and as they underestimated the impact their game could have on their peers, we decided to analyse and share this experience.

1.1 Aim and questions

In this paper, we will focus on students' engagement in student associations and the developed skills in one particular project within an association: The MagiePoly. The story of this project traces the stages of joint analysis by the students and their teacher to understand the success of the project and analyse the skills that have been developed.

- Why were the students involved and why did they carry out this project?
- What skills were developed?
- What can we learn from this experience?

2 METHODOLOGY

The investigation begins with a review of the state of the art on student motivation, followed by analysis of a survey and interviews.

2.1 State of the art

Students were asked to find in the literature the key elements of student motivation.

2.2 Qualitative analysis

A teacher interviewed two students involved in the MagiePoly project: the president of the Helphi association and the creator of MagiePoly. Two interviews were conducted. These students themselves conducted interviews with participants of the MagiePoly.

Qualitative data will be extracted from these different interviews.

2.3 Quantitative analysis

A survey was offered to students and workers on campus. The aim of the survey was to assess the achievement of the initial objectives of the game and to identify future participants or facilitators of the game. 56 people took part in the survey. The survey contains 4 closed questions and 3 open questions.

3 ANALYSIS

3.1 Student engagement, motivation, volition, and persistence

Based on the literature, we consider **student engagement** as proposed by V. Trowler in (Trowler 2010):

Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimise the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution.

Studies have shown how motivational and cognitive factors interact and influence student learning and achievement. Three key dimensions of student **motivation** have been proposed (Tinto 2017): **self-efficacy** that is a person's belief in their ability to succeed at a particular task; **sense of belonging** that refers to students that can see themselves as a member of a community of other students, academics and professional staff who value their membership and the **curriculum** through the perception of the **value** of what they are being asked to learn.

People's **volitional processes** refer to their desires, wants, or purposes together with a belief about satisfying them and converting intentions into actions (Keller, 2012).

Motivational persistence is defined as a person's predisposition to persist with the effort to achieve a selected goal, finding the personal resources to overcome the obstacles, fatigue, stress, and other distractors (Constantin, 2008).

3.2 Student analysis of their engagement

During the interviews conducted by the teacher, the students explain that the **value** of this game's project resides in its origin.

Helphi is a charity organisation that aims to educate and organise different events around the theme of ecology and human rights. Helphi decided to organise an afterwork for the entire organisation. As they were looking for an idea for the solidarity branch stand, a student member of the association, came up with the idea of a militant board game: an informative and entertaining game. As the event took place on March 8, International Women's Day, the idea was to bring attention to issues such as gender equality, reproductive rights, and violence and abuse against women.

Our aim was to challenge the ideas in the minds of the students. We have already been confronted with people who are opposed to discussing gender inequality and/or systematic and racial oppression.

In France, Monopoly is a well-known boardgame. It was assumed that the greatest part of the audience would already have a knowledge of the rules and the goals of the game.

The theme was obvious to them due to the injustice or discrimination they've been through, or they witnessed since their youngest age.

We - as women identifying person - are the witnesses of the inequalities we face, but also inequalities that affect other people. [...] It can sometimes be difficult to communicate and create a dialogue between people with different point of view. [...] We were and still are never allowed to be mediocre. To hope for a place and engage in your sport without facing discrimination, always having to be the best or do not attempt it at all.

Discrimination, bullying, or high expectation were present especially in schools and in sports teams.

Raising awareness of gender inequalities among their peers is what makes this project so valuable to the students.

As the students were created the game on their own, they could easily choose or adapt their tasks to their abilities. The need of **self-efficacy** was then fulfilled.

A benefit of the success of Magiepoly is the **feeling of belonging**. As this is an awareness-raising game, one of the objectives is to help peers develop and feel more at home in their school.

The value, sense of belonging and self-efficacy have allowed MagiePoly creators to reinforce their **volition** and **persistence** by carrying out the project.

4 MAGIEPOLY

This section presents the MagiePoly created by Helphi's student members.

4.1 Game's adaptation

The main differences between Monopoly and MagiePoly are:

- the spaces on the game board (property spaces with names of women activists);
- there are spaces related to domestic violence, regulation and contraception have been created, train stations are replaced by babies (Fig. 1);
- the currency (Women money);
- facilitator's guidance throughout the game;
- game ending: whilst the objective is the same as Monopoly, different endgame scenarios are possible depending on the time available.

Title cards contain information about the woman and her fights or achievements, for instance Marsha P. Jonhson, Ruth Badden Ginsburg, Malala or Rosa Parks.

As an objective of Helphi is to reduce waste, the choice was made not to create tokens but to use tokens borrowed from other boardgames.

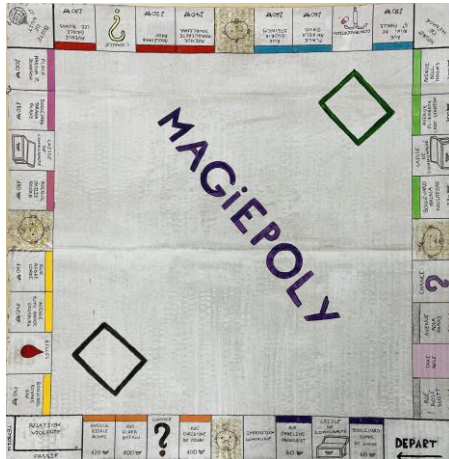


Fig. 1. MagiePoly's game board



*Fig. 2. Participants playing MagiePoly
(Image credits: Apostrophe)*

Playing the game (Fig. 2):

- 1) Players start to randomly choose a blue or pink card, which represents a gender stereotype, while ensuring inclusivity without reference to gender.
- 2) Afterwards, they play the game with a facilitator who explains each box and narrates the story of each woman. Some spaces have a different impact on the game depending on the gender card picked;
- 3) As the game board and the women involved in the fight for women's rights are discovered, discussions and debates are welcome. The role of the facilitator is key in ensuring that the game runs smoothly.
- 4) The game ends: when a player runs out of money, when all boxes have been purchased, when one player owns all boxes of one color, or when players simply decide to stop the game.
- 5) At the end of the game, the facilitator talks to the players about their feelings and the information they have learned during the game.

