

AN ACCESSIBLE AND INCLUSIVE FUTURE FOR TABLETOP GAMES AND LEARNING: PARADIGMS AND APPROACHES

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Abstract

In recent years, the social perspective on disability has been changing, abandoning the more traditional medical paradigm, and replaced by more socially and contextually aware methods. In this sense, disability is now seen as a social construct, as the inability to accommodate the personal requirements of each individual. This has prompted changes in both educational interventions and media creation frameworks, based on paradigms that promote inclusivity. Considering the recognized social and educational potential of tabletop games, their recognized potential for inclusion intervention, it makes sense to look at this medium and how it can advocate the inclusion of each individual player's needs. The present study explores different conceptual structures for the purposes of establishing a framework for inclusive development approaches in tabletop games. Beyond people with disabilities and specific accessibility needs, this study also intends to broaden the spectrum of inclusion through analogue games reflecting on human diversity, with a specific focus on Game-Based Learning (GBL). Results intend to foster evidence based and inclusive GBL interventions, which does not present inclusive design and accessibility as an obstacle but instead a creative process that can be addressed proactively by the different stakeholders. Furthermore, the developed reflections constitute a concrete bridge between the premises of the social model of disability, the broad range of individuals' support needs, and the learning potential of tabletop games.

Keywords: Tabletop Games, Game-Based Learning, Accessibility, Inclusion, Disability, Intersectionality.

1 CONTEXT

The present study was developed within the scope of TEGA (2020-1-UK01-KA203-079248), a project that intends to foster change in the educational landscape of Higher Education (HE), by using analogue Game-Based Learning (GBL) approaches for delivering consistent playfulness and reduce the existing barriers and hindrances for students. The use of tabletop games provides advantages over digital games in cost, ease of deployment, adaptation, and player-involvement [1]. Tabletop games encourage player involvement in ways that digital games do not, since the players themselves have to “activate” the different game components for the game to run. Successfully employing a tabletop games approach for the necessities of GBL, requires that the latter consistently recognizes the requirements of each individual students' learning process, in turn empowering instructors to accommodate those needs.

This work is part of Intellectual Output 2 (IO2) –TEGA Methodological Guide for creating and implementing gamified learning activities – addresses the concepts and skills required of instructors and designers to accommodate player necessities when developing a game. This will be done by first outlining a conceptual approach to the paradigms of disability and discussing their potential implications in the fields of games and GBL. Following this outline, specific conceptual frameworks will be defined to empower professionals in the field and ensure diversity is considered for analogue GBL.

2 INTRODUCTION

Recently, the perspectives on disability have been changing, replacing the traditional medical and therapeutic paradigms with a more social and contextual perspective. In this sense, disability is now seen as socially constructed, resulting from the inability of the context in accommodating the needs of each person.

Considering the importance of social interaction in tabletop games, they present a good opportunity for educational and social intervention from educators. More so, if such games could be constructed and adapted around the specific necessities of the individuals playing them.

This study presents a critical analysis of such solutions, prioritizing how they can enable the inclusion and representation of diverse populations. It intends to develop a conceptual framework that can be used by researchers, game designers, teachers, and other practitioners, empowering them in the design and implementation of GBL interventions, considering accessibility as a crucial aspect of the process.

3 THE SOCIAL MODEL OF DISABILITY AND ITS IMPLICATIONS FOR GAMES AND EDUCATION

Societal views of difference (and otherness in a general sense) have been determined by changing historical, cultural, and social contexts. Views of people with disabilities have followed a path from exclusion to inclusion, with segregation and integration in between [2]. Moreover, this path also represented a paradigm shift, from a medical model of disability to a social model of disability [3].

The medical model of disability is based on the notion that individual impairment is the main source of the limitations they experience in their daily lives, needing medical attention or curative treatment, whenever possible [4]. Currently, this model is regarded as a set of “discriminatory normative assumptions” [5], and understood as perpetuating accessibility practices that are reactive, particularist, and maker-centered. Such practices are mainly aimed at audiovisual translation [5], as a measure that is implemented only after the creative process, and that strongly conditions implementations in the field of tabletop gaming.

