Annales Universitatis Paedagogicae Cracoviensis 432

Studia de Cultura 17(3) ▪ 2025
ISSN 2083–7275 (druk), ISSN 2391-4432 (online)
DOI 10.24917/20837275.17.3.5

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The VIHARO model as an educational-socialization aspect of media exposure in digital games preferred by school-age children[1]

Introduction

The impact of digital media – and associated digital marketing communications – currently appears to be highly paradoxical. There is undoubtedly a large number of publications (e.g., Bujačková 1996; Krajňák 2005; Satková 2008; Spitzer 2018; Niklová 2019; Fichnová 2024; Košičiarová et al. 2024) that hold the view that the intensity and frequency of use of digital media – and media in general – has a negative social impact. Research points to the negative impacts of these communications on the development of personality in the earlier stages of development. Facebook, YouTube, Instagram, TikTok, video games, internet games... And we have not even mentioned the various marketing and communication strategies, manipulative and persuasive techniques that users inadvertently encounter when using the aforementioned platforms. In addition to these impacts, various forms of addiction (from

[1] The publication was supported by the KEGA project no. 023UKF-4/2024 Innovative education and development of consumer, information, and media (SIM) literacy in young adults in the European area.

gambling to Internet addiction), alienation from people, brain passivity, increased aggression, and many other equally serious consequences are often mentioned.

Despite the above red flags and intensive deterrent "campaigns" that point to the negative impact of the media in general, the rate of use of digital media is ever-increasing. This is caused by various factors – the technical progress associated with the online world itself, or the recent pandemic, which forced us to prefer online communication channels in all areas of our lives for two years in a row.

Children are a specific target group for digital media. Research suggests that social networks and video games are the most frequently used tools among children aged 6 to 16. Despite parental restrictions, various control measures, and even the recent efforts for government control of the time spent playing online games (e.g., in China), digital media are some of the most popular forms of leisure time.

Previous research and publications (Mago 2016; Santos et al. 2021; Adžić et al. 2021; Ferguson – Wang 2021; Shoshani & Krauskopf 2021; Shoshani, Braverman, & Meirow 2021) documented various negative and positive impacts of digital media. Our aspiration is not to present a unanimous position in terms of "for" or "against". We believe that digital media can have a negative impact, but with the right direction, approach, and restrictions, this impact can be reduced or eliminated. First, we will seek to explore possible alternative solutions that allow us to conduct marketing and marketing communications in the area of socially responsible marketing. Our intention is to point out various factors and identify stimulating elements that have a significant educational benefit in video games and/or to recommend that companies include and take such elements into account when creating video game scenarios.

Literature Review

The influence and impact of media on human personality have long been debated. Jirák and Köpplová (2003) distinguish between long-term "influence", which gradually shapes behavior or values, and short-term "impact", which produces immediate, episodic effects. For example, repeated exposure to video games may influence a player's long-term behavior, while a single advertisement or digital game session may have only a short-term impact. Previous studies by Janková (2015, 2016a, 2016b, 2016c, 2017) explored both positive and negative media effects. Szotkowski (2009) categorized negative influence as either overt content effects, such as violence or sexual material, or targeted manipulation of the viewer. Šupšáková (2000) highlighted that

passive, one-way media consumption suppresses active learning, a concern further addressed by Janková (2015), who proposed incorporating creativity-stimulating elements to "activate" brain engagement – an effect naturally supported by the interactivity of digital games.

While earlier research focused on negative outcomes, recent studies show more nuanced effects. Santos et al. (2021) found that active video games improve self-esteem, physical fitness, energy expenditure, and social interaction in children and adolescents. Similarly, Adžić et al. (2021) suggest that the harmful effects of aggressive games are often overstated; gameplay time does not predict mental health problems, and societal concern may reflect moral panic rather than evidence. Ferguson and Wang (2021) observed that academic performance is not impaired by gaming; in fact, gaming can provide self-reward and facilitate social interaction. Shoshani and Krauskopf (2021) demonstrated that team-based gameplay enhances prosocial behavior, while Shoshani, Braverman, and Meirow (2021) reported that prosocial games improve social satisfaction, peer support, and empathy, whereas violent games may increase bullying depending on social context. Zang et al. (2021) caution that violent games pose risks for boys, a concern reflected in Slovak initiatives like zodpovedne.sk, which emphasize prevention through age ratings, parental control, and awareness campaigns.

Building on these findings, the VIHARO model integrates Bloom's Taxonomy (Anderson & Krathwohl 2001) and Zelina's KEMSAK framework (1995, as cited in Janková et al. 2016c) to guide educational and social development through media interactivity. VIHARO emphasizes non-cognitive functions – cognition, emotion, motivation, socialization, value orientation, and creativity – leveraging interactivity and empathy to foster problem-solving, originality, flexibility, and self-improvement. Creativity is operationalized through fluency, flexibility, originality, sensitivity, redefinition, and elaboration, allowing players to experiment, differentiate themselves, and explore multiple solutions. Unlike previous frameworks, VIHARO systematically connects gameplay with holistic social-emotional development, offering an innovative approach for creative-humanistic education in digital environments.

