Tetiana Zinovieva
PhD in Art History, Associate Professor,
Information activities and media communications chair
Odesa Polytechnic National University, Odesa, Ukraine
zinovieva@op.edu.ua
ORCID: 0000-0002-3573-9978

EMOTIONAL INTELLIGENCE IN GAME ELEMENTS FOR FORMING HIGHER FEELINGS IN ACTIVE AND DEEPER LEARNING

Abstract. This study aims to investigate the model of emotional intelligence and its use in computer games. Video games can be used to enhance emotional intelligence through active and deep learning. This article explores how emotional intelligence and gaming intersect, offering insights into how higher feelings can be formed through active and deeper learning. The analysis of existing scientific literature highlights the growing interest in creating emotional intelligence models, particularly within the realm of serious games. As part of this investigation, the author introduces a classification of emotional intelligence models that demonstrates their conceptuality. This work proposes the integration of emotional intelligence into game dynamics to enrich the landscape of emotional intelligence assessment and development. One key aspect of this approach is viewing emotional intelligence as a means to cultivate higher-order feelings, such as moral, aesthetic, social, intellectual, and the joy of knowledge and empathy. These emotions are integral elements of a "hot" system, emphasizing their relevance to authentic, non-digital cultural experiences. The dynamic emotional intelligence model introduced here serves to nurture essential skills, including situational cognitive reassessment and "emotional work", leading to congruence in felt and expressed emotions. This model identifies the interplay of game aesthetics, mechanics, and dynamics as pivotal zones for the formation of higher feelings. The article argues that games intended to stimulate emotional intelligence should not induce a flow state that narrows the player's cognitive scope and inhibits critical thinking. To counteract this, the author suggests incorporating pauses, live communication, and reflective analysis of one's emotions within the gaming experience. The article explores the transformation of impersonal emotional intelligence test questions into game components encompassing mechanics, dynamics, and aesthetics. It outlines strategies for active and deeper learning, facilitating an enriched understanding of emotional intelligence through gaming. The recommendations derived from this discussion can be applied to an array of games under the dynamic emotional intelligence model, making it a valuable resource for educational game design. The proposed dynamic model of emotional intelligence within computer games emerges as a universal and versatile tool. It can function as a pedagogical framework for the development of student's emotional intelligence, enabling educators to harness the power of games for emotional growth. This model serves as a canvas for game designers, offering creative possibilities for the development of new computer-based educational games that target emotional intelligence. This article demonstrates that playing games can indeed stimulate emotional intelligence by fostering active and deeper learning. By incorporating emotional intelligence into gaming dynamics, it is possible to create more engaging and effective learning experiences, ultimately promoting the formation of higher feelings and a deeper understanding of emotional intelligence.

Keywords: emotional intelligence model; educational computer games; game design; serious games; humanization computer games; emotions; higher feelings; active and deeper learning

Statement and substantiation of the urgency of the problem. Higher Education Standards of Ukraine (Higher Education Standards, 2021) currently state such integrated competence. This is especially true for humanities applicants because the humanities and professions under the influence of the techno-digital age are subject to radical reassessment and thus must develop clear axiological, spiritual, moral, and humanitarian guidelines. Modern knowledge management (Nonaka & Takeuchi, 1995) emphasized emotions importance. Therefore the key to the career success of humanities graduates' soft skills, including emotional intelligence (EI). Under such conditions, emotional intelligence becomes a fundamental competence for the effective resolution of environmental demands (Bar-On, 1997).

The digital age technological progress is significant, but we should not overestimate them. According to Jean Baudrillard's concept, technology refers to the "cool" phase (Baudrillard,

1987). Thus, the "cool" includes a modern system of labor, money as self-worth, the "whole structural assemblage in general". The classic production and labor process are "hot". But they gave way to unlimited economic growth and thus became a "cool" process. "Coolness is the pure play of the values of discourse and the commutations of writing. It is the ease and aloofness of what now only really plays with codes, signs and words, the omnipotence of operational simulation. <…> Any "message" keeps us in the hot. We enter the cool era when the medium becomes the message" (Baudrillard, 2016). This thesis reveals the problem of the quality of modern education - substitution of the education content by its form. Under these conditions, the learning process becomes "an electronic cool game with an impersonal computer", and the "binary cool world" of test tasks "absorbs the world of metaphors and metonymy" of living knowledge (Luhova & Melnyk, 2012).

Austrian psychiatrist V.E. Frankl wrote that "Every age has its own collective neurosis, and every age needs its own psychotherapy to cope with it" (Frankl, 2017). Such therapy can be creativity "as overcoming despair" (Bentley, 1969), spiritual values, live communication, and the game as a "hot" reality conductor. The challenges of the digital society and civilization's self-saving need in the higher feelings as part of the system "hot".

Literature Review. The theoretical basis for emotional intelligence models is significant. Among all the variety of theories, the most scientifically made up are the following:

– *Ability models:* "The ability model of emotional intelligence" (Mayer, Caruso, & Salovey, 2016), (Daus & Ashkanasy, 2005).
– *Process models:* "Organizational emotional intelligence" (Daus & Ashkanasy, 2005), (Giorgi, 2013); "The process model of emotion representation and regulation" (Barrett & Gross, 2001); "The cascading model" (Joseph & Newman, 2010).
– *Adaptive models:* (Izard, 2001).
– *Multi-level and complex structural models:* "The layered model on emotional intelligence" (Drigas & Papoutsi, 2018); "The five-factor model of personality" (McCrae, 2000); "The multi-level investment model" (Zeidner, Matthews, Roberts, & MacCann, 2003).
– *Target models:* "The emotional leadership" (Caruso, Mayer, & Salovey, 2002); "Emotional intelligence through conflict management strategies" (Rahim, et al., 2002); "The gender-specific model of organizational variables" (Petrides & Furnham, 2006).
– *Tool models:* "The emotional intelligence test" (Mayer & Salovey, Mayer-Salovery-Caruso emotional intelligence test, 2007).