The “special” education system emerged through these notions of the medical model of disability, as an answer to specific educational needs, to be addressed on a school-by-school or classroom-by-classroom basis. There is an historical disconnection between “special” education and the potential role of disability studies in this field. This has been operationalized through the systematic disregard of the social model of disability in “special” education approaches, as well as the adoption of a unidimensional lens to analyze oppression [6]. The connection between the medical model of disability and “special” education is undeniable, based on how the euphemism “special” frequently accompanies ideas of segregation (e. g. specific schools for children with disabilities), as described by Pfahl & Powell [7], and remediation, shown even in the titles of academic journals (e.g., Remedial and Special Education).

In contrast to the medical model of disability, the social model of disability defines disability as a lack of adjustment between the specific needs of the individual’s body and the social, physical or attitudinal context that surrounds it. In this view, although impairment is present in the individual, disability only emerges when the environment surrounding that individual is not able to accommodate their support needs [8, 9]. The implication is that inclusion is a question of changing society, and not of “remediating” the individual.

The social model of disability is currently used by the World Health Organization (WHO) as a framework for its functioning classification where crucial relevance is given to contextual factors [10]. When disability is considered through this social and contextual lens, accessibility shifts from after-the-fact, particularist, maker-centered efforts to a more proactive, universalist, and user-centered perspective. The interaction between users’ particular characteristics, contexts and needs becomes the center of all accessibility-driven processes, avoiding the stigmatization of people requiring such measures, and emphasizing the benefits for everyone [5]. Also, in keeping with the shift in conceptions of accessibility, the Convention on the Rights of Persons with Disabilities (CRPD) recognizes accessibility as a fundamental right, emphasizing the obligation of the signatory states to provide accessible cultural and educational formats [11]. Cultural and educational formats are particularly relevant for GBL, and this shows the necessity of deeply aligning GBL with the new conceptions of accessibility.

By focusing on the specific issues of educational accessibility, a new paradigm shift seems to be emerging – inclusive education. The fundamental premise of inclusive education is that each and every student – regardless of the degree to which they face inclusion barriers in their daily life – requires participation and interaction within the educational environment to a crucial degree. From an inclusive education standpoint, accommodating the needs of all students is the role of the school or Higher Education Institution (HEI), to the extent that this adaptation process is seen as being a normal part of providing a learning experience [2]. For games in education, the inclusive education paradigm means that accessibility is a basic aspect of both the learning process supported by the playful experience and the playful experience in and of itself. Since inclusive education strongly emphasizes participation and interaction, and these are strongly present in analogue games (players largely play in direct face-to-face interaction and must continuously activate the game together to run it), tabletop games hold significant potential for inclusive education.

This discussion can lead us to acknowledge the existence of two different pathways in framing disability, educational systems, and accessibility. The first pathway is emphasizing individuals' impairments and remediate actions. This is the pathway that emerges from the relationship between the medical model of disability, "special" education, and reactive accessibility. The second pathway, which is beginning to replace the first pathway, emphasizes person-centered or user-centered notions of how the educational context needs to accommodate individuals' support needs as framed by the cohesion between the social model of disability, inclusive education, and proactive accessibility. Figure 1 systematizes these paths through a visual representation meant to support both researchers and practitioners in the adoption of a more inclusive-driven and non-stigmatizing stance, and when planning GBL interventions in particular.



Figure 1. Disability paradigms, educational models, and accessibility pathways. Source: Authors' elaboration.

In 2014, Lewthwaite [12] argued that the existing accessibility standards and framing discourses seem to remain linked to a notion of disability as an individual's biological limit, overlooking disability as "a complex and culturally contingent interaction". Eight years later, these stigmatizing attitudes seem to remain, even when considering younger digital media creators and developers, including undergraduate students in the field [13]. This premise highlights the relevance of considering comprehensive conceptual models of accessibility in a project as TEGA.

4 ACCESSIBILITY AND SUPPORT NEEDS

In broad terms, accessibility can be understood as a precondition to ensure full and equal participation of all citizens [14]. In an even broader manner, it can be seen as "the process of avoiding or removing unnecessary barriers" [15].