Materials and methods

We focused on the characteristics of the application level in relation to their identifiability in the digital game according to the identified element in the game, and according to various possibilities of indirect influencing of the recipient through marketing communication tools. We conducted our research with the aim of further specifying our model of the socialization and educational impacts of digital games on older school-age children. For

further research purposes, we needed to determine which stimuli motivate gamers to take action with the potential for socialization and educational effects in digital games.

The main goal of our research was to characterize and identify the elements of information/educational and socialization/educational functions at the application level in digital games. The specific formulation of our objectives was as follows:

1. Identify the elements of direct and indirect learning in relation to the learning factors according to the original Bloom's Taxonomy of Learning Objectives.
2. Identify the educational elements in relation to the learning factors according to the original Bloom's Taxonomy of Learning Objectives, with a specific focus on advertising games.
3. Characterize the identifiability of educational factors in digital games at the individual levels of the KEMSAK model.
4. Identify the elements of educational factors in digital games at the individual levels of application factors in the KEMSAK model.
5. Identify the elements of the indirect impact of marketing communication on the individual levels of application factors in the KEMSAK model.

We defined the following application factors of the original Bloom's Taxonomy of Learning Objectives and the KEMSAK model in digital games in our previous publications:

1. Cognitivization
   - Learning the rules (written and unwritten) of a successful game
   - Problem-solving through the completion of challenges and tasks
   - Analysis of the possible alternatives of the impact of the game
   - Technical skills
   - Learning foreign languages
2. Emotionalization
   - Emotional experiencing of the game
   - Emotional experiencing of the game's backstory
   - Emotional experiencing of the hero's fate
   - Mood swings
   - Anger
   - Happiness
   - Satisfaction
3. Motivation
   - Win
   - Getting to know the story
   - Getting to know the character of the heroes
   - Earning/scoring the points

- Collecting the trophies

4. Socialization
   - Communication with teammates
   - Searching for new friends
   - Teamwork
   - Mutual help with tasks
5. Axiologization
   - Critical attitudes to the game
   - Characteristic components of the game
6. Creativity
   - New ways to solve the task
   - Differentiation from others – for example, through avatars
   - Trying out new options in the game
   - Alternatives to improving the game
   - Self-improvement in the game
   - Search for variety in the gameplay

Based on these considerations, the following research questions were defined:

1. What educational elements, with a specific focus on advertising games, exist in relation to memorization, understanding, application, analysis, evaluation, and creation?
2. What elements for identifying the educational factors in digital games exist at the level of cognitivism, emotionalism, motivation, socialization, axiologization, and creativism?
3. What educational elements can be identified in digital games at the level of cognitivism, emotionalism, motivation, socialization, axiologization, and creativism?
4. What elements of the indirect impact of marketing communication exist at the level of cognitivism, emotionalism, motivation, socialization, axiologization, and creativism?

We used the questionnaire method, qualitative interview method, and content analysis in our research. We designed the research questions to include the basic information about age, employment, length of experience playing digital games, and the type of games played most frequently (Questions 1–4). We used open-ended questions on the context of gaming at the individual levels of the original Bloom's Taxonomy of Learning Objectives (Questions 5–10), as well as open-ended questions on the identification and characterization of application factors of the KEMSAK model (Questions 11–38). During the interview, we adapted the wording of the questions to the respondents' age. Interviews were audio-recorded, transcribed, and subjected to qualitative coding procedures. We first conducted open coding, assigning labels to meaningful segments of responses related to educational and socialization

functions. In the second phase, we performed coding, clustering the codes into broader categories corresponding to Bloom's taxonomy and the KEMSAK model. Finally, through selective coding, we integrated categories into core themes that directly answered our research questions. To ensure the validity and reliability of our findings, two researchers independently coded a sample of interviews and compared their results to establish inter-coder agreement. Discrepancies were resolved through discussion, and a codebook was developed for consistent application. Questionnaire data were analyzed using descriptive statistics for closed questions and thematic categorization for open-ended responses. Triangulation of interview data, questionnaire data, and content analysis of selected games increased the robustness of the findings.

Our research sample consisted of 25 respondents who were purposefully selected based on their age, gaming style, and type of games played. On the one hand, we needed to answer our research questions by adult, experienced users; and on the other hand, we also needed to cover the opinions and approaches of child users. For this reason, half of our respondents were aged 12, while the remaining three respondents were aged 22–31. The child respondents mentioned Fortnite, Minecraft, Call of Duty, and GTA as the types of games they play. Adult respondents mentioned games such as Call of Duty, GTA, Ghost of Tsushima, The Last of Us, FIFA, Battlefield, Forza Horizon, Mafia, and Uncharted.

