

GAME-ED - IO5

GUIDELINE FOR THE IDENTIFICATION OF BOARD GAMES APPROPRIATE FOR CREATIVITY DEVELOPMENT

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1. Presentation of the study

1.1. The game mechanics

Game mechanics are generally understood as the relationship between the game and the player, the way in which the elements of the game interact with the player¹.

Sharon Boller defines it as the rules and procedures that govern the player and the game's reactions to the player's moves or actions².

Ludeme: game motif, an element of the game, a constituent part. Elements that can even be used in completely different types of games. Not to be confused with game tools. (For example, in chess, the knight piece is a tool, and the knight's "L"-shaped move is a ludeme).

Rule: an instruction, a framework that determines how the game should be played (e.g. in chess, a rule is that the players take turns).

Game mechanics: refers to the rules and ludemes that regulate and guide player actions and the game's responses to player actions.

Every game has game mechanics. Mechanics define how the game should work for the players. However, not all games have their own unique game mechanics, countless games have the same basics. (For example, there are many word games in which you have to create and/or guess words made up of certain letters.) And a single game can have several types of game mechanics.

There are many different classifications of game mechanics. The largest board game website, the Board Game Geek, has collected 196 different ones, and for each of the games on the website, it is marked on which mechanics the given game is based.

Game mechanics through examples of some well-known games:

Taboo (1989 version): a party game in which one member of the team must define certain concepts without using certain words. Another player on the team has to guess the concept.

¹ Egenfeldt-Nielsen, S., Smith, J. H. és Tosca, S. P. (2008): *Understanding Video Games: The Essential Introduction*. Routledge, NewYork, NY

² Boller, Sharon (2013): *Learning Game Design: Game Mechanics*.

<http://www.theknowledgeguru.com/learning-game-design-mechanics/> (accessed on 2023-01-25.)

This game is based on two mechanics: Team-Based Game, as teams play against each other, and Communication Limit, as there are limits on how players can communicate with each other.

Go: the abstract strategy game with thousands of years of history has simple rules. Two players play against each other, placing black and white pieces / discs in the intersections of a 19x19 grid, their goal is to fence off as large an area as possible.

Game mechanics: Enclosure and Square Grid

Poker: The game played with French-suited cards relies heavily on betting, placing bets, and bluffing, and players aim to have the best possible hand during the game.

Game mechanics: Betting and Bluffing, Player Elimination and Set Collection.

Gloomhaven: One of the most popular, complex board games of 2022. Players take on the role of an adventurer, start the game with their own set of skills and goals, improve their skills along the way, cooperate in completing missions, explore different locations, and so on.

There are a total of 21 game mechanics and their combinations in this game. Among others: Role Playing, Cooperative Game, Hexagon Grid, Deck Construction, but it also includes Communication Limit.

As you can see, the same mechanism can appear in several games (e.g. the communication limit is both in Taboo and Gloomhaven), while others can occur in several variations (e.g. moving around the board is specific to several games; many games use a square-based grid for this, but there are also ones in which the players move between hexagon-based fields). The individual mechanisms and their combinations determine how each game works, the way the game can be played and how the game responds to our actions.

The specific rules, the theme (or, in the absence of a theme, the abstract style) and the tools and appearance of the game determine the uniqueness of the game. This is why it can happen that countless games can be made for the same mechanic or combination of mechanics, with different looks, themes, individual rules or something else. For example, there are many types of chess, which can differ not only in appearance, but by changing one parameter at a time, a new game can be created based on the basic rules. Thus, separate versions are Western chess (where the rules of chess apply, it is mandatory to hit, and the one who runs out of pieces wins), hex chess (played on a hexagon-based board), the three-player version (the board is also different, and not 2, but 3 players play against each other), 3D chess (in which the game is played on 3 levels and in space), chess can also be played on a board shaped like a Möbius strip, and so on.

1.2. The relationship between game mechanics and development

According to the best-known definition, play is a free action, a pastime that people do for the playing itself.

Not all games and board games were created with the express purpose of using them to transfer knowledge in learning and teaching. At the same time, every game, every time someone plays it, it affects them, whether it's a party game, a children's game, or a serious strategy game.

During its research, the Fontanus Center defined the game as follows:

The game is a practical learning process in which development appears naturally and life-like.

It is practical, so the individual participates in it, it happens through him, he brings his own actions into it and in the process gains real experiences.

It is natural, because for humans, play is a genetically coded activity that does not need to be taught, does not require external stimulation.