In the field of games specifically, accessibility concerns the acknowledgement of human diversity and its interaction with the game, including all the optimizations to avoid barriers between the player and the desired playful experience [15]. Regarding tabletop games or board games, the broad definition remains the same, and it is recognized to special relevance due to the potential for "accidental exclusion of marginalized groups" having increased alongside the popularity of the hobby of boardgames [16].

Accessibility issues in games cause a wide range of barriers to the overall experience, that might include the inability to receive or decode feedback and the inability to define in-game responses [17]. Moreover, to build a stronger conceptual framing, we propose the following adaptation of the WHO model of disability [10], as applied specifically to tabletop gaming (Figure 2).

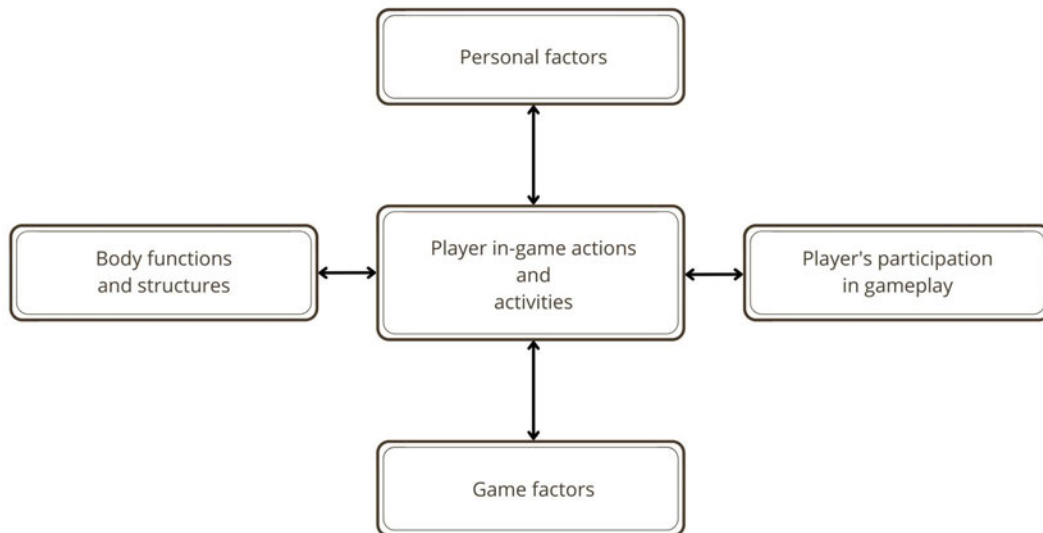


Figure 2. Functioning model applied to the context of analogue games. Source: Adapted from WHO [10].

In this adaptation proposal, the main components can be defined in the following way:

- Player in-game actions and activities as adapted from the “Activity” section of the WHO model [10], including all the subtasks and in-game activities that are inherent to the act of playing a game;
- Personal factors which merge the “health condition” and the “personal factors” dimensions of the WHO model [10], which in this proposal are not regarded as contextual since context in play can be better explained under the notion of “magic circle”, as proposed by Huizinga [18] – to the extent that the factors associated with the individual, regardless of whether they have a more individual, social, or health-related origin, can influence and be influenced by this context, but are not part of it;
- Body functions and structure, which are retained from the original model and represent the anatomical parts of the players’ bodies and their physiological functions, as well as psychological functions [10];
- Player participation in gameplay, where the concept of participation is similar as in the original model [10], although in a narrower scope which considers only participation in gameplay, operationalized by the ability of players to influence the game system;
- Game factors, which are an applied version of the contextual factors in the original model [10] that consider all the games’ tangible components and non-tangible mechanisms – these are crucial from the standpoint of how they can generate barriers between players and the experience that the designer has planned.

Depending on which support needs are identified in players, different game features and accessibility measures may be implemented. The most consensual way of grouping these features is sensory (auditory and visual) accessibility, motor accessibility, and cognitive accessibility [15, 19]. Nevertheless, another layer of accessibility has been emerging in the recent approaches, to accommodate needs besides the not covered by sensory, motor, and cognitive accessibility. The specific definition of this additional layer of accessibility is not yet well established, and may include the notions of inclusive design [20] or emotional, socioeconomic, and intersectional accessibility [16].