We offer a dynamic model of emotional intelligence, which is based on popular flow theories. Playing video games can create a flow experience that promotes mindfulness and relaxation, with the player becoming engrossed in the activity without feeling tired. Educational games can motivate individuals and foster positive psychology and well-being. We draw on works on game and motivational flows and the state of immersion (Cruea), (Csikszentmihalyi, 2014), (Song & Zhang, 2008). And we also use psychological works on adaptation and a sense of well-being (Moreno-Ger, Burgos, Martínez-Ortiz, Sierra, & Fernández-Manjón, 2008), (Chen, 2007), (Flett, Hein, Riordan, Thompson, & Conner, 2019), (Rybak, 2013).

The concept of emotional intelligence is also being explored in the realm of serious games. For instance, researchers have studied the use of serious games to develop emotional intelligence skills (Almeida, 2020) and to train crisis managers to use emotional intelligence effectively (Mackinnon, Bacon, Cortellessa, & Cesta, 2013). Other studies have looked at the role of serious games in facilitating deeper learning and emotional engagement (Graesser, Chipman, & Leeming, 2009), and how they can be used to create immersive experiences that foster emotional intelligence (Raybourn, 2011), (Raybourn, 2014).

Meditation games are a special trend in the gaming industry. Their aim is to overcome anxiety, anxiety, depression, stress disorders, etc. to achieve mindfulness (Kowal, Conroy,

Ramsbottom, Smithies, Toth, & Campbell, 2021), (Pine, Fleming, McCallum, & Sutcliffe, 2020), (Poppelaars, Lichtwarck-Aschoff, Otten, & Granic, 2021), (Carras, et al., 2018); (Jones, Scholes, Johnson, Katsikitis, & Carras, 2014); (Sliwinski, Katsikitis, & Jones, 2015), (Fish, Russoniello, & O'Brien, 2018); (Pine, Sutcliffe, McCallum, & Fleming, 2020), (Siegel, Germer, & Olendzki, 2009).

Researchers are currently examining the potential impact of digital games on emotional well-being, as well as the benefits of mindfulness practices (Johannes, Vuorre, & Przybylski, 2021), (Jagoda & McDonald, 2019), (Agrawal, Duggirala, & Chanda, 2018), (Sliwinski, Katsikitis, & Jones, 2015).

It's worth highlighting the impact of game-based learning (Gee, 2003) on the emotional state of students. It can lower levels of emotional burnout and aggression while promoting a sense of well-being, empathy, and joy in learning. These findings can inform the development of educational game algorithms (Winn, 2009). Our studies thoroughly investigate this topic: (Luhova, Melnyk, 2012), (Luhova T. A., 2020), and (Luhova & Kolot, 2023).

Identifying aspects of the problem that are still studied. Research is being conducted on the influence of digital games in creating a positive emotional state and mindfulness. However, game developers and researchers mainly focus on the relaxing effects of video games, and the impact on higher emotional and volitional processes is not fully investigated. There is also a lack of research on how video games can help deal with aggressive reactions and burnout.

In the field of intelligent tutoring and environment system development, games are being integrated into smart infotainment systems equipped with emotional intelligence and affective computing models for recognizing student emotional states. This approach to game-based learning is being explored by researchers who are studying the potential of emotional triggers to improve learning outcomes (Raybourn, 2014), (Lester, Ha, Lee, Mott, Rowe, & Sabourin, 2013).

The cultural value of emotional technology is a matter of concern. Our focus should be on people rather than technology. We should make efforts to preserve their emotional health and provide proper education on emotional intelligence for both individuals and society. It is therefore important to highlight the ability of this game-based model to influence players' emotional state positively. This can help reduce emotional burnout and aggression, and promote a sense of well-being, empathy, and the joy of learning the joy of learning.

This study explores emotional intelligence models and their potential application in computer games for forming higher feelings in active and deeper learning.

The methodology for this research includes a literature review to understand the current state of research on the topic and determine the originality of the study. It also involves a comparison of different models of emotional intelligence to establish a connection between emotional characteristics and game design components, as well as pedagogical strategies. Cultural analysis is used to understand educational system issues through J. Baudrillard, and A. Bakanurskyi. Finally, the research findings will be generalized to provide recommendations to game designers and teachers in higher humanities educational institutions. This will help in creating effective teaching strategies and improving emotional intelligence in students.

Presentation of the main material with justification of the obtained results.

Emotions as game dynamics. In our previous publication, we presented a table that transforms impersonal tests of emotional intelligence into dynamic components as an active learning strategy (Zinovieva, Kolot (2023). We discussed the issue of subjectivity in self-assessment tests of emotional intelligence and suggested using game situations to obtain objective data using behavioral tests. The result of transforming impersonal questions into a game should show the relationship between emotions and decisions and have some influence on pedagogical strategies (Blazhko, Gdowska, Gawel, Dziabenko, & Luhova, 2017). This led to considering the relationship between emotions and decisions as an algorithmic formula.

The feelings structure "two or more emotions and a logical algorithm-link" can be compared with combinations of game mechanics components responsible for the rules of the game. E.g. the envy feeling comprises the emotions of anger, resentment, and contempt, and the connecting algorithm is a comparison with a person who has achieved success in values (material or spiritual) that are significant for the envious person, a wish to be in his place. Game mechanics combinations look like this: "killer" = "shoot" + "destroy"; "driver" = "move" + "avoid" (Djaouti, Alvarez, Jessel, Methel, & Molinier, 2008).