Results

When analyzing and interpreting the results, we followed the research questions defined above. The elements of direct and indirect education at different application levels coincided in most cases.

At the level of memorization in the relationship of searching, highlighting, and creating, the challenge in the game appears to be an element of direct action. The respondents mentioned situations in which they had to look for different possible solutions in the game that serve the game's purpose. According to various tutorials available in the game and Let's Play videos (video recordings of the gameplay available online), they memorize the details and possible solutions with the aim of creating a more effective way of playing. The contexts of understanding, interpreting, summarizing, comparing, and explaining were related to the level of memorization. However, in this case, the application level is directly related to the gamer. Inspired by other attributes, the gamers relate them to their way of playing, which they subjectively interpret. In the respondents' answers, we did not identify any links with the direct or indirect impact of digital games on the application level of understanding that would not be related to other levels

of education. The level of application was perceived by the respondents as a result of previous factors. The use, implementation, and solution are represented by the direct action of the game in the in-game instructions and challenges that motivate the gamers with various options to earn points, trophies, characters, and strength. Indirectly, this can be found in various online competitions, challenges, and social media groups in the form of challenges between gamers. Analyzing, comparing, organizing, matching, designing, structuring, and integrating – similar to understanding – were related to the gamer's subjective approach. However, the respondents were also able to reflect on the presence of this level in the in-game instructions or challenges in which the gamer is specifically challenged to the stated attributes. Evaluation was perceived similarly in relation to control, assessment, and experimentation; in-game instructions were also perceived as an element capable of motivating the gamers, with the context of the entire game also playing a significant role. The respondents could also imagine indirect influence through marketing communication, for example, through online competitions. The level of creation in the form of design, planning, discovery, and production was related to the subjective perception of gamers; in-game instructions were identified as an element.

In the questions, we asked about the perception of social responsibility in this regard. Identifying the above elements according to the individual educational objectives was too difficult for the respondents. This question mostly surprised them, as they stated that until now, they had not specifically noticed the presence of socially responsible themes in games. After explaining the terminological issues, they stated that similar elements are part of the scenario in such games. They cited the examples of corruption – for example, in games such as GTA, The Godfather, and Mafia – warnings about age restrictions, and themes related to social problems in terms of content (e.g., games about the pandemic or robots).

They also perceived advertising in digital games in a similar way. They stated that they do not play advertising-focused games but mentioned games that include advertising, for example, FIFA, NBA, NHL, and NFL, in which they remembered various sports brands. One of the respondents stated that lay gamers focus on gameplay and the related experience, and that socially responsible elements and advertisements are not important to them.

According to the respondents, learning at the individual levels of Bloom's Taxonomy of Learning Objectives (1956) is possible through in-game instructions and challenges. This logical approach seems acceptable for our further research, and we see an alternative in the use of learning objectives (activities) within the in-game instructions: *search, highlight, create, interpret, summarize, compare, explain, apply, do, solve, compare, organize, assign, suggest, search, structure, integrate, control, assess, experiment, test, design, plan, discover, produce.*

The socialization and educational aspect and their application tendencies attracted the respondents to a greater extent. We were interested in the type and motivation to learn the written and unwritten rules of the game. In the previous part of our research, we were curious about whether the respondents were more likely to improvise or learn the rules of the game, which they systematically follow. Their answers gravitated towards learning the rules. The respondents' answers emphasized the fact that the gamers, in most cases, learn the rules of the game by playing it, and improvisation may not always be purposeful. Therefore, the game as a whole, or the aforementioned in-game instructions that correct the gamer during play, constitute an element of this application level. The stimulating tutorials, Let's Play videos, and online competitions can have an indirect impact on the gamers.

According to the respondents' answers, solving problems by completing challenges and tasks depends primarily on the gamer, and indirectly on online marketing communication tools. Even in this case, in-game instructions serve as an element of encouragement. When gamers have difficulty completing tasks, they are inspired by videos available on YouTube (the so-called Let's Play videos), which serve as game manuals or walk-throughs. In this context, they are indirectly affected by online competition. Multiplayer games can be expanded or supplemented with various additional hints and tips.

The analysis of the possible impacts of a game is related to the subjective intellectual abilities of the gamer. In some games, various decisions are accompanied by information about their possible consequences. For example, in *Detroit: Become Human*, the story depends on the gamer's reactions; when making important decisions, the game provides alerts about the character's current emotional state or relationships with other characters. Thus, information about forecasting success can be an element at this application level. In this case, the gamer may be indirectly influenced by experiences shared on social media and the aforementioned Let's Play videos.

Improving technical skills is directly related to gaming itself, and the element of difficulty of the gaming technique can have a detrimental stimulating effect. This level can be indirectly influenced by Let's Play videos – online guides and competitions. The development of foreign language competencies can be stimulated through various language tasks, challenges, and vocabulary development options. The respondents mentioned that the mere switching of the game interface to a foreign language can have a positive impact on the gamer. By listening to and reading the instructions, gamers have the opportunity to learn new words, their pronunciation, and meanings.