5 RESULTS

To assess whether the game has achieved its objectives, we are analysing the results of the survey.

5.1 Game's reception

Participants were asked whether they found the MagiePoly informative and entertaining on the following scale: strongly disagree, disagree, agree, strongly agree. Results show MagiePoly reached its objectives: more than 90% of the participants found the game instructive (Fig. 4), and all of them have felt entertained (Fig. 3).

**I found MagiePoly friendly,
fun and interactive.**

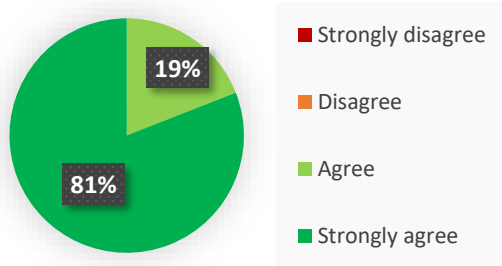


Fig. 3. Participant's perception of the entertainment value of MagiePoly

**I found MagiePoly
instructive.**

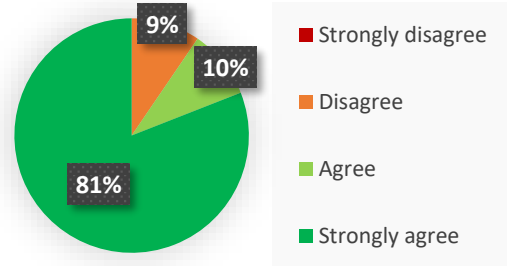


Fig. 4. Participant's perception of the instructive value of MagiePoly

The main information retained is the names of women activists, the nature of their fights, some gender inequalities, the pay gap, and the fact that the original idea for Monopoly came from Elizabeth Magie.

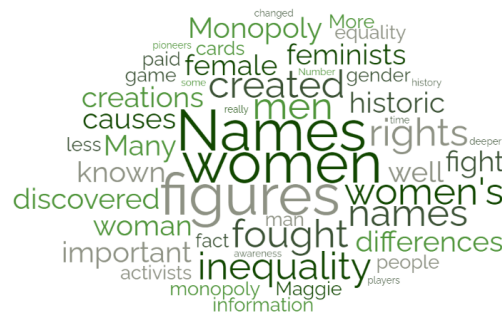


Fig. 5. Word cloud of the main information learnt by MagiePoly participants

In response to the survey, of the non-participants in the game, two thirds expressed interest in playing a future game.

5.2 Skills development

One of the challenges of the interviews was to develop the students' reflexivity to identify the skills they had developed as well as possible improvements.

The skills are different depending on the role of the students in the organisation of the event. The president of the association was able to identify leadership, conflict management, organisation, and communication.

It is particularly important for me to make sure that the right information is conveyed, I pay attention to the way things are said, I try to adapt according to the audience. It's not easy!

The creator of the game was confronted with managing a team, managing time and especially the unexpected.

It was stressful because we only had a short time to create the game and there was a lot to do. It's a big investment of time, but I wanted to make sure that the game was created on time as we had imagined it. I was happy to be able to pass on information and exchange ideas on themes that are important to me.

By realising the survey, the MagiePoly creators have also developed skills in project management while identifying which indicators that could assess the success of their project.

5.3 Future developments

The interview showed that when students carry out projects, for example after the event has taken place, or a project has been handed in for a course, they leave it behind and move on. It is important for the teacher to support the students to reinvest or continue a project that is impactful and important in terms of the values being promoted.

17 people have expressed an interest in helping to improve MagiePoly, and 6 would like to become MagiePoly facilitators.

The planned improvements for MagiePoly are related to the rules, the content of the cards and the given explanations or justifications, the training of facilitators and the sharing of MagiePoly to as many people as possible being inspired by the Climate Fresk (Climate fresk, 2023).

6 SUMMARY AND ACKNOWLEDGMENTS

Many projects are run by students within student associations. In this article, we have tried to show that it can be useful to draw on these student projects, which have all the characteristics of a learning situation in which a student can be committed and persistent in their learning. It is also important to enable students to identify the skills they are developing if they are not aware of them. Students who create projects on their own initiative, if supported and accompanied by teaching staff or the institution, gain confidence, are motivated and reinvest themselves in their studies. It's a step towards academic success.

Elizabeth Magie creates the Landlord's Game in 1903 with two sets of rules (Pilon 2018). It was a teaching tool meant to demonstrate that the anti-monopolist set in which all were rewarded when wealth was created was morally superior than the monopolist set in which the goal was to dominate opponents. 120 years later, students are paying tribute to her by creating a game to raise awareness about gender inequality. We thank all those who are committed to a more equitable world.

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