To create the player's emotional reactions and experience, the combination of game esthetic components produces the basic game emotions, or "fun", according to the MDA model (Hunicke, LeBlanc, & Zubec, 2004). E.g. for charades, this combination is: Fellowship, Expression, Challenge. For the game Quake it is: Challenge, Sensation, Competition, Fantasy. The Sims: Discovery, Fantasy, Expression, Narrative. Final Fantasy: Fantasy, Narrative, Expression, Discovery, Challenge, Submission. Game dynamics "the influence of time and the enemy" create a "Challenge" aesthetic. The "Fellowship" perception can be designed by sharing information between specific team members or providing winning conditions that are harder to achieve alone. A sense of "Expression" is formed via dynamic actions that encourage users to leave their mark on the game, based on the processes of buying or receiving in-game items, designing, building, and changing game-levels or worlds, and creating new unique characters (Djaouti, Alvarez, Jessel, Methel, & Molinier, 2008). We can identify the game fun with emotions that arise concerning the situation. They attach feelings to objects. In humans, emotions give rise to experiences of pleasure, displeasure, fear, timidity, etc. Emotions play the role of orienting subjective signals. Thus, the game aesthetics and mechanics combination creates various game fun. This creates the conditions for designing students' emotions in game learning.

Emotions are different in content. They reflect different meaning aspects of the situations that caused them. The MDA component "Aesthetics" offers eight types of emotional reactions. These are game "funs" or the game use subcategories (Djaouti, Alvarez, Jessel, Methel, & Molinier, 2008): Sensation, Fantasy, Narrative, Challenge, Fellowship, Discovery, Expression, Submission. It is difficult to reduce the game fun types to basic emotional states: happiness, anger, disgust, surprise, sadness, and fear. Because the vast majority of computer games classifications focus on the activity approach (action, simulation, strategy, role-playing games, adventure, puzzle, etc. And only one games genre has a clear focus on emotions - Survival horror, Horrors. The basic aim of the game aesthetics "Fellowship" is creating cooperative relationships, and empathy sense, teamwork, leadership, emotional management. But, as a rule, it does not consider deep ethical dilemmas. E.g., the "Total Domination" game (Total Domination Cheats, Tips & Guides) has a strong clan tradition that can manipulate a player's emotions.

Emotions and the volitional sphere are intricately connected. Volitional processes involve the emergence of needs, motives, or reasons to act in a certain way, decision-making, and their implementation (Petrovskii, 1976, p. 56). The volitional sphere comprises self-control, composure, endurance, and constructive activity. "Need" is the foundation for emotional and volitional expression. According to A.V. Petrovskii, a "need" is a state of an individual that expresses dependence on specific conditions of existence. The "need" serves as a source of personal activity (Petrovskii, 1976, p. 104)

In a game's environment, the needs of the player become the driving force. These needs lead to the creation of game artifacts, which are significant objects in the game's world. This principle of personality consciousness development is important in educational games, where the focus should be on emotional and meaningful content that addresses cognitive, cultural, and spiritual needs. In contrast, mass video games tend to focus more on natural and material needs, as seen in games like Snake, which satisfy the need for absorption (consumerism). Games with stories, riddles, and simulators of professions are more mental in nature. For educational games, the teacher should create objects that are of real importance for learning success, with stable

significance and positive emotion. "This is one of the essential ways to increase the learning productivity" (Petrovskii, 1976, p. 109).

It is important to differentiate between the concepts of need and motive because most models of emotional intelligence emphasize the flow of motivation (Christie, Jordan, Troth, & Lawrence, 2007), (Sobhi-Gharamaleki, 2012), (Magnano, Craparo, & Paolillo, 2016), as in the educational game models (Song & Zhang, 2008). A.V. Petrovskii defines motives as stimulus for activities related to certain needs' satisfaction. "If the needs to make up the essence, the mechanism of many human activities, then motives act as concrete manifestations of this essence" (Petrovskii, 1976, p. 109). To game design, the needs will embody game artifacts and resources. Then the motives are game mechanics and dynamics: rules, goals, strategies for achieving goals, time pressure, community influence, etc.

All serious games are educational (Ratan & Ritterfeld, 2009), important to clarify the essence of the cognitive processes involved in the game, their connection with emotions and behavior (Izard, Kagan, & Zajonc, 1984). Cognitive mental processes include (Petrovskii, 1976, p. 56): *sensations and perceptions* as a reflection of objects, and stimuli directly acting on the sense organs; *memory* as a renewable reflection of reality; *imagination and thinking* as a generalized and processed reflection in the human consciousness of the reality properties that are inaccessible to direct cognition. And also *attention* - the selective, directed nature of mental activity; the orientation of the psyche (consciousness) to certain objects that have a stable or situational significance for the individual, the psyche (consciousness) concentration, suggesting an increased level of sensory, intellectual or motor activity (Petrovskii, 1976, p. 187). Game researchers emphasize "attention processes" as a practice that promotes self-awareness and positively affects psycho-physical health (Rybak, 2013).

Interests are the emotional expression of a person's cognitive needs. Meeting these needs helps bridge gaps in knowledge, and improves orientation, understanding, and familiarity with significant facts. For the individual, interests evoke positive emotions, which enhance the learning process by fostering the desire to learn more about the object of importance and better comprehend it (Petrovskii, 1976, pp. 110-111). The purpose of educational games design, considering the model of emotional intelligence, is the formation of cognitive interest.