In the context of emotionalization, we were curious about how gamers emotionally experience the process of gaming, the game itself, and the fate of the main character. According to the respondents, experiencing the gaming process can be stimulated directly in the game and indirectly

through online communication strategy tools. Gamers are influenced, for example, by the original game controls, the appropriate difficulty of the gaming technique, and the engaging nature of the game. They are indirectly influenced by the possibility of completing challenges via social networks, as well as by information and news about the game and online events. The examples included *Guitar Hero, Rock Band, Formula 1, Gran Turismo, Forza Horizon, Need for Speed*, and *DriveClub*. The context of digital gaming that leads to experiencing the game story is also identifiable directly through the game through the storyline. The examples in this category included games such as *The Last of Us, Ghost of Tsushima, Uncharted, God of War, and Hidden Agenda*. In terms of experiencing, we were curious about which game elements have the potential to influence the experience of the main character's fate. The respondents mentioned factors such as a realistic story behind the character/protagonist that reminds them of themselves, the realism of the story itself, the gradual creation of a relationship with the hero, for example in the games *The Walking Dead, The Last of Us, Ghost of Tsushima, Marvel's Spider-Man, Detroit: Become Human, Shadow of The Colossus, Horizon Zero Dawn, The Last Guardian*.

The contexts of digital games in which the respondent gamers experience mood swings, anger, happiness, and satisfaction were related to the gameplay itself and to various difficult-to-generalize moments in the game.

We also asked about the motivation in a game with an emphasis on winning. It was very difficult to identify a generalizable level of this attribute in the answers. The issues mentioned by the respondents were related to the subjective experience of the game. The elements that were directly related to the game again included in-game challenges, while elements indirectly related included online competitions and multiplayer games. We were also interested in the motivation to learn the story. Similar to emotional experiencing, the story's appeal was mentioned. The motivation to learn about the character's fate included the character's realistic story, which reminded the gamers of themselves, the realism of the story, and the gradual creation of a relationship with the hero. Factors such as the possibility to engage in the challenges on social media, information and news about the game, online events, and other related elements may have indirectly affected the respondents. The gamers find motivation to earn points and collect trophies through various challenges and online competitions.

At the level of socialization, we asked which elements in the game can stimulate interest in communicating with teammates. According to the respondents, this aspect is significantly related to the type of gaming mode; some multiplayer games "force" gamers to communicate – for example, they are unable to complete individual levels without mutual interaction. Other levels were perceived in a similar way. Finding new friends, teamwork, and

cooperation in tasks are either connected to the need for interaction in the game or related to entertainment and communication with teammates whom gamers know in real life. However, the latter aspect is primarily related to the gamer's perspective.

The formation of a critical attitude towards the game and evaluation of its characteristic components can be stimulated directly in the game through challenges or by deliberately drawing attention to these components. Indirectly, they are found in manuals, YouTube videos, challenges on social media, and in various documentary releases about the game.

Creativity at the level of finding new ways to solve the game is related to various challenges in the game and indirectly to challenges on social media. Differentiating oneself from others is mainly related to the possibility of creating original characters. Trying new options in the game, alternatives for improving the game, and seeking variety in gameplay were also directly related to in-game challenges or indirectly to social media. We have summarized the research results in Table 1.

Table 1. Summary of the presented factors of education in relation to socialization, information, and education

Bloom's Taxonomy of Learning Objectives				
Level (Bloom's Taxonomy)	**Learning Action**	**Use in Digital Games**	**Game Elements**	**Indirect MK Actions**
Remember	search, highlight, create	Depends on the gamer (direct in-game, indirect via MK tools)	In-game instructions, challenges	Stimulating tutorials, online competitions
Understand	interpret, summarize, compare, explain	Depends on the gamer		
Apply	use, perform, solve	Direct in-game, indirect via MK tools	In-game instructions, challenges	Online competitions
Analyze	compare, organize, assign, design, search, integrate	Depends on the gamer (direct in-game)	In-game instructions, challenges	
Evaluate	control, assess, experiment, test	Depends on the gamer (direct in-game)	In-game instructions, challenges	
Create	design, plan, discover, produce	Direct in-game, indirect via MK tools	In-game instructions, challenges	Online competitions