4.1 Motor, Sensory, and Cognitive Accessibility

Although accessibility guidelines and heuristics are a more cohesive reality for the field of digital games, regarding analogue gaming a scarcity is registered, with Heron et al.’s [16] approach as one of the most cohesive. Table 1 summarizes this work, as well as the work of Filho et al. [21], centered around visual accessibility features. Notwithstanding, consulting the original sources is recommended for practical implementations of the guidelines.

Table 1. Concerns and accessibility measures grouped by support needs.

Accessibility areas	[15]	[20]
Motor	Size of cards; token shape; regularity of piece manipulation; ease of communicating instructions; physical acting; paper money; number of tokens; size of game board elements.	Not targeted
Sensory (Visual)	Reading level; lying/bluffing; communication of strategy.	Tactile feedback; color and contrast; information design; game rules; assistive technologies.
Sensory (Auditory)	Audibility; lying/bluffing; communication of strategy; need for audible communications.	Not targeted
Cognitive	Reading level required; game state complexity; memory requirements; game flow; number of token combinations; synergy of rules; scoring; general knowledge/trivia; multitasking.	Not targeted

In this table, some adaptations were performed to fit the accessibility measures under the categories: motor accessibility; sensory accessibility (visual or auditory), and cognitive accessibility. Besides the explored sources, some non-systematic approaches can also be found online, mainly from non-academic, and above all, non-peer reviewed sources, which reinforces the scarcity mentioned above.

Aligned to the overall gap registered, a stronger lack of both guidelines and empirical studies seems to be present for cognitive accessibility, aligned with evidence from other accessibility fields [22]. To the scope of the present work, this is an issue at two different levels: (1) the common complexity of tabletop games and how this might exclude individuals both from GBL and from hobby board gaming; and (2) the focus of TEGA on the teaching of abstract concepts through gaming.

4.2 Inclusive Design

Inclusive design can be seen as the creation of products for everyone [20], where this extends to games and GBL approaches. The premise for Inclusive Design is that accessibility is more than compliance with standards; it is also usability, and so needs to benefit everyone – non-native English speakers, people with temporary health conditions, older people, new users, and all others – and not just individuals with disabilities. With an emphasis on empathy and altruism in design processes, it can also be an egotist process, considering the timeliness of our physical and cognitive abilities [20]. In the tabletop game model proposed in this study there are two complementary perspectives of inclusive design: the biopsychosocial perspective and the intersectional perspective.

The biopsychosocial model was developed to address the gaps of the biomedical model, through a systems-led approach that considers individuals' needs and characteristics in a wider manner [23]. Acknowledging the biopsychosocial nature of individuals in creative processes implies that accessibility is tackled not only in considering a medical view of pathological conditions that will impact the activity of play but also in considering individuals as a whole, with different physical/psychological characteristics and social framings.

The concept of intersectionality was originally formulated to explore the complex relationships and intersections between different forms of discrimination, considered as greater than the sum of their parts [24]. We hold that intersectionality presents two interrelated dimensions in the context of tabletop games: (1) the intersection between different players' support needs and (2) how individuals' social context, privileges, and discriminations have an impact on the activity of play.

Emotional aspects of accessibility have been explored by Heron et al. [16] as arising from inconsistencies in the perception of what fun is among different people. This includes challenge, despair, arbitrary fates, bluffing/lying, need for closure/symmetry, "take that" mechanics, upsetting themes, score disparity, player elimination, and "ganging up". The Emotional accessibility rubric accounts for personality, mental health, and the social context of the game.

Heron et al. [16] approached the socioeconomic aspects of accessibility with a specific sociological view which can be actualized in tabletop game development through the use of more inclusive artwork, how play instructions are written, theme, player counts, and cost. For people planning to design a tabletop

game, promoting accessibility to this extent requires a critical perspective of their intended audience. This entails including the actual target groups in the iterative game design process, as well as in issues of representation and representativeness throughout this process. Representation can be defined as the way in which human diversity is visually and conceptually addressed in the intended experience of a game, and representativeness is related to the inclusion of diverse creators and audiences in the development process. Participatory-Action Research (PAR) and other comprehensive methodological approaches are crucial in ensuring that new original games represent different voices, experiences, and narratives.