Creating game algorithms that promote empathy formation is a challenging task that requires sensitivity to the emotional states of others, awareness, cognitive structuring of emotional aspects, and a motivating attitude to help the needy. American psychologist C.R. Rogers said: "To be in a state of empathy means to perceive the inner world of another while maintaining emotional and semantic nuances" (Rogers, 1975, p. 17). Ukrainian psychologist L. Zhuravlova noted that the empathic process development depends on many factors, i.e.: social, age, individual psychological, gender differences and other (Zhuravlova, 2008, p. 42). To the determining factors of the empathy genesis, she includes (Zhuravlova, 2008, p. 154): psychophysiological (sensitivity, emotional lability of the nervous system, the first signaling system development, neuroticism), individual psychological (sensitivity, depression, reactive aggression, shyness, openness, loneliness, self-esteem, "I-concept", needs, values), typological (social type, character accentuation: emotionality, meticulousness, anxiety, cyclothymic, demonstrative, exalted, personality orientation) and sociocultural (socialization conditions, parenting type). Such a variety of these factors show that the issues of empathy programming in the game deserve a separate study. As a result, the game must achieve the goal of forming charity - a sense of readiness to provide selfless help, forgiveness, practical realization of kindness.

We agree with the thesis of the Ukrainian theater researcher A.G. Bakanurskyi, that "empathy is a creative process, not a state" (Bakanurskyi, 2015, p. 17). He noted the essential empathy creation conditions: the "another life" sens, borders and freedom, "catholicity" and "looking-glass self".

The "another life" sens (virtuality experience) isolates the personality from social negatives and thus turns the game into a "psychotherapeutic laboratory with many existential options for realized" (Bakanurskyi, 2015, pp. 17-18).

Awareness of the boundary "as if" is a condition for the freedom of a person in the game. Freedom, as an empathy element, requires the "gap" in a player's mind between his feelings and the emotional background of the game itself. Otherwise, as the C.R. Rogers, the recipient-player "becomes no longer a prisoner, but a slave" of the game system, which is facilitated by his identification with the game image, which cuts off the possibility of free fantasy and operating with his own emotions (Rogers, 1975, p. 2).

Empathy has a "cathedral" character. It is an impulsive ability for emotional empathy with another person reaction (Bakanurskyi, 2015, p. 18). To the "looking-glass self" theory, proposed by C. Cooley (Cooley, 2011), a person forms his behavior according to his idea of himself through other people and depends on the authority of the one who provokes this emotional response.

If the game resource is filled with mental values, then the player will develop cognitive needs. Game storytelling and combinations of game tasks form the motivational component of the game. It develops the player's motivation through the principle of "revealing the hero in action" (Luhova T. A., 2020).

Why games shouldn't be flow? We separate the concepts of "flow" and "state dynamics" since the first does not correlate with the tasks of developing emotional intelligence, awareness, and management of emotions.

The motivation flow state described by (Csikszentmihalyi, 2014) is an important part of the inspiration, the game excitement, "work with pleasure", the specific activity success. But, the flow state implies complete activity immersion and causes a state of "narrowing of consciousness", reduces criticality, and increases attention selectivity.

As a kind of trance state, the game flow is close to affective states - pronounced emotional reactions that occur when faced with extreme situations that can slow down other mental processes (e.g., rational thinking), imposing a method of "emergency" overcoming the situation fixed by evolution "hit, run, freeze". The main game rules which determine the goal involve the noted reactions.

We emphasize that a "living object" concept is identical to a "moving object" within the game. The border "alive - not alive" for the player's awareness is blurred (Luhova T. A., 2020). Thus, the mental reaction "Beat" as an aggressive behavior aimed at eliminating the threat corresponds to the "Destroy" game rule. It invites the player to destroy, collect or catch game objects for their further accumulation or destruction. E.g., "eaten objects" or checkpoints in a racing game, etc.

The "Avoid" game rule (Djaouti, Alvarez, Jessel, Methel, & Molinier, 2008) prompts the player to sidestep collision with obstacles, opponents. We related this rule to the psychological reactions "Run" and "Freeze". Psychologists understand the "Run" reaction as psychomotor agitation, a "motor storm", non-purposeful, poorly comprehended actions that might help "break out of the situation". The "Freeze" response suggests a motor stupor (immobility), "imaginary death" when emotions "paralyze" the activity necessary to avoid imminent danger.

Therefore, it is necessary to design the game not as a "flow", but as meaningful transitions of emotional states, including pauses for self-reflection, criticality, and switching to live communication. It will also help to focus on such game rules as "Create" (the player compiles, builds, or creates virtual game values) and "Match" (the player sets or holds one or more objects in a certain state).

Simulation of a serious team game. The ability to reason with emotions and reinforce thoughts (MSCEIT™) concerns emotional intelligence. Therefore, important to connect emotions and thinking as a decision-making process.

Three blocks of characteristics that determine the input and output parameters and features of managing emotions can represent the model of a serious team game as emotional work (Fig. 1).
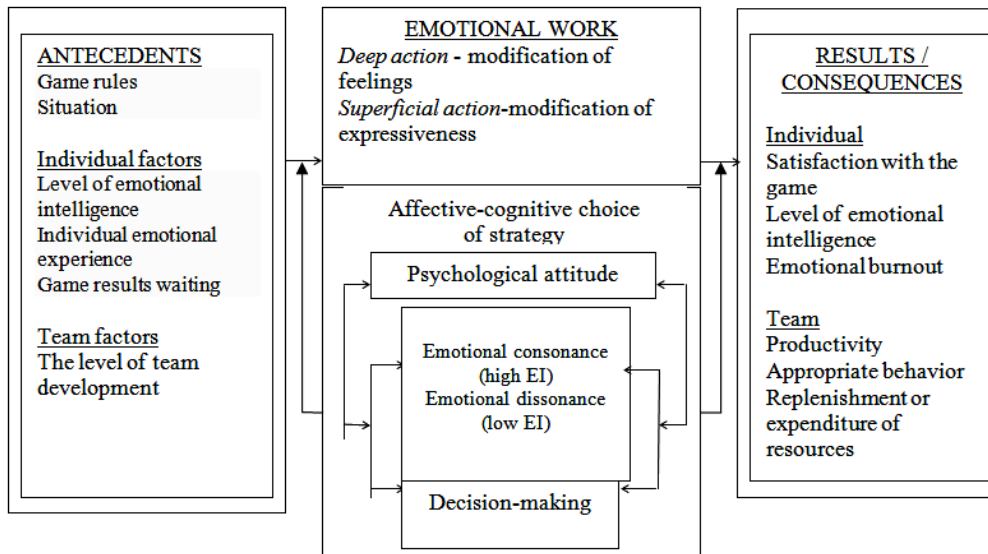

