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Gamificarea ca soluție de combatere a dezinformării în inițiativele de
media literacy dedicate studenților

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English summary of doctoral thesis

Disinformation is an omnipresent phenomenon in modern society, where new technologies, social platforms, algorithms and Artificial Intelligence are helping in informational democratization and facilitation of dialogue, but are also supporting the spread of false data faster and easier than ever before, through digital amplification and even more complex techniques.

To be able to even „scratch the surface” of the present global context, it is necessary to understand the meaning of a few of essential concepts, such as: virtual information systems, social networks, *digital natives*, media literacy and disinformation. All these elements create the new „informational ecosystem” (Norris & Suomela, 2017), wherein people communicate, get informed, structure and express their identity, build communities and look for ways to spend their leisure time.

The fourth technological revolution (Griffits & Ooi, 2018) has transformed the consumer in *prosumer* (Kotler, 2010), at the same time creator and audience, increasing the degree of influence and power that the individual has, both in the virtual „area” and in the real one.

The digital environment and the existence of social networks, like Facebook, Twitter and TikTok eased the intercultural dialogue and access to information, created real opportunities for vulnerable groups, but it have also brought possible threats to society, such as the instrumentalization of political polarization, the emergence of extremism and populism, the popularization of conspiracy theories and propagandistic ideas, all aimed at destabilizing the global social climate (Corbu and Negrea-Busuioc, 2020). In the present, they eve become part of the hybrid war (Vladu et al., 2024; Bârgăoanu and Nastasiu, 2022).

Human evolution is no longer dependent on what man can do by the strength of his own body; it is augmented by everything man’s inventions can do. With the appearance of new media, especially the Internet and social platforms, the needs of the individuals concerning content and the way it is presented, has significantly changed, acquiring a hedonistic lens (Kazakevičiūtė and Banytė, 2013), based on the need to be informed, but also entertainment, in line with the theories of utilization and gratification (Katz et

al., 1973). These hedonistic expectations did not limit to the area of mass-media or presenting information, but have entered in domains such as education, business, marketing and even healthcare (Basu and Sullivan, 2017; Kim and Eastin, 2011).

The desire for entertainment, the need for rapid feedback, the stimulation coupled with instant gratification and the immersion in the process are just a few of the needs of the new generations in order to have an experience that captivates them (Gunter, 2016). The preference for certain interactive elements and the way these can be implemented is explained by the existence of some archetypes and frameworks in which users are presented as being driven by a certain type of motivation and stimulated by certain elements, which is a perspective explored in game studies.

Using principles from video games, gamification or *gamificare*, terms used interchangeably in this present work, seems like a solution to increase motivation, behavioral change and increased wellbeing within the contexts in which it is integrated. Gamification answers the need of interaction in the field of education, being a way to present content that increases attention (Buckley & Doyle, 2014), active presence (Ortiz et al., 2016) and performance (Ferriz-Valero et al., 2020; Hallifax et al, 2019).

Can gamification play an important role in solving the real problems faced by modern society? Could it help the acquiring of abilities promoted by media literacy? What about with better identification of false and the success of combating them? Does the type of player matter or the way gamification is perceived matter in the „fight” against disinformation? Could gamification or games be an educational method that is relevant and interesting for students in Romania? These are the question this present thesis is trying to answer.

Previous studies have put forward mixed results concerning the efficiency of gamified media literacy interventions (Schenk et al., 2024; Modirrousta-Galian & Higham, 2023), the present paper wishes to contribute to the development of the academic corpus, with applications on students in Romania, this approach being present in a reduced number of studies (Cernicova-Buca and Ciurel, 2022)

Gamification is an element that generates significant interest in the academic field, with proven results relating to a high enjoyment, involvement, satisfaction and performance in higher education. Students are citizens with the right to vote and it is important that they can distinguish manipulated information from authentic information. Studies show that media

literacy, especially *prebunking* through active inoculation interventions, have a real potential in fighting deceitful content (Trecek-King & Cook, 2024; Kiili et al., 2024; Basol et al., 2021). Bringing these two concepts together has opened a niche in research on gamifying media literacy interventions.