It is realistic, as the game operates with situations similar to everyday life. With such familiar situations, where we can try several decisions and strategies without the real consequences occurring, but the consequences still become visible and experienced. In this way, we can learn, among other things, to make decisions effectively, to approach topics from other sides, to try new things, and so on.

Whatever we play, it is the process in practice, during which we have actions, steps, and we experience their consequences in the game. And so playing definitely has an effect on us. It follows that if during the game we acquire knowledge, try out possibilities, and develop certain competencies, we can use them profitably in our lives and in practice. For this reason, it can be said that the game is not only suitable for entertainment and relaxation, but can also be an effective development tool, the effects of which are effective in practice.

This effect can also be a developmental effect - which we can achieve by fulfilling several basic conditions that are based on each other.

During his research on development, Balázs Török-Szabó defined the five basic conditions of development as follows:

- attention
- tension
- tool
- work (invested energy)
- new path (searching for and trying out new opportunities)

If these basic conditions are met during the game, the game can lead to development, even if it is not a game specifically created for development.

If one of these conditions is not met during the game, the development effect will not apply either - even if it is a game specifically created for development.

In addition, it is important to note that the development effect can take effect during a game where the player's attention is directed. For example, if someone plays chess and during the game pays attention to being able to think more and more steps ahead, his foresight (predictive) ability can improve. Whereas if you pay attention to the spatial location of the pieces in relation to each other, your spatial vision can improve. Of course, you can pay attention to several things simultaneously or alternately during a game.

From the point of view of the possible development effect, it is worth separating the mechanics and the theme of the game. In most cases, the *theme* of the game is suitable for imparting lexical knowledge and teaching new knowledge, while the *mechanics and rules* of the game determine which competencies can be developed by it.

The theme of the game - if it is not a purely abstract game - contains information and knowledge with which we are constantly connected while playing the game, and we can discover more and more of it³. With regular play, we come across these knowledge repeatedly, and thus, through repetition, they can be recorded.

This doesn't just apply to real-world knowledge, but to anything we encounter regularly in the game. Thus, those who play a fantasy-themed game a lot can learn the characteristics, structure, characters, history, creatures and anything else that appears in the game of the fantasy world itself. (All this also means that "knowledge" that is not useful in practice can also be recorded, if the game contains such.)

Game mechanics are the way the game works and determine what options the game can contain and which the player can enjoy using the game. And the rules precisely define and specify these possibilities.

Competence, simply put, is the use of abilities in specific situations. And abilities are nothing more than opportunities. In a general sense, competence can be defined as living with certain possibilities⁴. Through a specific example: "digital competence"

³ E.g. thematic theme card: an educational aid in which cards and the knowledge on the cards serve as the basis for the game. For example, the philosophical theme cards contain concepts that are also dealt with by philosophy, and during the game the player comes into contact with these concepts, so he can learn their meaning. The historical theme cards contain historical data, facts, and connections, so they are suitable for recording that knowledge.

⁴ http://game-ed.eu/wp-content/uploads/2022/11/GameED-01.-IO1_Hungarian_Final.pdf

is the confident and critical use of electronic media⁵, in other words: being able to take advantage of the opportunities provided by digital media.

The mechanics used by the game and the specific rules of the game therefore determine the possibilities that the player can take advantage of. How much of these and how the player lives with these options is up to him. Thus, the *combination of the mechanics* and the mechanics that define the game's foundations, as well as the rules created based on them, determine which competencies are suitable for development. We can develop the competence that we use during the game (and on which the attention is), and this depends on the mechanics and the rules. For example, a game whose mechanics have a logical-strategic character is certainly suitable for developing logical and strategic abilities and the competencies that are related to them.

Based on these, by playing two games that use the same combination of mechanics but different themes, we can develop the same competencies and acquire different lexical knowledge. While in the case of two games using the same theme but different mechanics, we can acquire the same lexical knowledge, but we can develop different competencies.

1.3. The course of the research

In the research summarised below, we examined the relationship between abilities, skills, competencies and game mechanics in the case of certain board games.

Our goal is to create a practical method that training professionals can use in their daily work. In other words, if there is a need to develop certain abilities, skills, competences (e.g. creativity) and they would reach for the tool of game-based education, they should have a method in their hands with which they can choose the right game to develop the right area.

Also, based on what we experienced during the research, we also provide professionals with additional useful advice.

Criteria for choosing games:

The selection is not complete, the goal in choosing the games was primarily to show how to get started, if our goal is to develop certain abilities and competencies with the help of games - especially the ability to be creative. We also provide useful information if the goal is to create a development game.