Fig. 1. Model of the serious game as emotional work (Kolot, Khristich, & Polik, 2020), (Kolot, Khrystych, & Chernaya, 2019)

The emotional dynamics of team games are influenced by crucial factors such as the emotional experience of each team member, their emotional intelligence level, performance expectations, game rules, team norms, role behavior requirements, team development level, and situational events. Individual emotional experience is the most significant factor that affects all other inputs. It determines the variety, modality, and expressiveness of the presented emotions, regulated and adjusted by the game rules, and team norms for effective team environment formation. Positive experience contributes to the emotional awareness expansion, the interpersonal relationships' establishment through the coordination and exchange of emotional resources, as well as their replenishment under situational changes, levels out negative situational events, which reflects the functional purpose of EI (Kolot, Khristich, & Polik, 2020).

We aim for interpersonal relationships with mutual understanding formation and team cohesion as the basis for effective role-playing behavior and achieving team results. Negative experience impedes interaction and becomes the basis for correcting the indicators of emotional resources and emotional intelligence of team members. The control unit functioning of team emotional work during the game is determined by the processes of deep acting, surface action, and control strategies. Their use contributes to the optimization of the interpersonal relationship and allows you to regulate the emotional climate in the team. All these form the team's emotional experience thesaurus as a condition for effective teamwork/game. It expresses feedback from deep action processes as a positive change in the input characteristics of team emotional work and reflects its dynamics. Using superficial action processes by team members characterizes their unpreparedness, which manifests itself in the discrepancy between team norms and individual emotional experience with the game rules, as well as team expectations about individual behavior. The emotional dissonance, which shows the need to establish a positive emotional environment based on deep action processes, reflects such unpreparedness. The likelihood of transitioning from dissonance to consonance, where the displayed emotions align with the actually experienced emotions, depends on the ability to achieve high levels of satisfaction with the game. It also depends on the effectiveness of improving individual emotional experience and emotional intelligence indicators, as well as fostering team

interpersonal understanding and interaction (Kolot, Khristich, & Polik, 2020), (Kolot, Khrystych, & Chernaya, 2019).

During the game, emotional dissonance moves along the "emotional dissonance-emotional consonance" axis, under the change in the emotional work strategy used. For the pole on the axis, which is characterized by the maximum value of dissonance, emotional work-play is associated with the energy expenditure for experiencing a game loss and illustrates the inconsistency of emotional behavior with the rules of the game.

The output block of the model contains individual and team consequences and the results of the emotional work within the game. Individual results: negative - burnout, dissonance; positive - consonance and congruent emotional experience, a higher level of EI, personal satisfaction with the results of the game (work). Team results: a favorable team social and emotional environment that contributes to the team's effective interpersonal interaction development within and outside the team, the team EI and role behavior of team members; ensures the effectiveness of the result of the team. The factors' coincidence state the large results' achievement in the emotional management implementation for the personal and command levels of management. Managing emotions during the game at the team level contributes to the job satisfaction and game success that are significant for each individual and the team. The effectiveness of team emotional management leads to increased cooperation and the quality of interaction, a favorable social and emotional environment. It is a promising way to improve the functioning efficiency of optimizing team management by a rational and emotional approaches combination.

Conclusion.

1. The analysis of the scientific literature gave an opportunity to state considerable interest in creating emotional intelligence models, including for serious games. This made it possible not only to present the author's classification of EI models. It was found that most of the models of emotional intelligence proposed by scientists are characterized by coherence and conceptuality. We suggested considering emotional intelligence in-game dynamics.

2. It is proposed to consider emotional intelligence via the purpose of forming in players higher feelings (moral, aesthetic, social, intellectual, especially the joy of knowledge and empathy) as elements of a "hot" system (alive, natural, non-digital culture). The dynamic EI model serves to form the situation cognitive reassessment skill and the so-called "emotional work", the congruence achievement when felt and expressed emotions coincide in nature. The EI game model defines zones of the higher feelings' formation as game aesthetics, mechanics, and dynamics combinations.

3. The hypothesis the game flow model is close to the emotional intelligence model made it possible to establish that games with emotional intelligence should not be flowing, trance, and therefore narrowing the mind (critical thinking). For this, it is advisable to use pauses, live communication, and analysis of one's own feelings.

5. The proposed dynamic model of emotional intelligence in computer games is universal. It can be used as a pedagogical attitude for educational games, to develop students' emotional intelligence, and as a canvas for creating new computer educational games for game designers.

6. Playing games can stimulate emotional intelligence by facilitating active and deeper learning.

Prospects for further research. It is interesting to study the using specifics of the "Fellowship" games aesthetics, with a player's emotional burnout under the symptom "Emotional alienation" (Boiko, 1999). Detailed the game plots for the emotional intelligence development and the higher feelings' formation needs a separate study. Experimental studies of the impact on the emotional sphere of different genres of games are also promising. Also favorable are further detailed studies of emotional intelligence models as a basis for formation in players' higher feelings: moral, aesthetic, social, intellectual, especially the joy of knowledge,

and empathy.