4.3 Assessment of Accessibility Needs

Retaining a de-medicalized perspective is crucial as it regards overall models of approaching disability and also for the assessment of individual needs. Waddington & Priestley [25] contend that this de-medicalization can be affected through a contextual understanding of disability, based on human rights perspective. This type of understanding must account for the barriers that a person encounters in their daily life and for their needs, prioritizing their participation in policy design [25]. In the study's particular scope this entails the participation of learners both in game creation processes and in the definition of the pedagogical approaches.

Assessing human needs in context requires more intensifying the use of real-life, outcome-based criteria, where these include criteria related to the wider support networks of individuals as opposed to simply considering each individual in isolation. Moreover, the targeted individuals in the assessment must be involved in the generation of this evidence [25].

Games and learning beg for the implementation of a CRPD-based disability assessment. CRPD is implemented through the participatory development and implementation strategies that have been already detailed in the present paper. Learners need to be involved in the process of identifying their main needs and how these needs can be supported through game playing. This process needs to combine the categories of motor, sensory, and cognitive accessibility, together with broader inclusion-driven features. It is crucial to promote frequent playtesting sessions including moments for reflection and discussions, and to ensure participation of the target audience in planning the required inclusion enhancements to the game experience towards the end of the development cycle. These need to be considered proactively rather than reactively, as part of the creative process [26, 27].

5 TEGA ACCESSIBILITY AND INCLUSION FRAMEWORK

The conceptual framework proposed in this study (Figure 3) is grounded on the explored paradigms' pathway (Figure 1), and in the implementation of the WHO [10] functioning model to tabletop games. It was also developed based on the discussed biopsychosocial and intersectional considerations.

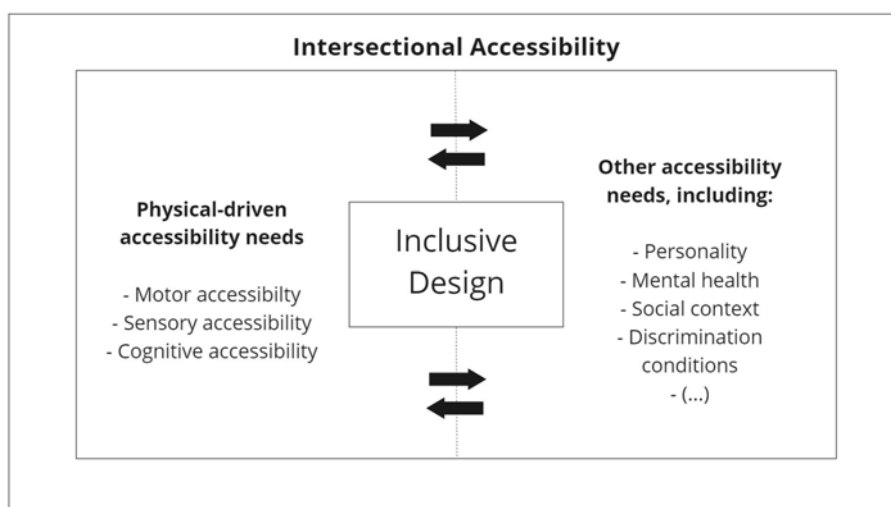


Figure 3. TEGA accessibility and inclusion conceptual framework Source: Authors' elaboration.

5.1 Applying the Conceptual Framework

The implementation of the proposed conceptual framework includes the consideration of different accessibility needs and axis, in a systems-driven manner, following a participatory assessment of the target audience, as follows.

5.1.1 *The Role of Assessment*

In the framework, assessment is seen as a pre-condition to the game development or adaptation process. As explored above, it is applied through a de-medicalized strategy and by involving the target audience in the creative process. This must comprise either the complete target audience or a representative part of it, avoiding to include only the ones seen as having “special” needs. Therefore, the role of assessment is consubstantiated by the creation or adaptation of games that represent the different voices and experiences of the target audience.

