

# EXPLORING THE IMPACT OF GAME DESIGN ON THE PROMOTION OF INCLUSION



Co-funded by  
the European Union



Jordi Sancho



UNIVERSITAT DE  
BARCELONA

# RESEARCH REPORT

Jordi Sancho  
jsancho@ub.edu

## GAME ON: INCLUSION THROUGH EDUCATIONAL GAME DESIGN

PROJECT NUMBER - 621406-EPP-1-2020-1-ES-EPPKA3-IPI-SOC-IN

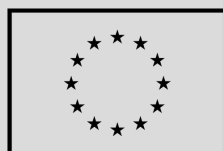


**KA3 - SUPPORT FOR POLICY REFORM – INITIATIVES FOR POLICY  
INNOVATION**

**SOCIAL INCLUSION THROUGH EDUCATION, TRAINING AND YOUTH  
CALL FOR PROPOSALS EACEA/34/2019**

THIS WORK IS LICENSED UNDER [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)

DOWNLOAD THIS DOCUMENT FROM: [HTTP://HDL.HANDLE.NET/2445/207806](http://hdl.handle.net/2445/207806)



**Co-funded by  
the European Union**

## Acknowledgments

In this research, only one author is credited, yet it would have been impossible without the collaboration of all the team members who have been part of the project and from whom I have learned so much.

Starting with Davide Tonon, from Nexes, the project coordinator over these three years.

Albert Buch, also from Nexes, who has always been behind the scenes and always willing to help whenever it was requested.

My colleague Ferran Cortès, from the University of Barcelona, and Patti Laura Ramon, who have assisted in conducting some of the interviews and their transcription.

To Dani Gómez, from Idealúdica, who specializes in game design and possesses a deep knowledge on the subject.

The team has engaged in quite interesting discussions with the rest of the partners. With Nerijus Kriauciunas from Nectarus, Alexandro Jan Lai and Giulia Degortes Caivano from Nur; Zoran Milošević, Snežana Bačlija Knoch, and Ivana Volf, from BalkanIDEA Novi Sad. And to all the other individuals who have participated in the various trainings, interviews, and meetings.

Barcelona February 18th, 2024.

## Table of Contents

<i>Exploration of Game design to improve inclusion.....</i>	<i>Error! Bookmark not defined.</i>
<b>1. Introduction: from game design to social Inclusion.....</b>	<b>3</b>
1.1 Learning with games, serious games and gamification.....	4
1.2 Game design.....	5
1.3 Co-design and constructionism in game design.....	8
1.4 Inclusion and competences for inclusion .....	9
1.5 Game Design Helping to Improve Social Inclusion .....	11
<b>2. Objectives .....</b>	<b>13</b>
<b>3. Methodology.....</b>	<b>14</b>
3.1 Sources of information .....	14
<b>4. Results .....</b>	<b>16</b>
4.1 Final users and application.....	16
4.1.1 Whom to train for game design?.....	16
4.1.2 Application of game design training.....	17
4.2 Perceived results.....	18
4.2.1 What is the target? The identified needs for inclusion. ....	18
4.2.2 What are the uses of game design?.....	21
4.2.3 What are the advantages of game design?.....	22
4.3 Shortcomings, obstacles, and difficulties associated with using game design.....	23
4.3.1 If it is so positive.....why has it not tried before? .....	23
4.3.2 Shortcomings and obstacles related to uses of game design.....	24
<b>5. Conclusion.....</b>	<b>27</b>
<b>References.....</b>	<b>28</b>

# List of Tables

Table 1. Interviews with trained facilitators..... 14

Table 2. Interviews with experts..... 15

Table 3. Profiles of the trained people who have completed the survey..... 16

Table 4. Profiles of the trained people who have completed the survey (% of the two main profiles)..... 17

Table 5. Application of the game design in projects for surveyed people in different countries..... 17

Table 6. Definition of inclusion by experts interviewed..... 18

Table 7. Inclusion needs and proposed applications by trained facilitators..... 20

Table 8. Advantages of game design by interviewed experts..... 22

Table 9. Disadvantages of game design by experts interviewed..... 25

## 1. Introduction: from game design to social Inclusion

The policies for social inclusion are an important part of the social policies for most of the countries. Normally, it represents welfare, employment, cultural or health policies. Those are big general policies. There is another approach, promoting more specific policies, related directly to professionals and informal educators. This project informs a methodology used on this last context, the co-design of a game, creating a social inclusion effort on the process.

In recent years, the uses of games, gamification, and games design has emerged with possibilities to become a powerful tool for driving social change and promoting inclusivity. Games have the unique ability to engage and immerse players in interactive experiences that can foster empathy, challenge stereotypes, and encourage social interaction. This research explores the intersection of game design and social inclusion, highlighting some examples on how game design can be leveraged to create a more inclusive society. By examining the role of games in fostering empathy, breaking barriers, promoting representation and accessibility, and enhancing social and developmental skills, we evaluate the transformative potential of game design in improving social inclusion.

This study emerges from a European project, Erasmus+ KA3, “Game on” and highlights how game design would be used to improve inclusion. To analyse the uses and effects of game design for inclusion, we need to define three main concepts: games for learning, co-design and constructionism in game design, and inclusion (and competences for inclusion).

### 1.1 Learning with games, serious games and gamification

Games, gameplay, serious games and gamification, as directly related to learning, and have extensively been investigated across the last decade. Although results vary, investigations provide a positive view of the educational benefits of gaming, especially when gaming practices are pedagogically anchored (Clark et al., 2016).

Games can be defined as an organized play structured by a set of rules and an obstacle-tackling goal (Klopfer et al. 2009; Schell 2019). With games derives game play, which is "essentially a process of learning, in which players interact with the game to learn rules and play strategies, then adapt and improve play skills to make progress" (Ke, 2016, p. 2). The use of games for the process of learning has been long developed for objectives beyond the joy.

Playing a game opens various possibilities both in terms of outcomes and in terms of personal or subjective views. It creates "emotions, stories to tell, learning, ideas, exchanges, encounters, etc., and therefore, there exist many different and specific experiences for each subject who plays the game» (Alvarez et al., 2019, p. 229).

Research has analysed the learning effects of game play, usually from an individual and skills training perspective. It suggests that positive cognitive, motivational, emotional, social effects, associated with enhanced spatial skills, problem-solving skills and persistence (Ke, 2016, p. 3). Finally, games can provide an immersive and authentic context for experimentation and situated understanding, hence act as rich primers for active learning (Clark et al. 2016; Gee 2008; Squire and Jenkins, 2003).