We see the prospect of developing educational video games as psychodrama, which allows players (students) to construct their own plots, filling gaps in life, in which a real person coincides with a fictional character, and the gameplay becomes more real than the surrounding reality that makes life, according to Leotard, "unstable, elusive, ephemeral". Conversely, to develop such pedagogical influence points that help the player get out of virtuality, realize the line between imaginary and real (human is not just a game moving object, but the highest value), analyze their emotions, reveal implicit deep emotions and be able to work with them.

REFERENCES

Agrawal, V., Duggirala, M. & Chanda, S. (2018). Journey: A game on positive affect. CHI PLAY 2018 – Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts, pp. 373-379.

Almeida, F. (2020). Adoption of a serious game in the developing of emotional intelligence skills. European Journal of Investigation in Health, Psychology and Education , 10 (1), 30-43.

Bakanurskyi, A. (2015). Theater as an escape: a research essay (ISBN 978-966-930-000-3 ed.). Kherson: Hryn D.S.

Bar-On, R. (1997). The Emotional Quotient Inventory (EQ-I): Technical Manual. Toronto: Multi Health.

Barrett, L. & Gross, J. (2001). Emotional intelligence: A process model of emotion representation and regulation. In T. J. Mayne, & G. A. Bonanno (Eds.), Emotions: Currrent issues and future directions (pp. 286-310). Guilford Press.

Baudrillard, J. (2016). Symbolic exchange and death. Sage.

Baudrillard, J. (1987). Cool Memories. Ch. Turner (Translator). Paperback. 240 p.

Bentley, E. (1969). Quality in Theatr. Theater, 2 (2), 8-21.

Blazhko, O., Gdowska, K., Gawel, B., Dziabenko, O. & Luhova, T. (2017). Deeper learning approaches integrated in serious games. Project, Program, Portfolio Management. P3M. In The Proceedings of the International Research Conference, 2, pp. 18-21.

Boiko, V. (1999). Method for diagnosing the level of emotional burnout. Practical psychodiagnostics, (2), 111.

Carras, M. C., Van Rooij, A. J., Spruijt-Metz, D., Kvedar, J., Griffiths, M. D., Carabas, Y., et al. (2018). Commercial video games as therapy: A new research agenda to unlock the potential of a global pastime. Frontiers in Psychiatry (8), 1-7.

Caruso, D., Mayer, J. & Salovey, P. (2002). Emotional intelligence and emotional leadership. In R. E. Riggio, S. E. Murphy, & F. J. Pirozzolo (Eds.), Multiple intelligences and leadership (pp. 55-74). Lawrence Erlbaum Associates Publishers.

Chen, J. (2007). Flow in Games. Communications of the ACM, 50 (4), 31-34.

Christie, A., Jordan, P., Troth, A. & Lawrence, S. (2007). Testing the links between emotional intelligence and motivation. Journal of Management & Organization, 13 (3), 212-226.

Cooley, C. (2011). Looking-glass self. In The production of reality: Essays and readings on social interaction (5 ed., Vol. 6, pp. 126-128). Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE, PINE FORGE.

Cruea, M. (2020). Gaming the mind and minding the game: mindfulness and flow in video games. Video Games and Well-being: Press Start, 97-107.

Csikszentmihalyi, M. (2014). Flow and the Foundations of Positive Psychology (ISBN: 978-94-017-9088-8 ed.). Springer.

Daus, C. & Ashkanasy, N. (2005). The case for the ability-based model of emotional intelligence in organizational behavior. Journal of Organizational behavior, 26 (4), 453-466.

Djaouti, D., Alvarez, J., Jessel, J., Methel, G. & Molinier, P. (2008). A gameplay definition through videogame classification. International Journal of Computer Games Technology, pp. 1-6.

Drigas, A., & Papoutsi, C. (2018). A new layered model on emotional intelligence. Behavioral Sciences, 8 (5).

Fish, M., Russoniello, C., & O'Brien, K. (2018). Zombies vs. Anxiety: An Augmentation Study of Prescribed Video Game Play Compared to Medication in Reducing Anxiety Symptoms. Simulation and Gaming, 49 (5), 553-566.

Flett, J., Hayne, H., Riordan, B., Thompson, L., & Conner, T. (2019). Mobile Mindfulness Meditation: a Randomised Controlled Trial of the Effect of Two Popular Apps on Mental Health. Mindfulness, 10 (5), 863-876.

Frankl, V. (2017). Man's search for meaning. Boston: Beacon Press.

Gee, J. (2003). What video games have to teach us about learning and literacy (1st edition (May 1, 2003) ed.). New Yor: Palgrave Macmillan.

Giorgi, G. (2013). Organizational emotional intelligence: development of a model. International Journal of Organizational Analysis, 2 (1), 4-18.

Graesser, A., Chipman, P., & Leeming, F. (2009). Deep learning and emotion in serious games. In Serious games (pp. 105-124). Routledge.

Higher Education Standards approved. Order № 593, 28.05.2021. "On Amendments to Certain Standards of Higher Education" (2021). Ministry of Education and Science of Ukraine https://mon.gov.ua/ua/osvita/visha-osvita/naukovo-metodichna-rada-ministerstva-osviti-i-nauki-ukrayini/zatverdzheni-standarti-vishoyi-osviti

Hunicke, R., LeBlanc, M. & Zubec, R. (2004). MDA: A formal approach to game design and gameresearch. Proceedings of the AAAI Workshop on Challenges in Game AI, 4.