Criteria :

- *popularity*; in the case of game-based education, it is also important to select games that people like to play with, so we also examined the development effect of especially popular games (e.g. Azul, Activity)

⁵ http://okt.ektf.hu/data/szlahorek/file/kezek/01_simandi_04_16/223kulcskompetencik.html

- *classic games*; we examined certain games with a long history, which presumably most people know and have come into contact with in some form (e.g. Chess, Bridge)
- *games specifically for educational purposes*; we examined some games that BoardGameGeek (BGG) places in the "Educational" category, i.e. they are basically developmental games (e.g. Wingspan)
- *games specifically aimed at developing creativity*; (e.g. Imagine)
- *less complex games*; since we primarily focus on the use of games for educational purposes, more complicated games that require longer preparation or prior knowledge and play for several hours or days were excluded from the study (the game with the most complicated rules in this research is Wingspan)
- *competitive*; we typically chose competitive games (from the point of view that the developmental nature is more effective if the game has stakes and the competition for victory is a basic instinctive and naturally stressful stake)
- *additional games* (e.g. creativity developing game developed in the framework of this project)

When defining and identifying the game mechanics, we basically used the division and classification of the BoardGameGeek (BGG) portal as a basis⁶. This is not necessarily a scientific categorization, but there are several reasons why we chose it:

- in the case of certain games, it is difficult to find other sources to define their mechanics - BGG tries to define the mechanics of all known games (there are more than 140,000 games in their database)
- the BGG database is continuously expanded by users, with administrative review; submitting, checking, and examining content is similar to Wikipedia in that anyone can submit material in compliance with the regulations (including game creators), and administrators⁷ check it before it is published
- you can usually find descriptions of the rules on BGG
- BGG also categorises games based on theme
- in practice, the BGG database is easily accessible to professionals dealing with education, so they can search for the mechanics, rules and themes of any board game at any time

It should be noted that there are inconsistencies in the organisation of the BGG. For example, sometimes the categories, types and themes of the games are blurred, which is understandable from the point of view of the structure of the portal (searchability), but sometimes causes difficulties from the point of view of the examined topic. So it can be used with care, but it is easy to use in practice, and the big advantage is that it is the most comprehensive database available.

⁶ <https://boardgamegeek.com/browse/boardgamemechanic>

⁷ the list of administrators is available here: <https://boardgamegeek.com/wiki/page/Admins>

In order to examine the development effect, in addition to the mechanics, the type of game (e.g. strategic, etc.) and category (card game, educational game, etc.) and specific rules were also taken into account.

During the study, the study participants played several games with the chosen game. They gave their experiences to the leaders of the investigation in conversations and interviews. The leaders of the study compared the experiences with the characteristics of the game (mechanics, rules, type, category, theme) and summarised the knowledge gained in this way.

After the summaries, the lessons learned from the study were summarized and recommendations and suggestions were made on how to choose the right games for the development of certain skills and competencies. Primarily, practical advice was formulated for professionals working in education who are looking for developmental board games for certain purposes and for the development of certain areas.

2. Examination of the games

2.1. Chess (1475)

BGG link: <https://boardgamegeek.com/boardgame/171/chess>

To this day, chess is the game that sells the most copies, is known and played by the most people. It is also used in public education in several countries.

2.1.1. Type:

- [Abstract](#)

2.1.2. Category:

- [Abstract Strategy](#)

2.1.3. Game mechanics:

- [Grid Movement](#)
- [Pattern Movement](#)
- [Square Grid](#)
- [Static Capture](#)

2.1.4. Experiences related to developmental impact:

The experiences gained during the research support the research results related to the role of chess in education. The game uses, among other things, the combinative ability, the ability of divided attention, the ability to recognize connections, spatial vision and other abilities.

Most of the people who played knew the rules of chess, and already during the first games they reported that they were looking for opportunities, tried to think several steps ahead, to imagine the possible consequences of certain steps. All of this can play a role in the development of strategic thinking - i.e. in the development of how the desired goal (capturing a piece, creating a situation, or ultimately winning) can be achieved in the future by taking steps for it and trying take into account all circumstances that may influence this (the rules of the game, the moves of the other player).

The fact that all this can be realized is partly due to the mechanics of the game. *Movement on the 8x8 grid* and *movement patterns* (that is, the rules that apply to the move - eg the knight's L-shaped move) limit the options that apply to the placement of the pieces. In each situation, the next player has a finite opportunity to place a pawn on another part of the field. This is how you can calculate and plan your steps in advance.