Serious games (SGs) are typically viewed as designed to educate, train, entertain, and promote behavioural change on the part of the player (Tettegah et al., 2015, p. 254). But their efficacy is not fully accepted. Some recent systematic literature reviews on the efficacy of serious games in healthcare professions education show negligible effects "Compared with other educational interventions, SGs led to neither statistically better behavioural engagement, knowledge acquisition, cognitive and procedural skills' development, attitude change, nor behaviour change." (Maheu-Cadotte et al., 2021, p. 210).

The last of the concepts, gamification, has seen a big impact on the organisational context. It can be defined as a "process of enhancing services with (motivational) affordances in order to invoke gameful experiences and further behavioural outcomes" (Hamari et al., 2014, p. 3026). These authors, after analysing 20 studies to answer the question if gamification works (p. 3028) explained that the learning outcomes results are mainly positive, "in terms of increased motivation and engagement in the learning tasks as well as enjoyment over them. However, at the same time, the studies pointed to negative outcomes which need to be paid attention to, such as the effects of increased competition, task evaluation difficulties, and design features."

## 1.2 Game design

Game design books and literature has been growing strongly in the last decades, and from different perspectives, each one with different implications in order to train and learn how to design games. Laureline Chiapello (2017) has identified four different epistemological implications on the field:

1. **Game Design as an Applied Art:** This phase views design largely as a creative and artistic process, emphasizing intuition and the individual genius of the designer. It is

characterized by a belief that the designer's creativity and personal vision are paramount. Key works adhering to this view include Crawford (1984) and Schell (2019), both of which emphasize the artistic and intuitive aspects of game design.

2. **Game Design as an Applied Aesthetic:** This phase moves slightly towards a more structured approach, integrating aesthetic principles into design. It draws from the Bauhaus School's emphasis on uniting art, craft, and technology, aiming for a scientific understanding of art to deduce the formal properties of design objects. Chris Crawford's work (1984) again features here, as it tries to navigate the fine line between the artistic vision and a more systematic approach to game design.
3. **Game Design as an Applied Science:** This phase represents a significant shift towards rationalism and objectivity in design, where the focus is on logical, systematic approaches and the application of scientific methods to the design process. This approach seeks to quantify and analyse game design elements to create a consistent gameplay experience. Key publications in this phase include Katie Salen and Eric Zimmerman (2003), which attempts to establish a comprehensive framework for understanding games from a theoretical perspective.
4. **Game Design as a Reflective Practice:** Inspired by Donald Schön's work (1983), this phase emphasizes the importance of reflection in action by practitioners. It suggests that knowledge in design comes from the practice itself, and that designers learn and create new knowledge through their actions and reflections on those actions. While not explicitly tied to game design, Schön's theory underpins this epistemological phase, suggesting a move towards recognizing the tacit knowledge and the iterative, reflective process inherent in game design practice.

The importance of these different views is that each phase or perspective implies a different approach to learn and train game design, reflecting the complexity and multidisciplinary nature of the field.

If we approach game design as an applied art, it should be learned through a focus on creativity, intuition, and the personal vision of the designer. Teaching methodologies might emphasize artistic processes, encouraging students to develop their unique styles and ideas. Learning in this phase is often exploratory and self-directed, with a strong emphasis on individual expression and the development of a personal design philosophy.

If we understand game design as applied aesthetic, we should integrate those principles into the design process, drawing from traditions such as the Bauhaus School's emphasis on the unity of art, craft, and technology. Teaching in this phase might involve a more structured approach than in the Applied Art phase. Learning could involve both theoretical



understanding and practical application, with exercises designed to bridge art and design with functional game mechanics.

When we see game design as an applied science, the learning is more analytical, and the training is approached more systematically, with an emphasis on logic, analysis, and the application of scientific methods. Teaching methodologies would likely involve a significant amount of theory, including game mechanics, user experience design, and possibly elements of psychology and sociology as they apply to game design.

Finally, if the chosen approach is design as a reflective practice, we should emphasize the importance of reflection in action. Teaching methodologies in this phase would focus on experiential learning, where students actively engage in design projects and then reflect on their process, decisions, and outcomes. Learning is iterative, with a cycle of action, reflection, and adaptation. Students would be encouraged to develop their ability to think critically about their design choices and continuously evolve their approach.

The deepening of the discussion on the implications for training and learning from all epistemological views exceeds the scope of this article, but some basic ideas can be commented. Jesse Schell (2019) starts with a simple definition: "Game design is the act of deciding what a game should be.". He explains that the game designer is one of the game developers, "A game developer is anyone who has any involvement with the creation of the game at all. Engineers, animators, modelers, musicians, writers, producers, and designers who work on games are all game developers. Game designers are just one species of game developer." The game designers make the story decisions and much others, about rules, look and feel, timing, pacing, risk-taking, rewards, punishments, etc.

He develops the idea that a game designer goal is not to design games, but to design experiences: "Ultimately, a game designer does not care about games. Games are merely a means to an end. On their own, games are just artefacts—clumps of cardboard or bags of bits. Games are worthless unless people play them. Why is this? What magic happens when games are played? When people play games, they have an experience. It is this experience that the designer cares about. Without the experience, the game is worthless" (Schell, 2019).

In the purpose of this research, the design of this experience leads to a significant learning to improve inclusion, something that can be related to a transformational play by some authors. Creating a game that produces significant learning or transformational play, «our challenge is to design fictional worlds that allow for the positioning of a person with a reason for learning, content with a use value, and context as pedagogically consequential in

that it provides the learner with information about the implications of his or her understandings and practices.» (Barab et al., 2012, p. 309). The those three main dimensions to work are later developed by the authors as:

- Design of spaces positioning a person with a reason for learning (the player becomes the protagonist equipped with dramatic agency in making choices that determine the direction of the unfolding storyline).
- Offering legitimate content by providing a use value (making academic or fundamental content necessary if one is to usefully understand and resolve the gameworld dilemma).
- Create context, providing the learner with information that is pedagogically consequential (embedding the context with interactive rules and gameworld states that are responsive to player choices).

### 1.3 Co-design and constructionism in game design

The important key on the interventions explored in this research is that they are not based on designing games by a skilled or professional person for players to improve a required knowledge when played. The aim is the process of designing a game with the players who have this problem of inclusion, to collaboratively uncover and work with it while designing the game. Game design, then, is a clear example of co-design and constructivist activity. Both concepts offer an interesting view from the implications of the participative nature of the process.

Co-design refers to a collaborative design process that actively involves all stakeholders (e.g., developers, users, experts) in the design process to ensure the product meets their needs and is usable. In game design, co-design can involve students, participants or players, educators, and developers working together to create educational games that are both engaging and effective.