Cognitivization			
Aspect	**Use in Digital Games**	**Game Elements**	**Indirect MK Actions**
Learning the rules of successful gameplay	Direct in-game, indirect via MK tools	Whole game, in-game instructions	Tutorials, Let's Play videos, competitions
Problem-solving via tasks	Depends on the gamer, indirect via MK tools	Challenges	Stimulating tutorials, competitions
Analyzing impact alternatives	Depends on the gamer, indirect via MK tools	Success forecasting	Social media experiences, Let's Play videos
Technical skills	Direct in-game, indirect via MK tools	Gaming technique difficulty	Let's Play tutorials, competitions
Learning foreign languages	Direct in-game, indirect via MK tools	Language tasks, vocabulary challenges	Social media challenges, competitions
Emotionalization			
Aspect	Use in Digital Games	Game Elements	Indirect MK Actions
Emotional experience of the game	Direct in-game, indirect via MK tools	Controls, difficulty, engaging gameplay	Challenges, game news, online events
Experiencing the backstory	Direct in-game, indirect via MK tools	Captivating story	Challenges, game news, online events
Experiencing the hero's fate	Direct in-game, indirect via MK tools	Relationship with the hero, realistic life events	Social media challenges
Mood swings	Depends on the gamer		
Anger	Depends on the gamer		
Happiness	Depends on the gamer		
Satisfaction	Depends on the gamer		

Motivation			
Aspect	Use in Digital Games	Game Elements	Indirect MK Actions
Winning	Depends on the gamer, direct in-game, indirect via MK tools	Challenges	Competitions, multiplayer games
Knowing the story	Direct in-game, indirect via MK tools	Compelling story	Challenges, game news, online events
Knowing characters	Direct in-game, indirect via MK tools	Relationship with the hero, realistic fate	Challenges, game news, online events
Earning points	Direct in-game, indirect via MK tools	Challenges	Competitions
Collecting trophies	Direct in-game, indirect via MK tools	Challenges	Competitions
Socialization			
Aspect	Use in Digital Games	Game Elements	Indirect MK Actions
Communication with teammates	Direct in-game, indirect via MK tools	Need for communication	Competitions, multiplayer games
Searching for new friends	Direct in-game, indirect via MK tools	Need to form teams	Competitions, multiplayer games
Teamwork	Direct in-game, indirect via MK tools	Need for teamwork	Competitions, multiplayer games
Mutual help	Direct in-game, indirect via MK tools	Need for mutual help	Competitions, multiplayer games

Axiologization			
Aspect	Use in Digital Games	Game Elements	Indirect MK Actions
Critical attitude to the game	Depends on the gamer, direct in-game, indirect via MK tools	Challenges	Manuals, YouTube, social media challenges
Characteristic components	Depends on the gamer, direct in-game, indirect via MK tools	Warnings	Documentary pieces
Creativity			
Aspect	Use in Digital Games	Game Elements	Indirect MK Actions
New task solutions	Depends on the gamer, direct in-game, indirect via MK tools	Challenges	Social media challenges
Differentiation (avatars)	Direct in-game, indirect via MK tools	Original characters	Social media challenges
Trying new options	Depends on the gamer, direct in-game, indirect via MK tools	Challenges	Social media communication
Improving the game	Depends on the gamer, direct in-game, indirect via MK tools	Challenges	Social media communication
Self-improvement	Direct in-game, indirect via MK tools	Challenges	
Seeking variety	Depends on the gamer, direct in-game, indirect via MK tools	Challenges	Social media communication

Source: Majherová 2011; Janková et al. 2016c, own processing.

In Table 1, we characterize the individual categories in relation to the possibilities of applying these factors in digital games (as described above) according to their identifiability in the game, identified element in the game, and various possibilities of indirectly influencing the recipient through marketing communication tools. When it comes to identifiability in the game, we based our analysis on the nature of the source of the given factor – whether it is identifiable directly in the game content, indirectly through social marketing communication, or whether it is directly related to the player's experience or attitude. At other levels, we summarized the elements through which these factors can be stimulated in a digital game and online marketing communication tools (for example, in-game challenges, tasks, and trophies).

Discussion

The main goal of our research was to characterize and identify the elements of informational/educational and socialization/educational functions at the application level in digital games. Our goal was to identify and describe: educational elements, with a specific focus on advertising games, in relation to memorization, understanding, application, analysis, evaluation, and creation (1); elements identifying educational factors in digital games at the level of cognitivism, emotionalism, motivation, socialization, axiologization, and creativism (2); educational elements that can be identified in digital games at the level of cognitivism, emotionalism, motivation, socialization, axiologization, and creativism (3); elements of the indirect impact of marketing communication at the level of cognitivism, emotionalism, motivation, socialization, axiologization, and creativism (4).

Based on a detailed analysis and interpretation of the results, we created a summary table of the findings in the previous subsection. We conducted our research with the aim of further specifying our model of the socialization and educational impacts of digital games on older school-age children.

The research indicated several key points in the model, which we incorporated into the resulting summary as part of our content-focused approach – either by correcting or eliminating certain application levels.