The fact that *capturing* is *static* in the game means that a piece can capture another piece if it is directly in the path of its move.

So grid movement, predefined movement patterns, and static capture mechanics map out the options for moving, capturing, and ultimately winning the game. In this way, they make it possible to calculate what options each player has in each situation, and the entire game can be planned, that is, it is suitable for developing strategies.

The rules of the game based on mechanics are consistent, making it suitable for the development of logical skills. It is also suitable for seeing correlations.

The mechanics, rules, and game elements combine to create a game in which there are many possible progressions from one situation, and each possibility leads to further possibilities. Therefore, it is suitable for the development of combinative ability and situational awareness.

More experienced players, who have played many matches against each other, can recall situations from their previous games, which they can use during the game - so it can also improve memorisation.

Maintaining attention is the key to winning the game, so you can improve attention and the ability to focus.

In some cases, choosing a new path from among the possibilities, combining the appropriate steps can lead to a result - in this way, it can also be suitable for developing creativity. This is supported by the fact that the basic elements of the game are known, they can be varied as desired according to the rules, so new situations can be created from an existing game position.

Basically, our experiences support the research, according to which chess is suitable for the development of many skills, abilities and competencies related to thinking (e.g. mathematics). And all of this can be related to the combination of mechanics that give you the opportunity to develop these areas.

Although it is basically an abstract game, and thus in principle you should develop the ability to abstract and generalize, in fact the players reported that most of them could not ignore the military themes and combat roles during the game. Thus, for them, chess was a thematic strategy game with a combat theme.

2.2. Bridge (1925)

BGG link: <https://boardgamegeek.com/boardgame/2181/bridge>

Bridge (Contract Bridge) is a well-known card game with French-suited cards. In most card games, everyone plays against everyone, but here, teams of 2 and 2 play against each other. Similar to chess, championships and competitions are organised around the world. It is used in public education in several countries.

The goal of the game is for the pair to take and score as many hits as possible. There is a calling player who places a card in the middle, the others must take turns placing a card of the same color if they have one. The one who lands the highest of the called suits takes the hit. Whoever hits calls in the next round.

2.2.1. Type:

- [Abstract](#)
- [Strategy](#)

2.2.2. Category:

- [Card Game](#)

2.2.3. Game mechanics:

- [Hand Management](#)
- [Predictive Bid](#)
- [Score-and-Reset Game](#)
- [Team-Based Game](#)
- [Trick-taking](#)
- [Turn Order: Claim Action](#)
- [Turn Order: Progressive](#)

2.2.4. Experiences related to developmental impact:

The combination of game mechanics has created a game where in order to win it is worth remembering who laid down what card in the previous rounds. This is partly due to the nature of the hand management, and partly to the hit, and the play of our team member also contributes. This means that if we know what cards we have, we can deduce from our partner's play what cards he has, and we observe the play of others, we can use memory and the ability to combine to set up a strategy that leads to a greater chance of winning.

The hand management part is also suitable for using and developing the ability to organise.

The testers found the predictive bid to be a form of communication, with which teammates can pass information to each other about the cards in their hands. Accordingly, communication skills and abilities can also be developed through it.

Scoring plays an important role in the game - which is not necessarily clear from the list of mechanics. Different hits have different point values. This characteristic of the game is suitable for the development of combining and converting abilities.

The strategic nature of the game can also be seen, as the predictive bid mechanic encourages us to plan our end goal at the very beginning of each game session (how many hits we will take during the game, together with the teammate). The same mechanic also improves predictive ability, that is, trying to anticipate the next steps in the game.

Some people tried to play without trying to play with their teammate for the sake of testing - the result of this in most cases led to defeat. It can also be seen from this that the game places great emphasis on teamwork and cooperation with others, so it can also teach you the importance of cooperation.

2.3. Wingspan (2019)

BGG link: <https://boardgamegeek.com/boardgame/266192/wingspan>

Among the tested games, it had the most complex rules, and it contained the most tools (different types of cards, tokens, cubes, boards). The game's creators describe it as a medium-difficulty card-driven board game. It has won countless board game awards and is popular for its unique graphics and themes.