The concept of co-design is directly linked to constructionism, a theory popularized by Seymour Papert (1991). He posits that people learn best through making or constructing something. Papert's concept is closely related to Piaget's theory of constructivism, which suggests that knowledge is constructed by the learner. As Piaget's (1951) declares, games require children to build representations of the world according to their understanding (Kafai, 1995; 1998).

Viewing these collaborative efforts from a learning framework, some authors offer guidance on how collaborative activities should be:

1. In terms of the basis, they would be focused on: 1) advancing shared purposes (i.e., the object of invention or action); 2) be oriented toward the creation of tangible products, and 3) openly networked so that everyone has the opportunity to participate and access distributed epistemic resources ([Laakso et al., 2021, p. 2](#)).
2. On the uses of materials, Sanders and Stappers (2014, p. 9) show that they usually consist on:
  - Probes are materials, designed to provoke or elicit response. For example, a postcard without a message.
  - Toolkits (made up of a variety of components) designed for each project/domain. The toolkits are used to make artefacts about or for the future.
  - Prototypes, rough physical manifestations of ideas or concepts.

#### 1.4 Inclusion and competences for inclusion

The social exclusion language, a concept from French origin, was commonly adopted to depoliticize poverty as far as income redistribution was concerned (Veit-Wilson, 1998, p. 97). That is one of the reasons why that concept, and the opposite of social inclusion, is far from clear.

The Council of the European Union defined social exclusion in 2004 as “a process whereby certain individuals are pushed to the edge of society and prevented from participating fully by virtue of their poverty, or lack of basic competencies and lifelong learning opportunities, or as a result of discrimination.” ([Bleumers et al., 2012, p. 15](#)). And the notion of social inclusion refers to “a process which ensures that those at risk of poverty and social exclusion gain the opportunities and resources necessary to participate fully in economic, social and cultural life and to enjoy a standard of living and well-being that is considered normal in the society in which they live. It ensures that they have a greater participation in decision-making which affects their lives and access to their fundamental rights” ([Bleumers et al., 2012, p. 15](#)).

These definitions imply two things:

- The need to define the meaning of not participate in the normal activities of citizens in that society. The “normal activities” are defined by Burchardt et al., (1999, p. 232) in 5 areas of activity: consumption, savings, production, political and social.
- The type of policies and actions to be done for improving social inclusion. With those areas in mind, the answers come from broad political, economic and welfare policies.

On the other hand, there is probably some space for personal or group actions. Those actions may be developed on a direct intervention level, and meant to develop some critical skills or competences to improve inclusion of specific actors. It is the meaning that "social inclusion is often equated with participation in various social arenas, and interventions focus on increasing individual capacity for incorporation or integration." ([Good Gingrich i Lightman, 2015, p. 99](#)).

Some of those skills or competences would be related to social inclusion for every member of a group. Koster et al. (2009, p. 120) mention being visible to other pupils (social impact), being someone with whom other pupils wish to spend time (social preference) and being a member of a group of friends that spend time together (social network affiliation).

On a broader sense, Murray and Dignan (2011, p. 4) expressed some competences representing the baseline and preconditions to be focused on intervention for improving social inclusion:

- Willing to accept diversity in society and respecting other ways of being.
- Being non-judgemental.
- Having an open mind.
- Having empathy and understanding.
- Showing flexibility and adaptability.
- Being sensitive and responsive (act on this awareness).
- Supporting a sense of belonging.
- Having enthusiasm: being engaged and motivated.
- Being creative to find alternative solutions and approaches.
- Showing warmth and being loving.

Apart from this kind of values, the simple increase in social interaction produces important inclusive effects on a community level. Some authors refer that "Social interaction has shown to be particularly effective at tackling societal barriers such as lack of well-being, sense of 'not belonging' to a community, or simply the lack of engagement with the neighbourhood", and also "social interaction, when positively meaningful, can break down

stereotypes and prejudice, empower people's agencies to act, has a positive impact on cohesion, emerges at people's own pace, and addresses conflict" (Fonseca et al., 2021, p. 1).

The potential problem with this approach is that "a social inclusion emphasis on increasing opportunity for citizens to 'participate' in society can shift the social policy focus away from fundamental issues of inequality and redistribution of wealth, particularly as no matter how much 'inclusion', class divides in a capitalist economy and social system maintain unequal" (Cappo & Verity, 2014, p. 27). For this reason, both the structural and direct approach should be developed in parallel.

## 1.5 Game Design Helping to Improve Social Inclusion

Game design can help social inclusion in three main directions:

- By helping to identify ways of exclusion. Example: people can't see in different colours, hearing issues, language problems, etc. People can learn about it. As Claude Shannon explained: the obstacles to sending a message, the difficulties to send it. Another example: when people can't interpret the message, due to different background, culture frameworks, etc.
- By developing common values, skills, and competencies that help to develop a more inclusive society. For example, games that promote teamwork, communication skills, and empathy can help break down barriers and promote social inclusion. Games that showcase diversity can also help to challenge stereotypes and promote understanding and acceptance of different cultures and identities. Additionally, game design can incorporate accessibility features to ensure that everyone can participate in the game.
- By offering a low stakes environment where people can explore different roles that people take, how they work as individuals and as pairs and in larger groups, or testing different roles or situations (Huberman, 2022). You are creating a secure context to learn rules and establish a broader foundation of practices.

In real cases, some or all of the above options can appear simultaneously. A good example is designing games to foster empathy (Belman & Flanagan, 2010; Muravevskaia et al., 2023). In conflict resolution, it is often needed "to encourage empathy between stakeholders on different sides of conflicts. Similarly, many interventions designed to reduce prejudice function by eliciting feelings of empathy towards victimized groups. Games are particularly well-suited to supporting educational or activist programs in which the fostering of empathy is a key method or goal. This is because they allow players to

inhabit the roles and perspectives of other people or groups in a uniquely immersive way" (Belman & Flanagan, 2010, p. 11).

