

Digital Storytelling Approach for Environmental Challenges and the Early School Leaving Prevention

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Abstract. Given the rapidly evolving nature of the labour market, it is crucial to develop individuals' soft skills to ensure effective job performance. To achieve this, teaching methods should prioritize the development of soft skills among students. One such instructional method is digital storytelling, which has been recognized as an essential tool for developing future workforce skills such as creativity, critical thinking, digital literacy, and communication skills. Two European Commission-funded projects under the Erasmus Plus Programme that utilize digital storytelling in education and training to help individuals and organizations adapt to the digital age are presented in the paper as examples of initiatives promoting this approach: The BIG_GAME and the Digital Stories.

Keywords: Digital Storytelling, Games, Environmental Issues.

1 Introduction

Due to the rapid changing in the labour market, soft skills' development is essential to support individuals to work effectively. Among these, leadership, teamwork, communication, adaptability, problem-solving, and time management are highly valued by employers and can lead to better job opportunities and career advancement. Therefore, using more effective teaching approaches focused on students' soft skill development is important (Ngang & Chan, 2015). This can help students become well-rounded individuals who are better equipped to face the challenges of the real world; be more job-ready, as they will have the skills needed to succeed in a professional setting; and be more effective communicators, which can help them in all aspects of life. In addition, this can develop students' emotional intelligence (Kumar & Sharma, 2019). One of these teaching approaches, which can support soft skills development, is digital storytelling, a short form of digital media production that allows everyday people to create and share their stories online.

In particular, digital storytelling can be a powerful way to develop soft skills such as:

- communication – students can learn how to communicate effectively through different mediums such as video, audio, or written narratives and developing their ability to communicate complex ideas in a simple and engaging way (Nair & Yunus, 2021).
- creativity – students can learn to use their creativity and explore their imagination by improving their capability to approach problems in new and innovative ways (Tackvic, 2012).
- collaboration – students can improve their collaboration skills by collaborating on digital stories, sharing ideas, and working together to achieve a common goal (Nordmark & Milrad, 2012; Tackvic, 2012).
- empathy – students can develop empathy by exploring different perspectives and understanding the experiences of others by creating digital stories about real-life experiences (Bratitsis & Ziannas, 2015).

With these premises behind, the European Commission funded two projects under the Erasmus Plus Programme: *The BIG_GAME: Immersive and Multidisciplinary STEM Learning through A Cooperative Story-Driven Digital Game* and *Digital Stories - Reducing Early School Leaving by Increasing Academic Achievement with Digital Applications in Storytelling Techniques*.

Through the projects mentioned above, the paper will describe the potentialities of digital storytelling.

2 The BIG_GAME Project

This Erasmus Plus project is coordinated by the University of Turku, Finland, and involves 8 experts organisation in education, STEM (Science, Technology, Engineering, and Mathematics), e-learning, digital games, research, and storytelling from different parts of Europe (Finland, Italy, Estonia and Romania).

The idea comes from the European latest needs emerged, such as the low interest of the students in science studies (STEM); insufficient digital skills for a changing society and the emergency resulting from climate change (Caena & Punie, 2019). Therefore, the project aims at promoting STEM training in secondary schools (11–16-year-old students) through multidisciplinary learning and solving problems related to the environment in the form of serious games. Secondary school teachers can benefit from a handbook on how to use the digital storytelling approach in STEM training focused on multidisciplinary aspects of the subjects.

In addition, the project intends to support digital transformation in secondary schools by providing an online and blended learning model, methodology and tools based on the digital storytelling approach to foster learning and cooperation in digital environments. The teachers are supported in developing the scenarios to be used as game sessions for realization in class or at a distance and in the use of the didactic and technical tools for the storytelling implementation and the evaluation of the scenarios developed by their students.

Finally, the project's aim is to encourage combat against climate change by helping students raise awareness about environmental issues through immersive learning experiences. In particular, students are expected to suggest possible solutions to environmental problems represented in a learning scenario form, that will be transformed into a game mission in the developed digital gaming environment.

2.1 Digital Storytelling in STEM Education: The BIG_GAME Approach

The project is based on the idea that the digital storytelling approach can be a powerful tool for developing students' skills in STEM education.

In fact, STEM education often involves complex concepts and ideas, whereas through digital stories students can develop their ability to communicate them effectively and clearly to a wider audience. By using digital tools to create and share stories, students can experiment with different techniques and explore their imagination to approach STEM problems in new, motivational and innovative ways (Dochshanov & Tramonti, 2022; Groshans et al., 2019).

In addition, using digital tools to create and share stories, students can learn how to use various software and hardware tools and build their digital literacy skills.