Izard, C. (2001). Emotional intelligence or adaptive emotions? Emotion, 1 (3), 249-257.

Izard, C., Kagan, J., & Zajonc, R. (Eds.) (1984). Emotions, cognition, and behavior (1 ed.). Cambridge University Press.

Jagoda, P., & McDonald, P. (2019). Game Mechanics, Experience Design, and Affective Play. Routledge.

Johannes, N., Vuorre, M. & Przybylski, A. (2021). Video game play is positively correlated with well-being. Royal Society Open Science, 8 (2).

Jones, C., Scholes, L., Johnson, D., Katsikitis, M., & Carras, M. (2014). Gaming well: Links between videogames and flourishing mental health. Frontiers in Psychology (5), 1-8.

Joseph, D. & Newman, D. (2010). Emotional intelligence: an integrative meta-analysis and cascading model. Journal of applied psychology, 95 (1), 54-78.

Kolot, S., Khristich, A. & Polik, V. (2020). Emotional management as a component of effective team management. Applied Aspects of Information Technology, 3 (2), 85-97.

Kolot, S., Khrystych, A. & Cherna, S. (2019). Emotional work management. Teoriya i praktika suchasnoyi psihologiyi, 1 (5), 197-202.

Kowal, M., Conroy, E., Ramsbottom, N., Smithies, T., Toth, A. & Campbell, M. (2021). Gaming Your Mental Health: A Narrative Review on Mitigating Symptoms of Depression and Anxiety Using Commercial Video Games. JMIR Serious Games, 9 (2), e26575.

Lester, J. C., Ha, E. Y., Lee, S. Y., Mott, B. W., Rowe, J. P. & Sabourin, J. L. (2013). Serious games get smart: Intelligent game-based learning environments. AI Magazine, 34 (4), 31-45.

Luhova, T. (2020). Narrative and storytelling in the knowledge structure of educational and business video games as factors of synergy of information technologies and spiritually-oriented pedagogy. Open educational e-environment of modern University (8), pp. 42-59.

Luhova, T. & Melnyk, S. (2012). Cool-education as a problem of quality of modern distance technologized learning. Our school, (6), 86-87.

Luhova, T. & Kolot, S. (2023). Emotional Intelligence Model in Educational Computer Game. The 12th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, 7-9 September. 2, pp. 846-852. Dortmund, Germany: IEEE.

Mackinnon, L., Bacon, L., Cortellessa, G. & Cesta, A. (2013). Using emotional intelligence in training crisis managers: the Pandora approach. International Journal of Distance Education Technologies (IJDET), 11 (2), 66-95.

Magnano, P., Craparo, G. & Paolillo, A. (2016). Resilience and Emotional Intelligence: which role in achievement motivation. International Journal of Psychological Research, 9 (1), 9-20.

Mayer, J. & Salovey, P. (2007). Mayer-Salovery-Caruso emotional intelligence test. Toronto: Multi-Health Systems Incorporated.

Mayer, J., Caruso, D. & Salovey, P. (2016). The ability model of emotional intelligence: Principles and updates. Emotion review, 8 (4), 290-300.

McCrae, R. (2000). Emotional intelligence from the perspective of the five-factor model of personality. In R. Bar-On, & J. D. Parker (Eds.), The handbook of emotional intelligence: Theory, development, assessment, and application at home, school, and in the workplace (pp. 263-276). Jossey-Bass.

Moreno-Ger, P., Burgos, D., Martínez-Ortiz, I., Sierra, J. L., & Fernández-Manjón, B. (2008). Educational game design for online education. Computers in Human Behavior, 24 (6), 2530-2540.

Nonaka, I. & Takeuchi, H. (1995). The knowledge-creating company: How Japanese companies create the dynamics of innovation. New York: Oxford university press.

Petrides, K. & Furnham, A. (2006). The role of trait emotional intelligence in a gender-specific model of organizational variables. Journal of Applied Social Psychology, 36 (2), 552-569.

Petrovskii, A. (1976). General psychology. Prosveshchenie.

Pine, R., Fleming, T., McCallum, S. & Sutcliffe, K. (2020). The effects of casual videogames on anxiety, depression, stress, and low mood: A systematic review. Games for Health Journal, 9 (4), 255-264.

Pine, R., Sutcliffe, K., McCallum, S. & Fleming, T. (2020). Young adolescents' interest in a mental health casual video game. Digital Health (6), 1-7.

Poppelaars, M., Lichtwarck-Aschoff, A., Otten, R. & Granic, I. (2021). Can a Commercial Video Game Prevent Depression? Null Results and Whole Sample Action Mechanisms in a Randomized Controlled Trial. Frontiers in Psychology, 1-17.

Rahim, M. A., Psenicka, C., Polychroniou, P., Zhao, J. H., Yu, C. S., Chan, K. A., et al. (2002). A model of emotional intelligence and conflict management strategies: A study in seven countries. The International journal of organizational analysis .

Ratan, R. & Ritterfeld, U. (2009). Classifying serious games. In Serious games (pp. 32-46). Routledge.

Raybourn, E. (2014). A new paradigm for serious games: Transmedia learning for more effective training and education. Journal of computational science (5(3)), 471-481.

Raybourn, E. (2011). Honing emotional intelligence with game-based crucible experiences. International Journal of Game-Based Learning (IJGBL) , 1 (1), 32-44.

Rogers, C. (1975). Empatic: an unappreciated way of being. The Counseling Psychologist, 5 (2), 2-10.

Rybak, C. (2013). Nurturing Positive Mental Health: Mindfulness for Wellbeing in Counseling. International Journal for the Advancement of Counselling , 35 (2), 110-119.