1. The educational objectives at the level of understanding are closely linked to subjective interpretation, personality traits, and the gamer's abilities. In this case, it is difficult to identify an objective element that uniquely motivates this level of education. For this reason, we omitted the elements of understanding with an emphasis on the in-game elements from the model.
2. The educational goals at different levels are identifiable through the same elements and instructions, which we define as a certain form of

assigning challenges. However, it is difficult to explicitly link these tasks to a specific level of education, so we suggest grouping them together. At the same time, however, we continue to hold the view that the concept in the instructions can steer the direction of education.

3. The educational and socialization goals at the level of emotionalization, which we examined in previous research through various emotional expressions of gamers (e.g., mood changes, anger, happiness, satisfaction), are also irrelevant in relation to content analysis in this case (at this level, the elements would only remain speculative). At the same time, we note that the issue can be thoroughly examined in further psychological research.

We are also aware of the limitations of our research regarding its reliability. Qualitative research gives us a more in-depth understanding of the topic, while our efforts to maintain objectivity were influenced by the diversity of the research sample, which consisted of respondents of different ages, lifestyles, and gaming styles.

Based on these results, we attempted to create a model that defines and characterizes the socialization, educational, informational, and learning functions of digital games.

A challenge means a task in the digital game that the gamer must complete under certain conditions. Feil and Scattergood (2005) define different types of challenges in relation to game difficulty:

1. time-limited tasks (the gamer must complete the task within a predefined time limit),
2. technical skill challenges (the gamer must skillfully operate the controller),
3. endurance tasks (the gamer must be able to perform a given task as long as possible),
4. knowledge challenges (the gamer must answer various knowledge questions),
5. logical challenges (the gamer must master the tasks using correct logical reasoning),
6. budgetary challenges (resource control: the gamer receives a certain number of points that must be managed effectively).

In our considerations, we tried to specify the elements of the given application levels. For some elements, it seems appropriate to define them specifically. For example, logical challenges are usually used in problem-solving, while a critical attitude towards the game in relation to axiologization may be instigated by a strategic budgetary challenge. Logical challenges can also be effective in finding alternatives to improve the game. At other levels, we saw links with various combinations of these challenges.

In-game instruction is defined as an assignment to a challenge in the digital game. However, as mentioned above, it is difficult to explicitly link the assignments to one specific level of education, so we suggest grouping them together. At the same time, we continue to hold the view that the concept used in the in-game instructions can steer the direction of education.

Game mechanisms related to game structure designate categories of application levels that analyze the possible alternatives for the impact of the game, its characteristic components, and the possibility of creating original visual representations of characters, weapons, game objects, etc. They have a possible impact on cognitivism, axiologization, and creativitization.

We understand atmosphere in terms of the game's environment, narrative, and scenario, which are made up of an engaging story, the gradual creation of a relationship with the hero, and realistic fate and life events known to the gamers. They follow the application levels of experiencing the storyline of the game, the fate of the hero, and knowing the hero's character. The educational and socializing aspects of this category operate at the level of emotionalization and motivation.

In multiplayer mode, we include the need for direct communication with teammates, the need to create teams, the need for team cooperation in completing the tasks, and the need for mutual help in completing the tasks. The elements are assigned to application levels such as communication with teammates, finding new friends, teamwork, and mutual help with tasks, which have the potential to stimulate socialization in children.

Game difficulty includes the complexity of the gaming technique, original game controls, appropriate challenge level, and overall engagement at the application level of technical skills and gaming experience, with an emphasis on stimulating cognitivism and emotionalization.

Based on these considerations, we defined the VIHARO model (an acronym formed from the initial letters of the individual categories: Challenge, Instruction, Game Mechanism, Atmosphere, Game Mode, and Difficulty). We have listed the basic characteristics of this model in Table 2.

The present model was created with the aim of identifying and characterizing the elements of identifiability at the application level of the informational, educational, and socialization impacts of digital games on older school-age children.

Table 2. The VIHARO Model

Category	Specification of element	Application level	Aims	Media function
Challenges	Logic challenges	Problem-solving, challenges	Cognitivization	Socialization and educational
	Different combinations of challenges	Win	Motivation	Socialization and educational
	Different combinations of challenges	Earning/scoring the points	Motivation	Socialization and educational
	Different combinations of challenges	Collect trophies	Motivation	Socialization and educational
	Strategic challenges	Social responsibility	Axiologization	Socialization and educational
	Different combinations of challenges	New ways to solve the task	Creativity	Socialization and educational
	Different combinations of challenges	Trying out new options in the game	Creativity	Socialization and educational
	Logic challenges	Alternatives to improving the game	Creativity	Socialization and educational
	Different combinations of challenges	Self-improvement in the game	Creativity	Socialization and educational
	Language tasks, language challenges, vocabulary development options	Development of language competencies in a foreign language	Cognitivization	Socialization and educational
	Strategic budgetary challenges	Search for variety in the gameplay	Creativity	Socialization and educational
In-game instructions	Search, highlight, create	Remember	Education	Information and educational
	Use, perform, solve	Apply	Education	Information and educational
	Compare, organize, assign, design, search, structure, integrate	Analyze	Education	Information and educational
	control, assess, experiment, test	Evaluate	Education	Information and educational
	Design, plan, discover, produce	Create	Education	Information and educational
	Different combinations	Learning the rules	Cognitivization	Information and educational