(Source of picture: <https://boardgamegeek.com/image/4564159/wingspan>)

2.3.1. Type:

- [Family](#)
- [Strategy](#)

2.3.2. Category:

- [Animals](#)
- [Card Game](#)
- [Educational](#)

2.3.3. Game mechanics:

- [Contracts](#)
- [Dice Rolling](#)
- [End Game Bonuses](#)
- [Hand Management](#)
- [Once-Per-Game Abilities](#)
- [Open Drafting](#)
- [Set Collection](#)
- [Solo / Solitaire Game](#)
- [Turn Order: Progressive](#)

2.3.4. Experiences related to developmental impact:

Based on experience, it took relatively (compared to other tested games) a longer time to fully master the rules of the game. For those unfamiliar with the game or this type of game, the testers needed a few playthroughs to get a feel for all the options. However, its complexity required attention, and for the players to see the system in it, which game elements have what effect on which other elements - in other words, it is suitable for developing the ability to organize.

The educational nature of the game can be seen primarily in the theme: you can find countless information about the birds in the game (e.g. the birds' habitat, food, etc.), which are integrated into our knowledge almost imperceptibly during the game.

2.4. Blue Banana (2019)

BGG link: <https://boardgamegeek.com/boardgame/288424/blue-banana>

A fast, fast-paced game based on the fact that certain objects on the cards are shown in a different color than they are in reality.



(Source of picture: <https://boardgamegeek.com/image/6259507/blue-banana>)

During the game, two randomly selected cards are presented, on which certain objects are not shown in their own color (e.g. green flamingo, black strawberry). From the open decks, available to everyone, the players have to get, as quickly as possible, the cards that contain the original color of the objects (e.g. the pink of the flamingo or the red of the strawberry) or the objects that correspond to the colors (the green is the color of the frog, black is the color of the cylinder, so frogs or cylinder cards of any color can be collected). Points are awarded for the collected cards.

2.4.1. Type:

(Not categorised.)

2.4.2. Category:

- [Action / Dexterity](#)
- [Card Game](#)
- [Real-time](#)

2.4.3. Game mechanics:

- [Catch the Leader](#)
- [Pattern Recognition](#)
- [Real-Time](#)

2.4.4. Experiences related to developmental impact:

The game is fast, in order to prevent the other players from taking the right cards from the decks, we have to switch quickly, so the game encourages the development of switching speed. This is primarily an opportunity due to its real-time nature.

In addition, the game can be suitable for developing the ability to switch and convert between systems due to pattern recognition and special cards. The game can be confusing for the brain to the extent that the systems between which the conversion takes place are not significantly different from each other (a system of colors and figures must be converted to figures and colors) and it also changes every round (other colors and figures are converted). Based on this, there were among the testers who were more disturbed by the game and reported not so much a developmental effect, but rather a disturbing effect. While others enjoyed the game - mainly because of its speed, the real-time tension - and after a while the time it took to recognize and collect the right cards decreased (with fewer and fewer errors). Thus, it can be assumed that it is suitable for improving the switching speed.

The game testers did not report an effect on developing creativity.

2.5. Metro (1997)

BGG link: <https://boardgamegeek.com/boardgame/559/metro>

In Metro, the task is to build subway tunnels as long as possible by drawing from specified building blocks (square-based tiles with varied routes) and placing them on the appropriate parts of the board.



(Source of picture: <https://boardgamegeek.com/image/512723/metro>)

2.5.1. Type:

- [Family](#)
- [Strategy](#)

2.5.2. Category:

- [Trains](#)

2.5.3. Game mechanics:

- [Network and Route Building](#)
- [Tile Placement](#)

2.5.4. Experiences related to developmental impact:

Effective game requires planning, that is, it is necessary to plan what route to build during the game - this is made possible by a combination of game mechanics. As the game progresses, our options decrease (more and more tiles are placed, which narrows the possibility of building routes), so the ability to solve problems can come to the fore.

The fact that the drawing of tiles is not freely chosen, but random, affects the preliminary plans. The testers reported that this is a life-like feature of the game, since in reality the tools that we first planned are not always available. In this way, we can get the best out of what is available - it has also been found suitable for the development of problem solving and situational awareness, and in some cases for the development of creativity.

Points are awarded in the game if a closed metro line (which starts from one station and runs into another) is created. It is worth as many points as the number of tiles the line runs through. Along complicated lines, the line can run along one tile several times, up to even four times. Following this during the game and when counting the points is a process that requires spatial awareness and attention, so the game can improve these as well.

Alternatively, in a test round, the players tried the game by working together to create a single tunnel as long as possible. With this modification, the game was made cooperative instead of competitive. The competition was to increase the length of the tunnel from game to game. Thus, they reported the effect of developing collaboration and cooperation.

2.6. Imagine (2015)

BGG link: <https://boardgamegeek.com/boardgame/191894/imagine>

The novelty of the game is that the players can create words, concepts, titles, expressions by combining common symbols printed on transparent plastic cards. The cards can also be stacked in this way.



