Chapter 8
Gamification Applied to Autism Spectrum Disorder

Vítor Simões-Silva

ⓘ https://orcid.org/0000-0003-2831-9729

Polytechnic Institute of Porto, Portugal

António Marques

ⓘ https://orcid.org/0000-0002-8656-5023

Polytechnic Institute of Porto, Portugal

Catarina Pinho

Polytechnic Institute of Porto, Portugal

Diana Gonçalves Pereira

Polytechnic Institute of Porto, Portugal

Joana Ferreira Oliveira

Polytechnic Institute of Porto, Portugal

Maria Luísa Barros

Polytechnic Institute of Porto, Portugal

ABSTRACT

Gamification is a recent technique in software development that allows the application of game principles to non-game contexts and environments. In an increasingly technological world, gamification has now higher popularity, and it is currently used in several technologies. One of the health conditions where gamification can bring great benefits is in autism spectrum disorder (ASD), which is a persistent neurodevelopmental disorder that can be characterized briefly by deficits in verbal and non-verbal communication, difficulties in interaction, and manifestation of stereotyped movements or interests. In the case of ASD, the programs, software, or the mobile applications should focus on the development of intrapersonal (such as motivation) and interpersonal (social skills) skills. Therefore, gamification can be useful in cases of ASD, but it is necessary to increase the analysis of the potentialities and needs for improvement of technologies and applications available on the market.

INTRODUCTION

Medicine and health treatments are usually associated with live sessions as a traditional in-person approach. However, with the rapid development of digital technologies, such as the internet or communication devices, it was possible to expand the health services to other approaches, namely telehealth (Weinstein et al., 2018).

According to World Health Organization (2010), telehealth can be defined as *"the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies, for the exchange of valid information for diagnosis, treatment, and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, in all the interests of advancing the health of individuals and their communities"*. In addition, telehealth is a term used to encompass a broader application of technologies for the application of evaluative, consultative, preventive, and therapeutic services delivered through information and communication technologies that support health care services, such as video conferencing, mobile apps and secure messaging (Brown-Jackson, 2019; Kruse et al., 2017). After some research, it is clear that sometimes the terms "telehealth" and "telemedicine" are defined differently, however throughout this paper, following the WHO line, no distinction will be made between telehealth and telemedicine, so the term 'telehealth' will be used for both (Kruse et al., 2017).

Telehealth has shown enormous potential to improve the reach and availability of treatment since it covers a variety of modalities that can be used for different conditions and populations to increase the affordability of treatment. This may be due to the lower cost usually associated with technologically based treatments and the increase the sense of confidentiality, because in nowadays some people prefer not to be seen in a healthcare setting (Granja et al., 2018; Marsch et al., 2014; Shigekawa et al., 2018). In addition to these advantages, the technology allows us to measure what the individual is experiencing in an objective, non-reactive way. Also, it allows the person applying the intervention to provide personalized feedback in real-time (Marsch et al., 2014). These advantages are due to the possibilities of communicating with a doctor or therapist, monitoring symptoms and providing therapeutic education. Literature also presents the efficiency of these technologies in the screening and treatment of several mental health pathologies (Shigekawa et al., 2018).

Even though there are many advantages of telehealth in the literature, it is necessary to highlight some disadvantages about telehealth, such as the difficulties in the palpation or use of touching on patients, which in a different point of view could be considered beneficial for the patient, since that, in some instances, this lack of proximity may increase openness to specific issues, such as sexuality and family problems (Weinstein et al., 2018). Beyond these, the literature indicates that there may be a breakdown in the relationship between health professional and patient. The risk of bad network connection, device breakdown or even lack of skills for using the digital tool may also be a disadvantage for the users (Daragó et al., 2013; Hjelm, 2005). In addition to this, the adherence rates to the use of health technologies are not as expected, so it was necessary to develop some strategies that can enrich this type of interventions (Cheng, 2020).

Telehealth also shows some difficulties to be implemented due to bureaucratic and ethical issues, such as problems with existing policies, rules or laws for remote health care delivery, problems to ensure the quality of the care provided, problems with malpractice liability and, finally, problems with data protection and confidentiality, due to the increased risk of unauthorized access to patient's personal and medical information (Daragó et al., 2013; Hjelm, 2005).

GAMIFICATION'S STATE OF THE ART

Today, there is no doubt that technology can facilitate the creation of various interventions, whereby this chapter will focus on Gamification and its applications (Marsch et al., 2014).

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