Category	Specification of element	Application level	Aims	Media function
Game mechanics	Added success forecasting	Analysis of the possible alternatives of the impact of the game	Cognitivization	Socialization and educational
	Social responsibility warnings	Characteristic components of the game	Axiologization	Socialization and educational
	Possibility of creating original characters, visual presentation of the game	Differentiation from others	Creativity	Socialization and educational
Atmosphere	Compelling story	Emotional experiencing of the game's backstory	Emotionalization	Socialization and educational
	Gradual development of a relationship with the hero, realistic fate, life events the gamers can personalize with	Emotional experiencing of the hero's fate	Emotionalization	Socialization and educational
	Gradual development of a relationship with the hero, realistic fate, life events the gamers can personalize with	Getting to know the character of the heroes	Motivation	Socialization and educational
Gaming mode	Need for direct communication with teammates	Communication with teammates	Socialization	Socialization
	Need to form teams to play	Searching for new friends	Socialization	Socialization
	Need for teamwork to complete the tasks	Teamwork	Socialization	Socialization
	Need for mutual help to complete the tasks	Mutual help with tasks	Socialization	Socialization
Difficulty	Difficulty of gaming technique	Technical skills	Cognitivization	Socialization and educational
	Original game controls, reasonable difficulty, engaging gameplay	Emotional experience of the game	Emotionalization	Socialization and educational

Source: Own processing.

Conclusion

In our research, we examined the possibilities and elements of identifiability of application factors of information, education, and socialization in digital games. Based on the research results and analysis presented in the previous chapters, we outlined the VIHARO model, which defines the categories of socialization and educational elements from the perspective of gaming. In our considerations, we tried to specify the elements at each application level. A challenge is a task in the digital game that the gamer must complete under certain conditions. An in-game instruction is defined as an assignment to a challenge in the digital game. Gaming mechanisms related to game structure designate categories of application levels that analyze possible alternatives for the impact of the game, its characteristic components, and the possibility of creating an original visual representation of a character, weapon, game object, etc. They have a possible impact on cognitivism, axiologization, and creativitization. We understand atmosphere in terms of the game's environment, narrative, and scenario – it is made up of an engaging story, gradual creation of a relationship with the hero, realistic fate, and life events known to the gamers. These correspond to the application levels of experiencing the storyline of the game, the fate of the hero, and knowing the hero's character. The educational and socializing aspects of this category operate at the level of emotionalization and motivation. In multiplayer mode, we include the need for direct communication with teammates, the need to create teams, the need for team cooperation in completing tasks, and the need for mutual help in completing tasks. The elements are assigned to application levels such as communication with teammates, finding new friends, teamwork, and mutual help with tasks, which have the potential to stimulate socialization in children. Game difficulty includes the difficulty of the gaming technique, original game control, appropriate difficulty, and engagement of the game, corresponding to the application level of technical skills and gaming experience, with an emphasis on stimulating cognitivism and emotionalization.

At the same time, it is necessary to acknowledge the limitations of our research. The study was conducted on a relatively small and non-representative sample, which reduces the generalizability of the findings. The data relied primarily on self-reported information from respondents, which may be subject to biases such as memory errors or social desirability effects. Moreover, the research was carried out in a specific cultural context, which may limit the applicability of the results to other cultural environments.

Bibliography

Adžić Slobodan, Al-Mansour Jarrah, Naqvi Hasnain, Stambolić Slobodan 2021. "The impact of video games on students' educational outcomes". Entertainment Computing no. 38. https://www.sciencedirect.com/science/article/pii/S1875952121000094.

Anderson Lorin W., Krathwohl David R. 2001. A taxonomy for learning, teaching, and assessing. A revision of Bloom's taxonomy of educational objectives. New York.

Bujačková Elena. 1996. "Cieľová skupina – rodina". Hospodárske noviny no. 4(62).

Ferguson Christopher J., Wang C.K. John. 2021. "Aggressive video games are not a risk factor for mental health problems in youth: A longitudinal study". Cyberpsychology, Behavior, and Social Networking no. 24(1). 70–73. https://doi.org/10.1089/cyber.2020.0027.

Fichnová Katarína. 2024. "Comprehension of print and digital media texts – anticipation of own comprehension performance". Media Literacy and Academic Research no. 7(2). 146–156.

Janková Györgyi. 2014. "Analýza faktorov podnecovania tvorivosti a ich podoby v reklame". Analýza a výskum v marketingovej komunikácii no. 2(2). 16–29.

Janková Györgyi. 2015. Adverfakt ako zrkadlo edukačnej a socializačnej funkcie médií. Nitra.