Pointing at co-design and constructivism, some ideas of the consequences of game design emerge:

- Game design fosters learning engagement and motivation, even in cases where normal interventions have problems to communicating with people. Games have the power to transport players to different worlds and put them in the shoes of characters with varying backgrounds and challenges. By presenting players with thought-provoking scenarios and complex decision-making, games can evoke emotional responses and encourage empathy. Through interactive storytelling and compelling narratives, game designers can ignite conversations, challenge stereotypes, and promote a more profound understanding of diverse individuals and their struggles. There are examples of boardgames design getting mindful life-storytelling to people with dementia across four countries (Niedderer et al., 2022, p. 12), or as a talking tool used as a quick, informal and homemade method of involving mental health service users in the design of their hospital environment. (Lamey & Bristow, 2015, p. 1)
- Participation in creative game design may be more important than mere gameplay (Kafai & Burke, 2016). In fact, constructing a game seems to be more motivating for students and stimulated deeper learning strategies than merely playing a game (Vos et al., 2011; Laakso et al., 2021).
- A consequence of participation is usually the increase in social interaction and "Designing for meaningful social interaction requires consideration of player preferences, needs, and requirements to support interaction that is both desired and meaningful to those interacting, and that includes playful behaviour with the environment and others" (Fonseca et al., 2021, p. 1).
- On co-designing games, "The outcomes of such situations are not final design solutions but rather a co-constructed understanding about the context, people's experiences, potential designs and dreams" (Vaajakallio & Mattelmäki, 2014, p. 63).
- The role of the facilitator has a large influence on the validity of the created scenarios, and influences the situation and its results through the tools and rules. (Vaajakallio, 2012, p. 73).

## 2. Objectives

The use of non-digital game design to improve inclusion is an innovative approach. This research is based on the Game on project, that developed a first approach to define modes and train pioneers in different countries.

This is a preliminary research and the primary objective is to explore the uses of game design to improve inclusive skills and competences in the context of the Game on project. The final purpose is to share and some discussions and guidance to further develop these interventions.

To develop this exploration we will focus on several secondary objectives, related to dimensions seemed to be critic to using game design for inclusion to success from the theoretical background. The game design process will advance as a methodology for intervention if the perceived results are adequate and hit the expected target; the process values and the engagement are satisfying; and the scalability is suitable.

The secondary objectives, then, are as follows:

- To explore the profiles of the interested users and their settings.
- To analyse the meanings of inclusion as the target for intervention.
- To review the advantages and shortcomings of game design to improve inclusion.

### 3. Methodology

There are basically two types of evaluation, process evaluation and impact evaluations. The first tries to see if the applied policies or interventions applied to correspond to the designed ones (are the users belonging to the defined profiles? Are we reaching all the potential users?, etc.) The impact evaluations try to inform if the policies or interventions are covering the initial problem or objectives. In both cases, these types of evaluation require a closed or designed process of intervention. The game design interventions analysed here are better defined as starting points than closed intervention systems. In such case, a research design seeking a causal inference (to show that the independent variable is the causing the impact of the dependent variable) is probably not the best methodological design. If our purpose is limited to description or to exploring or describing in a pilot study, then we don't need a design that will permit us to explain what's causing something (Rubin & Babbie, 2011, p. 264).

In order to analyse the specific objectives, we developed some dimensions from the literature review to analyse the adequacy of the game design, and used three main sources of information.

#### 3.1 Sources of information

##### *Interviews with participants in Barcelona*

These are 10 people interviewed after one of the first training courses, on February 19th 2022. The interviews took 30 minutes each one approximately.

*Table 1. Interviews with trained facilitators.*

Interviewee	Position
Margot	High school teacher and coordinator of teachers.
Anna	Secondary school teacher and Anthropologist, teaching History and Geography.
Paula	Teacher in ESO, background in Economics, currently teaching Mathematics.
Ana	Secondary school teacher, teaching English.
Georgina	Master of special education, teacher in an institute of special education.
Maria	Teacher at institutes, specialized in art as a supporter of projects.
Guillem	Studied primary education, leisure monitor, currently doing external job.



Interviewee	Position
Ana P.	High school teacher of physics and chemistry.
Albert	Works in non-formal education, monitoring at camps, activities in schools and institutes.
Julia	Works in a secondary education institute, teaching Catalan language.

#### *Impact survey for anonymous 48 Participants in training*

These are 48 participants who took part in different training courses and seminars implemented in the framework of the Game On project at the end of 2021, in 2022 and the first half year of 2023. They answered the Impact survey between May and August 2023. The distribution by countries is:

- 17 from Spain
- 12 from Lithuania
- 14 from Italy
- 5 from Serbia

#### *Interviews with partners of the project as experts*

Six interviews with partners from five organisations directly involved in development of materials and training were done. These are the experts, the people who developed the program, training materials and have the experience from having training about 40 people or more. The interviews took between 40-60 minutes, during the last part of the project.

*Table 2. Interviews with experts.*

Interviewee	Organisation	Date of the interview	People trained (approximation)
Davide	Nexes (Spain)	18/10/2023	45
Albert	Nexes (Spain)	19/10/2023	60
Nerijus	Nectarus (Lithuania)	22/11/2023	50
Jan	Associazione Interculturale NUR (Italy)	29/11/2023	40
Zoran	BalkanIdea Novi Sad (Serbia)	29/11/2023	40
Dani	Idealudica (Spain)	21/12/2023	40

## 4. Results

### 4.1 Final users and application

#### 4.1.1 Whom to train for game design?

One of the key issues is to train the profiles that can be more effective in using the game design effectively. While opened to different roles, the targeted group is clearly related to professionals who work with young people, as educators and youth workers.

As mentioned before, 8 out of the 10 interviewees in Barcelona were working as teachers in secondary education, and of the last two, one studied to being a primary teacher and the other worked in non-formal education. From the trainers interviews, the project partners, most of them were teachers and youth workers. Finally, Table 3 shows the profiles for the 48 trained group from the four participant countries.

*Table 3. Profiles of the trained people who have completed the survey.*

	Profile	Count
1	Teacher or adult educator	23
2	Youth worker	13
	Others: one of each (project manager, bank manager, director of educational programmes, intercultural mediator, researcher, freelancer, parent, student)	7
3	Unknown	4

The two main profiles are consistent among the different countries, except in Serbia, with no data on 4 of the 5 participants.

*Table 4. Profiles of the trained people who have completed the survey (% of the two main profiles).*

Country	Profiles and Their Proportions
Italy	- Teachers or adult educators: 35.71% - Youth workers: 14.29%
Lithuania	- Teachers or adult educators: 83.33% - Youth workers: 16.67%
Serbia	- Unknown: 80%, Youth worker: 20%
Spain	- Teachers or adult educators: 41.18% - Youth workers: 47%

#### 4.1.2 Application of game design training

To what extent the trainees have applied the game design methodologies? With data from the 48 participants of the survey, the proportion of participants who have actually applied their learnings from the project reveals that overall, 33.33% of participants indicated that they have applied their learnings in some form. Two thirds, the 66.67%, have either not applied their learnings yet or did not indicate a direct application in their responses.