Thus, the digital storytelling can help students become more engaged in STEM education by making it more fun and interactive through the development of a deeper interest in the subject and motivation in learning.

In particular, the context of the project aims at enabling students to build their story-driven learning scenarios on how to solve specific environmental issues that will be transformed into game mission in the digital world developed by the project game team. Afterwards, the students will be able to compete in this digital environment testing their suggested solutions.

3 The Digital Stories Project

Storytelling is a powerful pedagogical approach used to disseminate learning outcomes in the education of general, scientific and technological subjects (Smeda, Dakich, & Sharda, 2014). Storytelling is also a preferred way by educators to better explain complex ideas, concepts, or information to students (Hung, Hwang, & Huang, 2012).

Today, individuals continue to tell stories by using new digital media tools. However, with the modernization process that overturned traditional lifestyles, news and information based on individual relations left its place to mass communication. In the 19th and 20th centuries, which started to industrialize at an increasing rate, in addition to the need for character-forming organs other than the family for the socialization of newly born people in their societies, the ability of adult people to receive information and news about the world and various phenomena of social life that they may need in order to keep their social relations functioning properly and effectively has also changed. These people's learning about the world has started to happen through the new form of communication we call Mass Communication (Livberber & Tiryaki, 2019).

Traditional forms of storytelling, such as reading aloud or telling stories from memory, may not be as effective for engaging and motivating students in the digital age. Students today are often exposed to a wide range of multimedia formats, from videos and podcasts to social media and video games, and may have shorter attention spans than previous generations. As a result, traditional storytelling methods may not be as effective at capturing and holding their attention.

Digital storytelling, on the other hand, leverages multimedia formats that are more familiar and engaging to students. By allowing students to use technology to create stories, digital storytelling can tap into their interests and skills, and provide a more interactive and personalized learning experience (Kaminskienė & Khetsuriani, 2019).

Another reason for the rise of digital storytelling is that it can help develop increasingly important skills, such as digital literacy, media literacy, and communication skills. Students can develop these skills in a more practical and relevant context by incorporating technology into the storytelling process (Robin, 2008).

Overall, the lack of classical old-style storytelling in schools, coupled with the changing needs and preferences of students in the digital age, has created a demand for new approaches to storytelling that are more engaging, interactive, and technology-driven. Digital storytelling has emerged as a powerful tool for meeting these needs and providing students with a more dynamic and effective learning experience.

In view of the above, the Digital Stories project is designed to help reduce the number of students leaving school early due to anxiety and a negative attitude. By allowing students to express themselves through multimedia formats such as video, audio, and images, digital storytelling can engage students who may have disengaged from traditional forms of education. Digital storytelling can also help students develop critical thinking, problem-solving, communication, and other essential skills, improving their academic performance and reducing their likelihood of dropping out. By giving students a voice and allowing them to share their experiences and perspectives, digital storytelling can also help to build self-esteem and a sense of belonging, which can be particularly important for students who may be at risk of dropping out due to social, economic, or other factors.

In addition to its potential benefits for individual students, digital storytelling can also be used to build stronger connections between schools and communities. By sharing their stories with their families, peers, and community members, students can help to create a sense of shared identity and purpose, which can help to reduce the likelihood of social isolation and disengagement.

The project has emerged with the aim of transferring the experiences of the past to the students, who are the stakeholders of education, on digital story creation platforms (iMovie, Slide.ly, PowToon, Animoto, Story jumper etc.) as a teaching model in the digital age. During the project activities, the instructors training on the digital storytelling use and most suitable digital tools will be organized.

The instructors will be provided with training in the digital story creation workshops, how to create stories with the digital language used by the generation they teach, paying particular attention to the entertaining and educational side of the story. This will allow also support students, mainly those who are at risk of learning difficulties, to change their attitude towards the school environment.

4 Conclusions

In conclusion, with digital storytelling potential to create engaging and informative narratives that can help students understand complex environmental issues and their impacts while incorporating personal stories, images, and sound, can help motivate action and behaviour change. From the other side, included into the game environment, the same aspects become perceptible through immersive and interactive experiences that allow players to explore environmental challenges and potential solutions. As a result, games are assumed to make learning about the environment fun and engaging, encouraging players to learn more and take action in the real world.

Both digital storytelling and game development can be used to reach younger generations who may be particularly receptive to digital media. By leveraging the power of technology and multimedia, these approaches can help to bridge the gap between scientific data and public understanding.

Additionally, being closer to the young generation, the advantages of digital narratives as engaging and motivating, developing essential skills, building self-esteem and a sense of belonging, fostering connections with the community should not be overlooked.

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