(Source of picture: <https://boardgamegeek.com/image/4385507/Imagine>)

2.6.1. Type:

- [Party](#)

2.6.2. Category:

- [Deduction](#)
- [Party Game](#)
- [Puzzle](#)

2.6.3. Game mechanics:

- [Acting](#)
- [Team-Based Game](#)

2.6.4. Experiences related to developmental impact:

The testing team unanimously stated that the game is suitable for developing creativity, since they have to create a new meaning from existing basic elements. This is mainly due to the deduction and puzzle nature of the game.

The fact that the rules allow many possibilities (e.g. moving the cards, the countless interpretation possibilities of each card) also helps us to use our creativity, and also contributes to the development of situational awareness.

Teams play against each other (it's a team-based game), so you can develop cooperation, teamwork and cooperation.

2.7. Activity (1990)

BGG link: <https://boardgamegeek.com/boardgame/8790/activity>

One of the most popular party games, during which one member of the team tries to show, draw, or say a word, phrase, or concept by omitting certain words, and the other members of the team have to guess it.

2.7.1. Type:

- [Party](#)

2.7.2. Category:

- [Action / Dexterity](#)
- [Card Game](#)
- [Party Game](#)

2.7.3. Game mechanics:

- [Acting](#)
- [Action Timer](#)
- [Communication Limits](#)
- [Line Drawing](#)
- [Paper-and-Pencil](#)
- [Team-Based Game](#)
- [Track Movement](#)

2.7.4. Experiences related to developmental impact:

First of all, of course, it is a party game, which means free pastime, the primary purpose of which is not development - according to experience, using it as a party game is suitable for developing social skills and abilities, since the focus is on this, primarily on communication. It should be noted that all members of the testing team have previously played Activity as a party game.

But it can also be recommended as a developmental game, as it is suitable for the development of several things - as long as the attention is on the given action or skill.

The ability to communicate can be improved, primarily how to pass on information to the other person in such a way that it is "received", that is, the other person recognises and understands it. This is also true for drawn, verbal or acted/shown information.

The same is true from the other side: it also requires attention from the receiving party, often a change in thinking, in order to come up with the presented solution.

Creativity can be developed, if it often requires new approaches to draw and show an explanation when we fail to convey it the first time. The communication limit plays a role in this (you can't speak or you can't use certain words) - so the game encourages you to explore new paths, which is one of the basic conditions for development.

Empathy can be developed, as it is often necessary to empathize with it, to imagine how the other person might be thinking in order to know what they want to express. Or from the other side: if we know the other person's thinking and sets, it is easier to present the given words and expressions (development of social competences).

During the game - precisely because it is a game - inhibitions related to acting, acting, or even presenting our drawings can be released, so it can make you more open.

Due to the nature of team play, cooperation is a particularly important development area.

2.8. Azul (2017)

BGG link: <https://boardgamegeek.com/boardgame/230802/azul>

Another currently very popular game with unique graphics. Its rules are relatively simple and offer many options for players. The essence of the game is to collect and place tiles on the board, according to certain rules, so that it is possible to choose from a specific set in turn with the opponents - so each player's decision affects the game of the others.



(Source of picture: <https://boardgamegeek.com/image/3805727/azul>)

2.8.1. Type:

- [Abstract](#)
- [Family](#)

2.8.2. Category:

- [Abstract Strategy](#)
- [Puzzle](#)
- [Renaissance](#)

2.8.3. Game mechanics:

- [End Game Bonuses](#)
- [Open Drafting](#)
- [Pattern Building](#)
- [Tile Placement](#)
- [Turn Order: Claim Action](#)

2.8.4. Experiences related to developmental impact:

Based on the experiences of the first game, the need to plan and develop longer-term plans already appeared in the second and third games. The effect of the steps taken in the first rounds reverberates until the end of the game, in a traceable way. Considering these, the game is probably suitable for the development of strategic thinking.

The game is open selection, that is, everyone draws tiles from the same set. In this way, the tactics of the other players can be guessed and assumed, which also helps in planning, as well as the recognition of changing situations and, in some cases, encourages a change in tactics. In this way, for example, you can develop critical thinking.

Certain tiles are worth more points than others during settlement (it counts how many sides are connected to other tiles that we have already managed to place on the field). Therefore, on the one hand, it is worth counting the possibilities, and on the other hand, this type of pattern building can promote the ability to see through systems, recognize patterns, and, for example, logical ability ("if... then..." rules).