By country, the proportions of participants indicating application of their learnings are as follows:

*Table 5. Application of the game design in projects for surveyed people in different countries.*

Country	Applied (%)	Not Applied (%)
Italy	21.43	78.57
Lithuania	58.33	41.67
Serbia	20.00	80.00
Spain	29.41	70.59

Lithuania stands out with a significantly higher proportion of participants (58.33%) indicating that they have applied their learnings, compared to other countries. Italy, Serbia, and Spain show a lower proportion of applied responses, with the majority of participants in these countries either not applying or not explicitly mentioning the application of their learnings in their responses. This variation highlights differences in either the

opportunities to apply the learned skills or the participants' readiness or ability to implement them.

## 4.2 Perceived results

### 4.2.1 What is the target? The identified needs for inclusion.

Game design is a method to achieve improvements in inclusion, so another core issue is to see if the target of inclusion is clearly defined, or at least defined enough to be applied. There seem to be some differences on how to define inclusion between the partners (experts) who developed and applied the trainings on the project.

*Table 6. Definition of inclusion by experts interviewed.*

Theme	Definition	Interviewees
Equal Opportunities and Participation	Emphasizes that all individuals should have the same opportunities, possibilities to participate, create, and be heard in the same conditions, with adaptability to any situation or environment as necessary.	Dani
Removal of Barriers for Full Participation	Focuses on facilitating complete participation of all people regardless of barriers (e.g., language, economic, social level, cultural baggage, physical/mathematical abilities), advocating for the elimination of such barriers to ensure full and active participation.	Albert
Equitable Conditions Against Exclusion	Defines inclusion as creating conditions that counteract exclusion, allowing people to participate on equal terms and exercise their rights fully, such as rights to knowledge, understanding, expression, and education.	Nerijus
Engagement and Adaptability to Needs and Abilities	Highlights engaging everyone regardless of their capabilities and abilities, ensuring the process meets all needs and fits the abilities of each person wanting to be included.	Zoran
Participation, Differences'	Implies inclusivity through participation, the understanding, and acceptance of differences, and	Davide

Theme	Definition	Interviewees
understanding thorough Creativity and Emotional Intelligence in Pedagogy	engaging diverse emotional and creative intelligences in a fun and involved pedagogical process, though not directly defining inclusion.	
Taking care of the Obstacles.	Being inclusive in the things we do means that whoever is interested is included. In the target it may be that some people are not included by economic reasons, in some times, it is geographically isolations, etc. If you are interested, you should have the change to participate.	Jan

Ensuring of full participation is almost a common trait in most of the definitions, but when we look at a secondary level, on more specific meanings, there appears to be some “flaws” or specific differences:

- **1. Active Removal of Barriers** (Albert, Jan): Focus on the elimination of physical, economic, geographically and social barriers to facilitate full participation.
- **2. Universal Access and Adaptability** (Dani, Zoran): These definitions emphasize equal opportunities for all and the adaptability of processes to individual needs and abilities.
- **3. Equitable Conditions and Rights** (Nerijus): Concentrates on creating conditions that ensure equity and counteract exclusion, emphasizing the exercise of rights.
- **4. Creative and Emotional Engagement** (Davide): Highlights the role of creativity and emotional intelligence in fostering an inclusive, engaging, and fun pedagogical process.

There are interesting implications with those approaches. The first definition acknowledges the problems from a broader perspective, more in line with the Council of the European Union definition of social exclusion in 2004 (Bleumers et al., 2012, p. 15). The way the design of games can work it out seems to be acknowledging it and thorough cooperation between equals. It should be noted that Albert also cites cultural and cognitive barriers.

The second and third definitions make an emphasis on equity and equal opportunities, with an interesting focus (3) on the exercise of rights.

It is interesting, on the other side, that only Davide seems to show the importance of acting thorough the individual increase in abilities. The other definitions seem to identify the concerns that make impossible inclusion, as problems that occurred on a systemic or “global background” outside the individual or group capabilities, the ones that can be intervened.

Ten people who were interviewed in Barcelona (basically all teachers), when asked for the specific needs for inclusion they see on a day-to-day basis, offered a range of answers, some of them more specific and clearer, and some of them also similar to the above definitions. It is interesting when we put the inclusion needs next to the proposed solutions through game design, and we compare them.

*Table 7. Inclusion needs and proposed applications by trained facilitators.*

Interviewee	Inclusion Needs Identified	Proposed Solutions Through Game Design
Margot	Difficulty in welcoming people with different thoughts.	Teamwork and exploration of different ways of thinking.
Anna	Language barriers, social exclusion, ADHD, self-isolation.	Adjustable difficulty levels and creation of games by students.
Paula	Racism and discrimination against various races.	Focus on diversity, particularly racial diversity.
Ana Maria	Economic and social problems, gender issues, physical traits.	Cooperative gaming to enhance group cohesion and cooperation.
Georgina	Stigma of special educational needs, social acceptance of differences.	Fostering cooperation and focusing on social skills through game creation.
Maria	Resources, stigmatization, and inclusion of diverse groups.	Addressing stigmatization and promoting understanding of different perspectives.
Guillem	Lack of transversal work on inclusion.	Creation of more inclusive environments through game design.
Ana P.	Emotional needs, belonging, diversity, rejection.	Games as a method to ensure egalitarian participation and address social issues.
Albert	Linguistic and socioeconomic barriers, gender issues.	Game design as a space to work on group cohesion and inclusion, except socioeconomic.

Interviewee	Inclusion Needs Identified	Proposed Solutions Through Game Design
Julia	Linguistic barriers, socioeconomic differences, intellectual performance diversities.	Game design offering flexibility and openness to address various inclusion needs.

Though there are also cited generic barriers to inclusion, as economic or general social issues, most of the issues are specific and related to things that can be learned or worked by small groups, the things that game design seems to be more able to cop with. Those definitions are more related to critical skills or competences that can lead to interventions focussed on increasing individual capacities for incorporation or integration (Good Gingrich i Lightman, 2015, p. 99). It is also the case of competences representing the baseline and preconditions where intervention for improving social inclusion can be focused (Murray and Dignan, 2011, p. 4).

#### 4.2.2 What are the uses of game design?

If we look at the solutions proposed on the last table, where trainees linked the problems of inclusion, they see with the proposed solutions they could develop for these problems with game design, there seems to be three main categories

1. **Enhancing Participation and Group Dynamics.** This category emphasizes practical strategies for facilitating participation and enhancing group dynamics, crucial for inclusive education settings.
2. **Promoting Diversity and Inclusion.** This category focuses on embedding diversity and inclusivity directly into the game design process, ensuring that games serve as a reflection of and catalyst for a more inclusive society.
3. **Addressing Specific Social Problems.** In this case, it underscores the power of games to challenge and reframe social narratives, fostering a more profound understanding of diverse experiences and promoting societal change.