Janková Györgyi. 2016a. "Edukácia a socializácia v marketingovej komunikácii". Mládež a spoločnosť: slovenský časopis pre štátnu politiku a výskum mládeže no. 22(4). 39–47.

Janková Györgyi. 2016b. "The socializing and educational function of media and marketing communication". European Journal of Science and Theology no. 12(3). 93–101.

Janková Györgyi, Džupina Milan, Satková Janka, Bačíková Zuzana. 2016c. Sociálna zodpovednosť pri tvorbe adverfaktov. Nitra.

Janková Györgyi, Tóthová Tímea. 2017. "Parental control over digital threats to children". Episteme. Czasopismo naukowo-kulturalne no. 12(34). 245–262.

Jirák Jan, Köpplová Barbara. 2003. Média a společnost. Praha.

Košičiarová Ingrida, Kádeková Zdenka, Kollár Rybanská Jana. 2024. Spotrebiteľské správanie a jeho zmeny v dôsledku zmenených podmienok na trhu: racionalita a iracionalita v spotrebiteľskom správaní. Nitra.

Krajňák Ondrej. 2002. Manipulácie v programoch pre deti a mládež. http://www.frcth.uniba.sk/new/science/conferences/20020504/3-Krajnak_doc.html.

Mago Zdenko. 2016. "Edukačný potenciál digitálnych hier". Analýza a výskum v marketingovej komunikácii no. 4(1). 45–51.

Niklová Miriam. 2019. "Závislostné správanie detí a mládeže na online počítačových hrách". Sociológia a spoločnosť no. 4(2). 53-62. http://www.sociology-society.ff.ukf.sk/archiv-cisel/c8/c8-miriam-niklova.pdf.

Santos Isis Kelly, Silva Cunha de Medeiros Rafaela Catherine, Azevedo de Medeiros Jason, Almeida-Neto Paulo Francisco, Souza de Sena Dianne Cristina, Cobucci Ricardo Ney, Oliveira Ricardo Santos, Araújo Tinoco Cabral Breno Guilherme, Silva Dantas Paulo Moreira. 2021. "Aktívne videohry na zlepšenie duševného

zdravia a telesnej zdatnosti – alternatíva pre deti a dospievajúcich počas sociálnej izolácie: prehľad". International Journal of Environmental Research and Public Health no 18(4). 1641. https://doi.org/10.3390/ijerph18041641.

Satková Janka. 2008. Mediálna výchova realizovaná výtvarnou tvorbou. In: Individualita žiaka v elektronickom prostredí: zborník z odborného seminára. Zabadal Ľubomír et al. (eds.). Nitra. 32–39.

Shoshani Anat, Krauskopf Maya. 2021a. "The Fortnite social paradox: The effects of violent-cooperative multi-player video games on children's basic psychological needs and prosocial behavior". Computers in Human Behavior no. 116. 106641. https://doi.org/10.1016/j.chb.2020.106641.

Shoshani Anat, Braverman Shahar, Meirow Galya. 2021b. "Video games and close relations: Attachment and empathy as predictors of children's and adolescents' video game social play and socio-emotional functioning". Computers in Human Behavior no. 114. 106578. https://doi.org/10.1016/j.chb.2020.106578.

Spitzer Manfred 2018. Digitálna demencia: Ako pripravujeme seba a naše deti o rozum. Bratislava.

Szotkowski René. 2009. "Negative effects of electronic media on children and youth". Journal of Technology and Information Education no. 1(2). 3–9.

Šupšáková Božena. 2000. Detský výtvarný prejav. Svätý Jur.

Zelina Miron. 2011. Stratégie a metódy rozvoja osobnosti dieťaťa. Bratislava.

Zelina Miron, Zelinová Milota. 1990. Rozvoj tvorivosti detí a mládeže. Bratislava.

Zhang Qian, Cao Yi, Tian JingJin. 2021. "Effects of violent video games on aggressive cognition and aggressive behavior". Cyberpsychology, Behavior, and Social Networking no. 24(1). https://doi.org/10.1089/cyber.2019.0676.

Abstract

This paper explores the possibilities and components of the educational and socialization aspects of the media impact of digital games on school-age children. It builds on the research results and relies on the application factors of the original and revised Bloom's Taxonomy of Objectives (1956, 2001) and Zelina's KEMSAK model (1996). It focuses on research into the characteristics of digital games for school-age children, examining the degree of cognitivism, emotionalization, motivation, socialization, axiologization, and creativity involved in playing digital games. Subsequently, through content analysis, it defines the categories of socialization, educational, and learning elements from the perspective of a digital game, referred to as the so-called VIHARO model.

Słowa kluczowe: model VIHARO, aspekt edukacyjny i socjalizacyjny, gry cyfrowe, dzieci w wieku szkolnym

Keywords: VIHARO model, educational and socialization aspect, digital games, school-age children

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