Facing the „disappearance” of various mechanisms of fact-checking and flagging fabricated content present in the online environment or social networks (McMahon et al., 2025), a growing need is becoming visible for the development and „training” of citizens’ abilities to distinguish false information (from authentic one) and to diminish the desire to share this information towards other users, especially when individuals are aware that that information is not true.

Because social networks are the primary source of information for Millennials and Gen Z, and young people are aware that they are exposed to disinformation, many times overestimating their personal abilities to detect false information (*EP Youth Survey 2024*, 2025; Kops et al., 2025), it becomes pressing to adapt the media literacy interventions to the new context that the student comes in contact with (ex: video games, the digital environment, active roles) (Tejedo et al, 2023).

The objectives of this thesis concern 1) the differences between various types of media literacy interventions (gamified or not gamified) in what concerns recognizing disinformation, 2) exploring the possibility that gamification and serious games may represent a relevant education alternative for students, 3) and understanding the way in which these interventions should be designed (by teachers, institutions, organizations etc.) to be relevant to students from Romania.

This doctoral thesis is organized in two main sections: the first, which contains the first 3 theoretical chapters, which analyzes the main concepts of the paper (gamification, disinformation and media literacy) and the second section that involves methodology, data analysis and the interpretation of the results, together with contributions, ethical considerations, limits and recommendations for future studies.

The concept of gamification is examined within the first chapter, where the history of the notion is presented, together with the characteristics and how it is separated from similar concepts. Further shown are the elements that form gamified structures and how these can be implemented, psychological theories behind the success of gamification

and the theoretical framework for creating a relevant design aimed towards students and the educational field.

Gamification brings benefits to the level of academic performance, the interest for the delivered content, a higher immersion in solving tasks and a greater collaboration with other colleagues; all these shows it to be a good alternative for delivering content about the techniques used in disinformation.

Additionally in this chapter we will address and explain the notion of *serious games*, especially in reference to those that are oriented towards fighting disinformation and that help to understand and present the information about the techniques upon which disinformation relies. Because any gamified system is composed of elements (ex: points, badges, levels), the way these interact and the behaviors they generate (e.g. collaboration or competition), it is necessary that the gamification is created based on some objectives and adapt it to the contexts in which it appears.

The evaluation of the gamified elements (motivators or core drivers) and their calibration is explained through the Octalysis framework-theory (Chou, 2014) and through the GAMEX scale (Eppman et al., 2018), used for analyzing the dimensions present in gamified experiences.

The second chapter focuses on the concept of disinformation, where we can find an analysis of the academic literature from the field of disinformation, combining the communicational perspective with the psychosocial one, following the phenomenon of disinformation, its characteristics, its agents, the informational and technological context, the mechanism of how it appeared, types of false information, psychological concepts that underpin this phenomenon and the negative effects on information systems, journalists, individuals and societies overall.

Disinformation becomes more and more complicated to identify in the digital „area”, and the ones that can become victims of the phenomenon do not fit in a certain profile because deceitful content can affect persons of any age, educational level or sex. An important mention is that part of this section is dedicated to the theory of inoculation by McGuire și Papageorgis (1962; McGuire, 1964), in particular active inoculation, which represents the basis for the experimental conditions in this research.

In the third chapter I will examine the notion of media literacy, elements that constitute it, how it differs from other types of literacies, the beneficial effects on combating disinformation but also the need to have this type of literacy within the general education of the 21st century, specifically integrated in the game and the gamified structures.

Media literacy needs to adapt to the current context and needs active participation from citizens that are used to scan, identify and avoid content manipulations (Hobbs, 2025). Integrating media literacy in the social context is already happening by public policies, European projects and political and educational interventions, however it is more important than ever to empower citizens and offer them, especially in the university environment, the possibility to „hone” their abilities to analyze and critically evaluate the information which students engage with during their time on social media.

In the last chapter, the scientific endeavor will focus on the analysis of the impact that gamified interventions based on active inoculation have on correct identification of news, on the intent of distribution of those perceived as false and on the level of self-efficiency of students, understood as the trust in individuals’ ability to recognize deceitful content that they encounter in the online environment.