2.9. Castle Of Mind (2019)

BGG link: <https://boardgamegeek.com/boardgame/276629/castle-mind>

The abstract strategy board game created by Fontanus, which develops abilities related to thinking. The basic rule of the game is that the hit (capture) does not happen where the step is, so the capture is not static, in this way it is not stationary. When moving colored pieces on colored squares, a hit occurs when a piece moves to its own color - then you can remove one of the opponent's pieces that is also on that color.



(Source of picture: <https://boardgamegeek.com/image/4691264/castle-mind>)

2.9.1. Type:

Not categorized.

2.9.2. Category:

- [Abstract Strategy](#)

2.9.3. Game mechanics:

- [Area Majority / Influence](#)
- [Grid Movement](#)

2.9.4. Experiences related to developmental impact:

Since it is a game developed by Fontanus (the game was designed by Balázs Török-Szabó, the professional leader of Fontanus), based on a thorough knowledge of the game, it can be said that the list of game mechanics is definitely incomplete in this case. The basic operation of the game is that the hit does not take place where the step is taken - at the time of writing this document, the corresponding mechanic is not in the BGG database based on our searches. At the same time, this is an extremely important mechanic of the game, which is necessary to be able to talk about it in relation to the development effect.

(Our proposal for the name of the mechanic, e.g.: “distant capture” / “distance hit”)

In connection with the development effect of Castle of Mind (COM), in-depth surveys were also prepared in the past. During this, the researchers examined several areas related to thinking, among others:

- Organizing ability (recognizing the relationship between elements, arranging elements into a system, recognizing a system)
- Combining ability (creating relationships based on regularities)
- Converting ability (switching between systems)
- Predictive ability (“foresight” ability: taking into account next possible steps, weighing between them)
- Logical ability (conclusion, rule-making)
- Communication skills
- Strategic thinking (longer-term planning of actions)
- Concentration (maintaining and focusing attention)
- Spatial vision (perception of the spatial location of objects and the observer)
- Critical thinking (a complex way of thinking consisting of many factors)

The study showed that regular playing with COM can lead to improvement in these areas both in childhood and adulthood.

The rules of the game allow many possibilities, both in terms of moving, taking up territory (you can move from one square to a variable number of squares), and in determining the role and importance of individual pieces (there are no predetermined roles for individual colors and pieces), and in developing strategies. Because of the distant hitting mechanics, it is advisable to keep in mind as many opportunities as possible in order to win. This is true both in space (monitoring as much of the board as possible, preferably the entire board) and in time (taking into account possible progression options).

Its developmental effect in terms of combinative and other skills can be compared to chess, with the difference that players can count on even more options, endless replay possibilities, so there are even more opportunities for development.

2.10. Fields Of Creativity (2022)

A game created specifically for the development of creativity within the framework of the Game-ED project. Since it is a new game, it is not yet listed in the BGG database, it is not categorized.

Part of its operation is somewhat similar to the operation of Imagine, in that by combining cards containing symbols, we can create concepts that are difficult to express. However, it is also fundamentally different from it, since here we can use not only objects and symbols expressing physical images, but also the relationship between them, symbols expressing mental notions during the game.

The game is partly competitive, but also contains cooperative elements.

2.10.1. Type:

Not categorised.

2.10.2. Category:

Not categorised.

2.10.3. Game mechanics:

Not categorised.

2.10.4. Experiences related to developmental impact:

During the test games, the feedback was almost exclusively that due to the simple rules and endless possibilities (the only limit for combining and placing the cards is the imagination), there is a great emphasis on creativity during the game. Creating a new meaning by combining existing elements is an essential element of the game.

In addition, due to the cooperative element, the players can learn about the way of thinking of the other players, depending on who combines the individual symbols in which way to formulate certain concepts. In this way, they can learn new ways of thinking and ways of associating images during the game, which also contributes to the development of creativity.

3. Recommendations

Developing creativity

If you are looking for a game that develops creativity, based on the above, you should choose a game in which the goal is to create something new from the combination of certain basic elements. These basic elements can be the basic elements of the game (e.g. the moves in chess), symbols (such as the symbols on the Imagine and Fields of Creativity cards), or others (e.g. words, letters, building blocks, etc.).

It is useful if the game encourages us not to assemble an existing, known thing from the basic elements, but to assemble something new or in a new way (the combination of puzzle and communication limits game mechanics, for example, promotes this).