The examples developed from the potential users (basically educators) are:

##### *1. Enhancing Participation and Cohesion trough Group Dynamics*

- Adjustable difficulty levels and creation of games by students: Tailors the game experience to diverse skill levels, promoting equal participation.
- Cooperative gaming to enhance group cohesion and cooperation: Encourages teamwork and collective problem-solving.

- Fostering cooperation and focusing on social skills through game creation: Uses the game development process to build social competencies and teamwork.
- Game design as a space to work on group cohesion and inclusion, except socioeconomic: Provides a platform for strengthening group unity and addressing various inclusion aspects, though it notes an exception for socioeconomic factors.

### 2. Promoting Diversity and Flexibility

- Focus on diversity, particularly racial diversity: Targets racial diversity to ensure broad representation and awareness within game content.
- Creation of more inclusive environments through game design: Utilizes game design principles to build spaces that welcome and support all participants.
- Game design offering flexibility and openness to address various inclusion needs: Highlights the adaptability of game design to cater to a wide range of inclusion challenges.

### 3. Addressing Specific Social Problems

- Addressing stigmatization and promoting understanding of different perspectives: Aims to reduce stigma and enhance empathy through perspective-taking in games.
- Games as a method to ensure egalitarian participation and address social issues: Leverages games as a tool for social justice, ensuring fair involvement and tackling societal challenges.

Those are related and compatible with two of the three main directions mentioned on the theoretical background: helping to identify ways of exclusion; developing common values and skills (see 1.5)

#### 4.2.3 What are the advantages of game design?

There are different methodologies, from fields as pedagogy, social work and education and others to improve inclusion and skills and abilities at a personal and group level. Game design is not making it disappear, but it should be important to establish what are the main advantages for using it.

When asked to experts, the summary of their responses were very interesting (see table below).

*Table 8. Advantages of game design by interviewed experts.*

Interviewee	Advantages of Using Game Design
Dani	- Fosters creativity and engagement



Interviewee	Advantages of Using Game Design
	<ul style="list-style-type: none"> <li>- Enhances emotional intelligence and pedagogical approaches</li> <li>- Encourages deep understanding</li> </ul>
Albert	<ul style="list-style-type: none"> <li>- Promotes collaborative problem-solving</li> <li>- Develops empathy</li> <li>- Highly engaging and motivating</li> </ul>
Nerijus	<ul style="list-style-type: none"> <li>- Encourages non-formal, positive learning experiences</li> <li>- Structured and collaborative</li> <li>- Develops essential skills like persistence</li> </ul>
Zoran	<ul style="list-style-type: none"> <li>- Enhances team dynamics and creativity</li> <li>- Results in a tangible product that can be celebrated</li> </ul>
Davide	<ul style="list-style-type: none"> <li>- Improves creativity, understanding, and emotional engagement</li> <li>- Makes learning processes fun and involved</li> </ul>
Jan	<ul style="list-style-type: none"> <li>- Stimulates collaboration and empathy through design tailored to diverse audiences</li> <li>- Engaging and allows for a wide range of activities</li> </ul>

Their responses offer uses rather than advantages from other intervention methodologies. They are also in line with the other authors (Murray and Dignan, 2011, p. 4) when listing competences and preconditions to be focused on intervention for improving social inclusion: developing empathy, being engaged, being creative, etc. Furthermore, the motivation and behavioural changes "has shown to be achieved via numerous combinations of game elements (e.g. graphics, rules, a storyline, or levels), and via more complex game mechanics and dynamics that are only observable during game play mediated by the game" (Fonseca et al., 2021, p. 2).

### 4.3 Shortcomings, obstacles, and difficulties associated with using game design

#### 4.3.1 If it is so positive.....why has it not tried before?

The game experience is a common experience with young people and educators, and the board games used, so a first question should look for the double loop learning (Argyris, 1977, 1986, 1991, 1998). If non-digital games are so commonly known, why the game design is a new methodology or experience?

When asked, the 10 trained interviewees, some interesting answers emerged:

1. **Margot** expressed concerns about the educational system's rigidity and fear among educators, which might hinder the adoption of innovative approaches like game design. She mentioned, "I think one reason can be the fear of us people working in education, fears based on everyday life, on complying with the syllabuses, with a rigidity of the system that isn't allowing students to enjoy knowledge".
2. **Anna** discussed the misconception of play and games as negative or non-educational, suggesting a cultural and pedagogical barrier to integrating game design into teaching strategies. She stated, "Because we consider play as something perverse, negative, with a non-educational connotation".
3. **Paula** highlighted the difficulty of ensuring educational outcomes through games, pointing out the challenge of effectively combining learning and gameplay. She mentioned, "It's true that with games they are more motivated, but it doesn't always guarantee that they learn. It's very difficult to combine learning and games".
4. **Ana** emphasized the lack of training and awareness about game-based learning, indicating a gap in educators' knowledge and skills necessary for implementing game design effectively. She noted, "I haven't done it before due to lack of training. I think that people don't know what game-based learning is, what a game is, and what gamification is".

Those answers, from teachers, refer to the rigidity of the educational system, in terms of lack of flexibility for teachers and from the curriculum. They are in line with a common critique: "We have reached a challenging junction at which, on the one hand, teachers and schools face increased pressure to prepare students for standardized tests, whereas, on the other hand, they face a generation of students who regard the school curriculum as largely irrelevant to their own lives." (Barab et al., 2012, p. 306). The other question on this rigidity relates to the misconceptions related to the use of games for learning. On some academic settings may seem that using games is the opposite to learning. This last idea demonstrates the difficulties for the research to reach the practice level, although it is widely accepted the uses of games and gamification on learning (Clark et al. 2016; Gee 2008; Squire and Jenkins, 2003). This lack of confidence on the value of games even appears in some young educators who have registered to a course in game design.

#### 4.3.2 Shortcomings and obstacles related to uses of game design

The rigidity of the educational system cannot be used as the only critique for the uses of game design to improve inclusion. There are clear disadvantages that should be considered.

In the table below, the experts consulted show that although the creation of games is something that produces a high engagement to participants, it also presents several challenges, including its time-consuming nature. Ensuring participant engagement and adapting to the complex methodology of game design demands significant attention and low participant-to-facilitator ratios. Moreover, maintaining motivation during the prototyping phase is difficult. The creative process may also overshadow the inclusivity goals, necessitating a balance between product orientation and inclusivity-focused process orientation.

