APPLYING STEAM EDUCATION FOR HIGH SCHOOL STUDENTS ON SOCIAL MEDIA THROUGH GEEK CONTENT

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ABSTRACT

The work in question aims to apply STEAM education in social networks through geek content, aiming to improve the acceptance and learning of physics, mathematics and science among high school students. Short videos and posts to social networks using geek-themed movies and series, mixing science fiction with real concepts, will be applied and evaluated in order to verify the degree of acceptance and learning of high school students about the topics addressed, through associations and allusions to geek content and the real world.

KEYWORDS

Social Media, STEAM, GEEK, Physics, Mathematics, Science

1. INTRODUCTION

STEAM (Science, Technology, Engineering, Arts, and Mathematics) education emerged in response to the need to increase students' interest and skills in Science, Technology, Engineering, and Mathematics (STEM) fields (Quigley, Herro, & Jamil, 2017). Learning basic concepts of physics, math, and science through theoretical textbooks with fancy language is not appealing to young people in today's. Given the world they are immersed in, with the amount of technology available, it is increasingly difficult to continue with somewhat archaic and monotonous teaching methods. The STEM Academy project, a partnership between Samsung and the Amazonas State University, has as one of its goals STEAM education for high school students in Amazonas and uses social media as a tool for outreach.

Social networks are groups of Internet applications built on the ideological and technological foundations of Web 2.0, and that enable the creation and exchange of User Generated Content (UGC) (Kaplan Andreas M., Haenlein Michael, 2010). Social networks have assumed gigantic proportions in the last decades in modern society due to their high capacity to propagate a large amount of information enabling communication and bringing science closer to society. Targeting young people, who end up spending many hours on social networks (Instagram, TikTok, etc.), and with this consume a lot of content, among which can be mentioned the geek content, which focuses on science fiction movies (Star Wars, Star Trek, Marvel Cinematic Universe, DC). Therefore, this study aimed to insert Geek content to promote STEAM teaching in social networks.

2. METHODOLOGY

The social network @manostem is one of the STEM Academy Project's social networks dedicated to promoting STEAM education to young people and teenagers. This social network is used to post information about the project, online and on-site courses, content about university entrance exams and STEAM education. For STEAM education, strategies are devised to attract these young people. One of these strategies is the use of geek contents.

The use of geek contents that are part of this world in which they are immersed, through series and movies, is used, trying to make an association to teach theoretical concepts of science, physics, and mathematics in a didactic way and with a language they are already used to. Thus, the short videos (reels) in which the themes will be merged, explaining how physics applies or not, in these science fiction scenarios.

The contents covered in the videos, are prospected through websites, science magazines, science channels, among others. These contents go through a selection process in which the most appropriate ones are chosen. Then, the scripts are developed with the objective of retaining the maximum attention of the followers. As a tool, the mental triggers are added, which are tools of persuasion used to keep the interlocutors in the first 3 seconds of the video, then the scenario is set up for the recording that is thought to refer to the subject matter, using panels and led lights to create the best environment and increase quality, and then the recording is made. After going through all the previous process, the video goes to editing, in which changes will be made to make it even more attractive, which is done with the use of images, sound effects, visual effects and various other graphics resources. The video when completed goes to the post on social network entitled as @manostem on Instagram and thus delivered to the public of these contents.

3. RESULTS

The possible contents that went through the funnel phase (selection) were prospected, where we obtained those that would be used to make short videos or posts that went to the social network page on Instagram (@manostem), so that we could get the results, if it was accepted or not by the public.

An example of content created would be to associate the high speed of flash, a DC Comics character who has super speed, and physics in the real world, explaining how kinetic energy works and what are the consequences of a human being reaching 98% of the speed of light. The video got a total of 1564 views and 84 likes, a satisfactory amount considering the amount of followers of the page, which is 3000 thousand followers.

Another example was that of Spiderman, a character from the MCU (Marvel Cinematic Universe), which aimed to demonstrate if Spiderman's spear could stop a train, using physical concepts and comparing the materials of the spear with steel. The video got 8942 views and 261 likes, more than satisfactory numbers.

Figure 1. A: Flash Video B: Spiderman Video

The results were quite significant taking into account the number of views and likes that the videos obtained. Proving that this approach to content has an adhesion and much greater among young people and teenagers, and also that association can be very significant to better introduce STEAM teaching to these students. We can evaluate this performance, through the views of 8 contents that were posted in the month of

December 2022, 4 of them being geeks and the other 4 non-geeks, which were arranged in a table, and then a comparison was made between the contents as shown in the graph below:

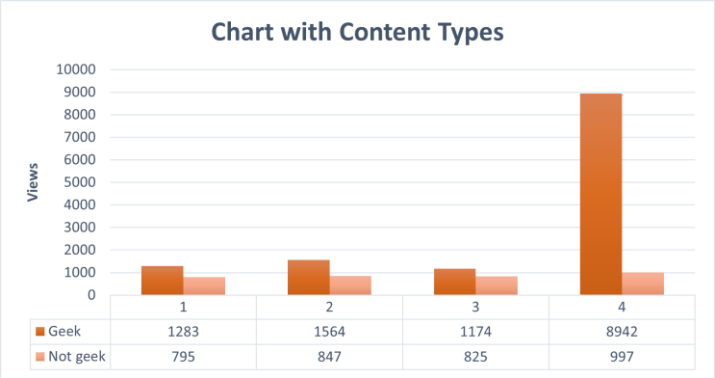

Figure 2. Geek and non-geek content comparison chart

The graph shows the progression of each content that was posted. Videos 1, 2, and 3 had a similar progression when compared to non-geek content, they had a growth of approximately 62%. Content 4 had a much higher performance, when compared to non-geek content it had an 897% growth. This result of the last video is due to Instagram, which, realizing that the video got more views than usual, delivered it much more on the platform, raising this significant number.

4. CONCLUSION

Therefore, its use in the geek content application method can be very useful, because it allows a much greater absorption and in a more effective way, due to the high habituation to the subject by young people who are in high school and who consume a large amount of information through the media, learning concepts of physics, mathematics or science in a faster, more didactic and fun way, and with the passage of time, it can become as habitual as watching a simple video or seeing a simple post.

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