Creativity can be developed equally if we create something new ourselves (e.g. by playing Fields of Creativity we create a concept with the help of symbols), or if we try to figure out what someone else has created. In the latter case, we can come across a new way of thinking, a way of associating images, and we can add it to our creative toolbox.

Any game that has these elements can enhance creativity if the player's attention is on it. And they develop creativity as long as your attention is on it. Thus, very complex games that contain elements suitable for the development of creativity may not be as effective in this respect as games that contain rules that specifically require creativity.

Basic conditions for development

It should be emphasized that the game is a tool and does not guarantee development by itself. However, it can be a useful tool for development, since the basic conditions for development are easily available in the case of a game. It is worth paying special attention to their existence.

In the case of players, attention can be directed to the area to be developed. For example, when playing Azul, from the beginning, pay attention to how they want to build the tiles on their board, or that in the case of COM, it is worth seeing as much of the board as possible, thinking as many steps ahead as possible, etc.

The excitement of trying to win the game can add tension, in the case of cooperation, the striving to achieve the set goal, but a competitive situation can also be created (e.g. a championship), or attention can be drawn to the presence of tension in other ways.

Processing the consequences of each step, becoming aware of the experiences of each game and match, and learning from mistakes and successes can be an investment of work. It is worth paying special attention to this, since new knowledge and new information become conscious and usable knowledge through them.

A new path can be provided by games that allow for multiple playthroughs, the search for new solutions in the game, and even new game partners can show something new.

The complexity of the game

It is worth choosing the game according to the given time frame. If the system of rules is more complicated, more time is needed for the players to understand all its options - i.e., the competences associated with the options can be developed. At the same time, if there is a time frame for it (perhaps multiple opportunities to play), it may be worthwhile to play more complex games, as this gives a wider spectrum of possibilities, so the areas that can be developed can be more diverse.

Complexity in the case of mechanics means that a game uses a combination of several mechanics (see: Wingspan). But the complexity can arise from the multifaceted nature of the rules, or even from the structure of the board. For example, the basic COM game is more complex in terms of possibilities than COM for Kids, because although their rules are similar, the basic COM board contains more fields and colors, the game can be played with more pieces, so there are many more options for moving in each situation.

Regularity

Even a single playing session can bring development in certain areas, it can help highlight certain possibilities, and many things can be learned through it, but a more serious developmental effect - especially in terms of skills and competences - can be achieved with regularity.

In terms of regularity, it is worth thinking about changing playing partners. Thus, the player can always meet a new character, new tactics, and new solutions.

Personal attendance

In contrast to online games, if there is a personal relationship in the game, it affects many more areas than if there is not, or if we are only in virtual contact with our game partner. In this way, our social skills and abilities, which are somewhat relegated to the background these days, but which are closely related to human nature, can also be developed, and we can connect with others more easily. During the test games, it was also proven that if people who did not know each other before the game sat down at a table, by the end of the games they typically behaved in a relaxed manner in each other's company.

Modification of the rules

Although the game is a game because the rules are exactly what they are, in some cases certain rule modifications can be tried in order to achieve certain goals. (In testing, one such modification was the addition of a cooperative objective to the Metro game, where the team worked together to create the longest possible route.)

Connections between game mechanics, game types and abilities and competencies

There are certain game types, categories, and mechanics that are more likely to develop certain skills and competencies than others. If the goal is to develop these, then it is worth looking for these types of games as a tool. Some of these examples are listed in the table below, primarily for informational purposes.

feature	the type of feature	what does it develop
abstract	category / character	abstraction
strategy	category / type	planning strategic thinking
deduction	category	inference logic deduction
puzzle	category	induction
puzzle (if the rules allow more than one solution)	category	creativity
team based game	mechanics	cooperation
hand management	mechanics	organizing ability
the role of starting player can be taken	mechanics	ability to initiate
realtime (usually supplemented with some other mechanism)	mechanics	reaction time switching time
communication limits	mechanics	creativity communication
network and road construction	mechanics	spatial vision planning creativity
open selection	mechanics	planning, recognizing the impact of decisions

movement pattern	mechanics	converting ability
predictive bid	mechanics	predictive ability strategic thinking

Notes:

- it follows from the *combination* of mechanics, categories, types and the actual rules, which areas a game can develop
- the specific rules can influence the development effect in any case
- it should not be forgotten here that the game itself is "merely" the tool among the basic conditions of development, without the others, the developmental effect cannot be realized
- based on the basic conditions of development, the developmental effect takes place where the players have their attention
- as a result, a game in itself never guarantees development or that it will achieve the development effect in the intended area