*Table 9. Disadvantages of game design by experts interviewed.*

Interviewee	Disadvantages of Using Game Design
Dani	<ul style="list-style-type: none"> <li>- Potentially lengthy process</li> <li>- Financial and technical requirements for a polished final product</li> <li>- May lead to a focus on the product rather than the inclusive process of creation</li> </ul>
Albert	<ul style="list-style-type: none"> <li>- Time-consuming</li> <li>- Some stages may be seen as demanding or less engaging</li> <li>- The gap between prototype and a finished product can be challenging</li> </ul>
Nerijus	<ul style="list-style-type: none"> <li>- Challenges in maintaining motivation through the prototyping phase</li> <li>- Requires significant time investment</li> <li>- Difficulty in applying the game design process within structured systems like formal education</li> </ul>
Zoran	<ul style="list-style-type: none"> <li>- Difficulty in understanding and integrating concepts of inclusion with game design</li> <li>- The creative process can overshadow the goal of inclusivity, focusing more on the game's outcome rather than the inclusive design process</li> </ul>
Davide	<ul style="list-style-type: none"> <li>- Risk of focusing too much on game creation, neglecting the inclusive process</li> <li>- Requires a balance between product orientation and process orientation</li> <li>- The need for experiences prior to practical application to understand the full benefits and methods of design</li> </ul>
Jan	<ul style="list-style-type: none"> <li>- Requires attention and energy to ensure engagement from all participants</li> <li>- Complex methodology that demands low ratios for effective application</li> <li>- Communication barriers can exclude individuals if not addressed</li> </ul>

Interviewee

Disadvantages of Using Game Design

---

properly

## 5. Conclusion

Although the uses of games and gamification have gained a lot of coverage lately, and there is a lot of research supporting the uses on learning in formal and informal settings, the game design is something quite new and innovative. The targetting of educating and changing behaviours to improve the inclusion, is also a new and refreshing approach. In this sense, the game design approaches and methodologies discussed in this research are opening some new paths that should be followed and tested more thoroughly.

For the objective of exploration of the game design, some questions have emerged. The target users and settings seem to be firstly teachers and then youth workers. These are the most interested in the subject, and it opens the path to develop the intervention on those frameworks. With the analysed information, the uses in the formal educational context should take into account the existing rigid schedules and the misconception of play and games as something negative.

Further research should be needed to analyse the robustness. Some ideas that sound great in theory often fail under conditions of field implementation. The implementation is acted through large administrative systems and also mediated by the incentives, preferences, and capacities of program targets. A good intervention should be robust enough that even if the implementation process does not go very smoothly, the outcomes will still turned out to be satisfactory (Bardach and Patashnik, 2020, p. 42).

Some of the most interesting parts comes from the evidences that the game design encourages collaboration, creativity, empathy, and engagement among the users. This offers the view that game design is an interesting option to improve skills and competences for inclusion on a group level. It offers an opportunity to address problems and situations in a creative way while in a low stakes environment for people to explore different roles.

Some concerns have identified and would need a more focussed approach. There were different views on inclusion and how to work with it. The scalability of the game design to a broader user base with time constrains and big groups would also need to be addressed.

Finally, the game design seems to be an interesting new methodology to add in the arsenal of tools to improve the intervention of professionals.

## References

- Alvarez, J., Irrmann, O., Djaouti, D., Taly, A., Rampnoux, O., & Sauvé, L. (2019). Design Games and Game Design: Relations Between Design, Codesign and Serious Games in Adult Education. In S. Leleu-Merviel, D. Schmitt, & P. Useille (Ed.), *From UXD to LivXD* (p. 229-253). John Wiley & Sons, Inc. <https://doi.org/10.1002/9781119612254.ch11>
- Argyris, C. (1977). Double loop learning in organizations. *Harvard Business Review*, 55(5), 115-125.
- Argyris, C. (1986). Skilled incompetence. *Harvard Business Review*. *Harvard Business Review*, 64(5), 74-79.
- Argyris, C. (1991). Teaching smart people how to learn. *Harvard Business Review*, 69(3).
- Argyris, C. (1998). Empowerment: The emperor's new clothes. *Harvard Business Review*, May-June.
- Barab, S. A., Squire, K., & Steinkuehler, C. (2012). *Games, Learning, and Society*. Cambridge University Press.
- Bardach, E., & Patashnik, E. M. (2020). *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem-Solving* (6a ed.). SAGE.
- Belman, J., & Flanagan, M. (2010). *Designing Games to Foster Empathy*. <https://www.semanticscholar.org/paper/Designing-Games-to-Foster-Empathy-Belman/8d48b3136fe4f0dcc686cd516474cb9b514f1d8f>
- Bleumers, L., All, A., Mariën, I., Schurmans, D., Van Looy, J., Jacobs, A., Willaert, K., de Grove, F., & Stewart (ed), J. (2012). *State of play of digital games for empowerment and inclusion: A review of the literature and empirical cases*. Publications Office. <https://data.europa.eu/doi/10.2791/36295>
- Burchardt, T., Le Grand, J., & Piachaud, D. (1999). Social exclusion in Britain 1991—1995. *Social policy & administration*, 33(3), 227-244.
- Cappo, D., & Verity, F. (2014). Social Inclusion and Integrative Practices. *Social Inclusion*, 2(1), 24-33. <https://doi.org/10.17645/si.v2i1.50>
- Chiapello, L. (2017). Epistemological Underpinnings of Game Design Research. In *Game design research: An introduction to theory & practice*, (p. 15-33). Carnegie Mellon University.

[https://kilthub.cmu.edu/articles/journal\\_contribution/Game\\_Design\\_Research\\_An\\_Introduction\\_to\\_Theory\\_Practice/6686750](https://kilthub.cmu.edu/articles/journal_contribution/Game_Design_Research_An_Introduction_to_Theory_Practice/6686750)

Clark, D. B., Tanner-Smith, E. E., & Killingsworth, S. S. (2016). Digital Games, Design, and Learning: A Systematic Review and Meta-Analysis. *Review of Educational Research, 86*(1), 79-122. <https://doi.org/10.3102/0034654315582065>

Crawford, C., 1984. *The art of computer game design: Reflections of a master game designer*. Osborne/ McGraw-Hill.

Fonseca, X., Slingerland, G., Lukosch, S., & Brazier, F. (2021). Designing for meaningful social interaction in digital serious games. *Entertainment Computing, 36*, 100385. [<https://doi.org/10.1016/j.entcom.2020.100385>].