Siegel, R., Germer, C. & Olendzki, A. (2009). Mindfulness: What is it? where did it come from? In Clinical Handbook of Mindfulness (pp. 17-35). New York, NY: Springer New York.

Sliwinski, J., Katsikitis, M. & Jones, C. (2015). Mindful gaming: How digital games can improve mindfulness. In J. Abascal, S. Barbosa, M. Fetter, T. Gross, P. Palanque, & M. Winckler (Ed.), Human-Computer Interaction – INTERACT 2015. INTERACT 2015. Lecture Notes in Computer Science. 9298, pp. 167-184. Cham: Springer.

Sobhi-Gharamaleki, N. (2012). The prediction of achievement motivation from students' emotional intelligence. Journal of school psychology , 1 (3), 49-62.

Song, M. & Zhang, S. (2008). EFM: A Model for Educational Game Design. In Z. Pan, X. Zhang, A. El Rhalibi, & L. Y. Woo W. (Ed.), Technologies for E-Learning and Digital Entertainment. Edutainment 2008. Lecture Notes in Computer Science. 5093, pp. 25-27. Berlin, Heidelberg: Springer.

Zeidner, M., Matthews, G., Roberts, R. & MacCann, C. (2003). Development of emotional intelligence: Towards a multi-level investment model. Human development , 46 (2-3), 69-96.

Zhuravlova, L. (2008). Methodological foundations of human empathy research. Bulletin of the Prykpathian University. Philosophical and psychological sciences. Special issue , 152-155.

Zinovieva, T. & Kolot, S. (2023). Enhancing students' emotional intelligence with game-based learning as an ICT tool. Open educational e-environment of modern university. 46-61. 10.28925/2414-0325.2023.154.

Winn, B. (2009). The Design, Play, and Experience Framework. In R. Ferdig (Ed.), Handbook of Research on Effective Electronic Gaming in Education, Vol. 3.

Text of the article was accepted by Editorial Team on October 13th, 2023

ЕМОЦІЙНИЙ ІНТЕЛЕКТ В ЕЛЕМЕНТАХ ІГРИ ДЛЯ ФОРМУВАННЯ ВИЩИХ ПОЧУТТІВ В АКТИВНОМУ ТА ГЛИБИННОМУ НАВЧАННІ

Зінов'єва Тетяна Анатоліївна
кандидат мистецтвознавства, доцент, доцент кафедри інформаційної діяльності та медіа-комунікацій
Національний університет «Одеська політехніка», Одеса, Україна
zinovieva@op.edu.ua
ORCID: 0000-0002-3573-9978

Анотація. Метою цього дослідження було дослідити модель емоційного інтелекту та її потенційне застосування в комп'ютерних іграх для формування вищих почутів у навчанні. Стверджується, що ігри мають бути не лише засобом розваги, а й способом розвитку емоційного інтелекту. Досліджується перетин емоційного інтелекту та ігри. У межах цього дослідження представлена класифікація моделей емоційного інтелекту, яка демонструє їхню статичність та концептуальність. Ця робота пропонує інтеграцію емоційного інтелекту в динаміку гри, щоб збагатити ландшафт оцінки та розвитку емоційного інтелекту. Одним із ключових аспектів цього підходу є розгляд емоційного інтелекту як засобу культивування почуттів вищого порядку, таких як моральні, естетичні, соціальні, інтелектуальні, а також радості знання та співпереживання. Ці емоції є невід'ємними елементами «гарячої» системи за Ж. Бодрійяром, що підкреслює їхню відповідність автентичному, нецифровому культурному досвіду. Динамічна модель емоційного інтелекту служить для виховання основних навичок, включаючи ситуативну когнітивну переоцінку та «емоційну роботу», що призводить до узгодженості відчутих і виражених емоцій. Ця модель визначає взаємодію ігрової естетики, механіки та динаміки як ключових зон для формування вищих почуттів. У статті стверджується, що ігри, призначені для стимулювання емоційного інтелекту, не повинні викликати стан потоку, який звужує когнітивні можливості гравця та перешкоджає критичному мисленню. Щоб протистояти цьому, пропонується включати паузи, живе спілкування та рефлексивний аналіз власних емоцій гравця-студента в ігровому досвіді.
У статті досліджується трансформація знеособлених тестових питань емоційного інтелекту в ігрові компоненти, що охоплюють механіку, динаміку та естетику. Запропонована таблиця окреслює стратегії для активного та глибшого навчання, сприяючи збагаченому розумінню

емоційного інтелекту через ігри. Рекомендації, отримані в результаті цього обговорення, можуть бути застосовані до низки ігор за моделлю динамічного емоційного інтелекту, що робить його цінним ресурсом для проектування навчальних ігор. Динамічна модель емоційного інтелекту в комп'ютерних іграх постає універсальним і багатофункціональним інструментом. Вона може функціонувати як педагогічна основа для розвитку емоційного інтелекту учнів, дозволяючи педагогам використовувати силу ігор для емоційного зростання. Ця модель служить полотном для розробників ігор, пропонуючи творчі можливості для розробки нових комп'ютерних навчальних ігор, націлених на розвиток емоційного інтелекту. Ця стаття демонструє, що ігри справді можуть стимулювати емоційний інтелект, сприяючи активному та глибшому навчанню. Завдяки впровадженню емоційного інтелекту в ігрову динаміку можна створити більш захоплюючий та ефективний досвід навчання, зрештою сприяючи формуванню вищих почуттів і глибшому розумінню емоційного інтелекту.

Ключові слова: модель емоційного інтелекту; навчальні комп'ютерні ігри; ігровий дизайн; серйозні ігри; гуманізація комп'ютерних ігор; емоції; вищі почуття; активне та глибше навчання