The theoretical framework of this research is based on:

- the umbrella-concept of active learning (Brame, 2019) in which the student plays a central role, trying to derive new meanings through the process in which she is integrated
- the active-inoculation theory (McGuire, 1964; McGuire & Papageorgis, 1962), and applying it in contexts of gamification and serious gameplay (Basol et al., 2020; Basol et al., 2021);
- the Model of Learning Mechanics – Gamification Mechanics (LM-GM) (Lim et al., 2013; Arnab et al., 2014) which provided the foundation for creating the gamified training
- The Octalysis theory (Chou, 2015) for understanding the gamified elements and their impact on student motivation, as well as for calibrating elements within the gamified experience

- The HEXAD gamer typology (Marczewski, 2015) which offers a classification of gamers depending on the needs and motivations they have and from which we derived the gamification/gaming elements they best respond too

From a methodological standpoint, this paper has used a mixed methodology: 1) quantitative, by using an experiment and filling out a questionnaire post-experiment and 2) qualitative, by having 16 students from the game and gamified conditions later participate in a focus-group to explore the way the users engaged with the gamified elements, their effect on positive/negative emotions and to offer recommendations and suggestions for future gamified media literacy interventions. Choosing both types of analysis was based on the low number of studies that integrate both approaches and the need to understand a 360° perspective of the students' experiences of the gamified and gaming conditions from Romania.

The experiment involved gathering 284 students from all over the country, from social sciences degrees (e.g. Psychology, Communication, Sociology, Law etc.) and distributing them in 4 experimental conditions: 1) control, 2) playing an online anti-disinformation game, 3) participating in a gamified training adapted to the Romanian space and 4) participating in a classic-type lecture, based on PowerPoint and without interaction.

After the experiment, a survey was filled out that contained an index of news titles (10 - 5 fake, 5 true), the scale for the gamer typology (The short version of HEXAD – Krath et al., 2023), the evaluation of the gamification/the game through the GAMEX scale, (Eppman et al., 2018), the self-efficiency scale for recognizing disinformation (Hopp and Kazmi, 2023).

A week after taking part in the experiment, the students participated in a focus-group that had as a main purpose the understanding of the personal experience with gamifying and the anti-disinformation game, based on a guide constructed on the *Octalysis* theory (Chou, 2014) and recommendations offered by the students for improving these kind of interventions in the future.

Referring to the conceptual model, the research attempt to explore if there is a link between the type of experimental condition (independent variable) and the three dependent variables: the correct identification of the titles of news (false, true and overall performance),

the intention to distribute news perceived as being false and the level of self-efficacy in identifying disinformation.

In addition to this central question, the experiment also looked into different factors like if the typology of the players moderates the relationship between the type of group and the impact on the three dependent variables and if the perception of the gamification as being well implemented and „natural” in this context mediates the relationship between the independent variable and the dependent ones. Further more it was tested if the mediation relationship was moderated by one’s previous experience of being a video game player.

All these questions and hypotheses are generated from the literature gaps and „zones” from the academic domain regarding gamified media literacy intervention in the education field.

The results have shown that gamification and serious games are a viable and interesting option for students, superior to classical methods of delivering information, increasing their interest for the subject, being interactive, immersive and offering them stimulation through elements like levels, points, badges, the story of the ludic universe and through collaboration and competition.

The gamified training condition had the best performance in relation to identifying the titles of false news, a decreased intention to share them online and students were more confident in their abilities to recognize deceitful content when coming in contact with it on social media or anywhere in the digital environment.

These positive results need to be integrated in a more nuanced analysis because although the students better identified false news in comparison to other experimental categories, students from the gamified training could not identify the titles of true news correctly, as a result of a „negative spillover” effect (Hoes et al., 2024). In other words, due to the focus on discovering disinformation techniques, there was an increase in skepticism that made recognizing true information more difficult. These was possible through activation of availability heuristic when our top of mind information (or information that is easily accesible) tend to inflate the frequency with which we can encounter such content. In the era of „post-truth”, the impossibility of recognizing true

information can pose real issues, as significant as the lack of ability to separate facts from opinion.