Gee, J. P. (2008). Learning and games. *The ecology of games: Connecting youth, games, and learning, 3*, 21-40. <https://doi.org/10.1162/dmal.9780262693646.021>

Good Gingrich, L., & Lightman, N. (2015). The Empirical Measurement of a Theoretical Concept: Tracing Social Exclusion among Racial Minority and Migrant Groups in Canada. *Social Inclusion, 3*(4), 98-111. <https://doi.org/10.17645/si.v3i4.144>

Huberman, A. (2022). *Using Play to Rewire & Improve Your Brain* (58). <https://www.youtube.com/watch?v=BwyZIWeBpRw&t=1481s>

Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does Gamification Work? A Literature Review of Empirical Studies on Gamification. \_2014 47th Hawaii International Conference on System Sciences, 3025-3034. <https://doi.org/10.1109/HICSS.2014.377>

Kafai, Y. B. (1995). *Minds in Play: Computer Game Design as a Context for Learning*. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Kafai, Y. B., Franke, M. L., Ching, C. C., & Shih, J. C. (1998). Game design as an interactive learning environment for fostering students' and teachers' mathematical inquiry. *International Journal of Computers for Mathematical Learning, 3*(2), 149-184. <https://doi.org/10.1023/A:1009777905226>

Kafai, Y. B. (2006). Playing and making games for learning: Instructionist and constructionist perspectives for game studies. *Games and Culture, 1*(1), 36-40.

- Kafai, Y. B., & Burke, Q. (2015). Constructionist Gaming: Understanding the Benefits of Making Games for Learning. *Educational Psychologist*, 50(4), 313-334.  
<https://doi.org/10.1080/00461520.2015.1124022>
- Ke, F. (2016). Designing and integrating purposeful learning in game play: A systematic review. *Educational Technology Research and Development*, 64(2), 219-244.  
<https://doi.org/10/f8ggtk>
- Klopfer, E., Osterweil, S., & Salen, K. (2009). *Moving learning games forward*. The Education Arcade.
- Koster, M., Nakken, H., Pijl, S. J., & Van Houten, E. (2009). Being part of the peer group: A literature study focusing on the social dimension of inclusion in education. *International Journal of Inclusive Education*, 13(2), 117-140.  
<https://doi.org/10.1080/13603110701284680>
- Laakso, N. L., Korhonen, T. S., & Hakkarainen, K. P. J. (2021). Developing students' digital competences through collaborative game design. *Computers & Education*, 174, 104308.  
<https://doi.org/10.1016/j.compedu.2021.104308>
- Lamey, B., & Bristow, C. (2015). The Game as a Talking Tool: Using a Board Game for Creative Consultation, Engagement and Inclusion. In G. Brewer & R. Hogarth (Ed.), *Creative Education, Teaching and Learning* (p. 243-253). Palgrave Macmillan UK.  
[https://doi.org/10.1057/9781137402141\\_23](https://doi.org/10.1057/9781137402141_23)
- Maheu-Cadotte, M.-A., Cossette, S., Dubé, V., Fontaine, G., Lavallée, A., Lavoie, P., Mailhot, T., & Deschênes, M.-F. (2021). Efficacy of Serious Games in Healthcare Professions Education: A Systematic Review and Meta-analysis. *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare*, 16(3), 199-212.  
<https://doi.org/10.1097/SIH.0000000000000512>
- Muravevskaia, E., A, A., Prabha, P., Unnithan, M. S., H, A., P.R, R., Kanukunta, R., & Manikutty, G. (2023). Designing Empathy Game: Case on Participatory Design Session with children within the Indian context. *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference*, 459-463. <https://doi.org/10.1145/3585088.3593862>
- Murray, C., & Dignan, S. (2011). *Diversity and Social Inclusion Exploring Competences for Professional Practice in Early Childhood Education and Care*. DECET/ISSA Working Group on Professionalism - Bernard van Leer Foundation.  
[https://www.issa.nl/sites/default/files/pdf/Publications/equity/Diversity-and-Social-Inclusion\\_0.pdf](https://www.issa.nl/sites/default/files/pdf/Publications/equity/Diversity-and-Social-Inclusion_0.pdf)



Niedderer, K., Holthoff-Detto, V., Van Rompay, T. J. L., Karahanoğlu, A., Ludden, G. D. S., Almeida, R., Durán, R. L., Aguado, Y. B., Lim, J. N. W., Smith, T., Harrison, D., Craven, M. P., Gosling, J., Orton, L., & Tournier, I. (2022). This is Me: Evaluation of a boardgame to promote social engagement, wellbeing and agency in people with dementia through mindful life-storytelling. *Journal of Aging Studies*, 60, 100995.

<https://doi.org/10.1016/j.jaging.2021.100995>

Papert, S. (1991). Situating Constructionism. In I. Harel & S. Papert (Eds.), *Constructionism* (pp. 1-11). Ablex Publishing

Rubin, A., & Babbie, E. R. (2011). *Research methods for social work* (7a ed.). Brooks/Cole Cengage.

Salen, K. and Zimmerman E., (2003). *Rules of play Game design fundamentals*. Cambridge, MA: MIT Press.

Sanders, E. B.-N., & Stappers, P. J. (2014). Probes, toolkits and prototypes: Three approaches to making in codesigning. *CoDesign*, 10(1), 5-14.

<https://doi.org/10.1080/15710882.2014.888183>

Schell, J. (2019). *The Art of Game Design: A book of lenses*. Third Edition. CRC press.

Schön, Donald. (1983). *The Reflective Practitioner: How Professionals Think in Action*. Basic Books.

Squire, K., & Jenkins, H. (2003). *Harnessing the power of games in education*.

Tettegah, S., McCreery, M., & Blumberg, F. (2015). Toward a Framework for Learning and Digital Games Research. *Educational Psychologist*, 50(4), 253-257.

<https://doi.org/10.1080/00461520.2015.1134330>

Vaajakallio, K. (2012). *Design games as a tool, a mindset and a structure*. Aalto University publication series.

Vaajakallio, K., & Mattelmäki, T. (2014). Design games in codesign: As a tool, a mindset and a structure. *CoDesign*, 10(1), 63-77. <https://doi.org/10.1080/15710882.2014.881886>

Veit-Wilson, J. (1998). *Setting adequacy standards: How governments define minimum incomes*. Bristol: Policy Press.

Vos, N., Van Der Meijden, H., & Denessen, E. (2011). Effects of constructing versus playing an educational game on student motivation and deep learning strategy use. *Computers & Education*, 56(1), 127-137. <https://doi.org/10.1016/j.compedu.2010.08.013>