The highest scores in identifying true news were present in the group that played the anti-disinformation game and in the control group, the first also having the best overall performance at the task of recognizing the true news.

To what concerns the moderating and mediating variables, a few results were important for the field of research in gamified intervention: 1) previous gaming experience does not moderate the relationship between group type and moderators, 2) the enjoyment and state of flow partially mediates in a negative sense the relation between the experimental condition and the recognition of false news (the more people feel joy and immersion in the task, the more they can generate fail to identify disinformation because they focus on fun elements), and finally, 3) enjoyment and dominance were associated with a positive increase of autoefficacy, hinting to a possible partial mediation (through direct effect of mediator on dependent variable), but it was not statistically sustained through the indirect effect (tpe group – moderated by previous experience – mediators – dependent variable).

Regarding the moderators, the game typology has a complex relationship with moderating the relationship between the independent and dependent variables. For self-efficacy, increased level of altruism, social connectedness, relatedness, exploring and performance can positively impact autoefficacy in game, training and lecture conditions. For intention of sharing false content, higher scores on exploring, creativity and performance can decrease the sharing behavior in training condition, but low scores on reward-oriented motivation and changing of the system can negatively impact the variable, making students more prone to share disinformation in the game condition. For the variable concerning the accurate identification of news, for true news: 1) high scores for exploring and performance can decrease truth discernment for the students in the game condition and 2) high scores for reward-oriented behavior can decrease the accuracy of true news, but increased intention of rebellion and change of the system can actually increase the accuracy for students in the training condition, where they had poor performance for this task.

Finally, regarding the moderation of group type on global performance of disinformation detection, when students are interested in discovering the gameful context and honing their abilities, they tend to have a lower score on the general efficiency in the

task, most probably because the design of the training was too linear or the challenges were not difficult enough for the rewards to be perceived as stimulating.

The results of the qualitative analysis have portrayed gamification and games as an interesting alternative for learning, but it needs some calibration. Future studies need to be more careful in designing the narrative, the progress elements (like points and badges), a need of clearer instructions, an extended time limit for solving tasks, calibrating the social factor and notifying at the beginning of the intervention that active inoculation is just an educational method that helps understanding disinformation techniques, but which should not be replicated in real life under any circumstance.

The relevance of the research topic is illustrated by the need to find an adequate way to „survive” in the „post-truth” era, where individuals are no longer interested in the objective truth and no longer believe the official sources, but they do their own „research” based on subjective opinions and emotional intensity. The two extraordinary events that have affected the entire world were the COVID-19 pandemic and the ongoing war in Ukraine. These events had and continue to have a negative impact on institutional trust, led to polarization, social divide and will modify (possibly for ever) the way in which people relate to information, regardless by which channels it is distributed.

The relevance of the research theme also derives from the amplification of the phenomenon of disinformation (both online and offline) and the need to find a solution to fighting the negative effects which deceitful content has on the individual, the community they are part of and on the democratic regimes, overall. Media literacy proved to be an efficient intervention for boosting critical thinking, with benefits in increasing the ability to identify the false information.

The authors contributions in this thesis are illustrated by developing the corpus of existing theories in this academic literature of the field, by the creating a work definition for the Romanian space of the three concepts, by centralizing current regulations concerning media literacy in Romania and the European Union, by analyzing anti-disinformation games and centralizing the main false narratives, both from the time of the war initiated by Russia and the pandemic, together with a conceptual model, untested so far in the literature of the field.

Furthermore, translating the scales used in this thesis and the adaptation the Octalysis theory by combining quantitative analysis with engaging with „deficiencies” from previous research helps with expanding the field, especially in studies that have as a central point the cultural context of Romania.

From a practical perspective, the information derived from this thesis can help teachers, trainers, instructors or other people interested in creating media literacy interventions focused on students to develop and calibrate the gaming elements in a relevant way for the Romanian digital natives.

Maybe we can't win the fight, but we need to support the youth to be as prepared as possible in this new context. This paper proposes exactly this: to support this initiative to research further solutions to fighting disinformation, implemented in ways appreciated by the new generations of students: integrating the need for entertainment when approaching serious subjects, by gamifying and game.