5.1.2 *Inclusive Design*

The core of the framework is inclusive design. It is seen as the conceptual structure that links and relates the different types of needs each player might present. It can also be operationalized in the creative process as the cornerstone notion that inclusion in tabletop games goes beyond disability, to include as much as possible every aspect of human diversity.

5.1.3 *Biopsychosocial consideration of players’ needs*

The framework includes players’ needs that might emerge from an impairment – physical driven accessibility needs – targeted by motor, sensory, and cognitive accessibility. Moreover, the biopsychosocial model is implemented by a holistic vision of players’ needs that includes their personality, mental health aspects, social context, discrimination conditions, life experiences, or any other that enhances their well-being while playing. This is consubstantiated through a comprehensive assessment strategy that sees players’ as co-researchers or co-creators, as explored above.

5.1.4 *Intersectional Accessibility*

While exploring the framework, a concept’s overlap seems to emerge. This was developed on purpose to sustain the implementation of all the accessibility measures through the lens of intersectional accessibility. The intersectional dimension that frames the whole process intends to foster the cumulative nature of accessibility needs. Hence, promoting accessibility and inclusion in tabletop gaming should consider the different needs of players, but also these needs are related among them, creating their contexts and uniqueness as individuals.

5.2 The Case of Disability

In this case, assessment is a crucial part of the process. Some examples of assessment operationalization might include an anonymized questionnaire applied to a class, allied with group discussions on the topic. Due to the stigma involving disability, using two different methods – one anonymized and one explicit – represent a strategy to ensure the accuracy of the gathered feedback.

After this, the designer or the designing team has a fundamental role in systematizing the needs of the audience and implementing solid accessibility measures in the game, based on the existing heuristics [16, 20]. This step can be included both in the creation of new games and in the adaptation of existing ones. Examples of games created with accessibility needs as creative triggers might include AudiOdyssey [28], Nyctophobia [29] - accessible for blind players – or Collaborative Puzzle Game [30] – accessible for children with Autism Spectrum Disorder. Accessibility and inclusivity-driven features of existing games can be exemplified by Auditory Uta-Karuta [31] – an adapted game – or Chinatown [32] – a commercial game.

Also, playtesting internally and with the target audience is also fundamental to ensuring the intersectional validity of the implemented measures. In case the audience presents needs that are difficult to simultaneously accommodate, the creation of customizable game modes can emerge as an alternative. After playtesting, including players’ feedback in the subsequent versions can work as a strategy for them to experience empowerment and ownership [27].

5.3 Intersectional Considerations

For this example, consider any game that has player elimination as a mechanic. This means that the game offers the possibility of a player being eliminated at an early stage and necessarily demoted to an observer role for the rest of the round. Richard Garfield's "King of Tokyo" [33] is a classic example of this. Another example can be observed in Adam Kwapiński's "Nemesis" [34], which also presents complex gameplay with cumulative sets of mechanics, including cooperation, semi-cooperation, dice rolling, hidden roles, player elimination, a modular board, betraying, and variable powers.

Now, imagine a group of students that have a certain tendency to exclude some peers due to their academic or athletic performances. Would any of these two examples be a good option for a session in this context? How would this experience resonate with a specific student that had also experienced abandonment in their life? How would an early elimination impact a student with an intellectual disability that can also struggle in understanding the gameplay autonomously?

These issues and questions reinforce the cumulative nature of accessibility needs, and how they are operationalized in practical cases. It also reinforces how promoting accessibility can be an ad-hoc process of adapting the game to the specific group, its characteristics, and experiences.

6 DISCUSSION

This study aimed to explore accessibility as part of analogue GBL strategies, to support the development of an inclusive methodology for TEGA project and, overall promote inclusion in tabletop gaming. Considering this, it was possible to create a conceptual framework for accessibility and inclusion in the development and adaptation of tabletop games.

The model highlights the relevance of game designer's – teacher or not – awareness of the current disability paradigms, namely their ability to acknowledge the role of contextual factors, and its centrality in the accessibility of tabletop games. This includes further reflections on how a game, or an educational strategy is framed on the social model of disability, inclusive education, or proactive accessibility practices.

Regarding the results, it is also possible to mention that there are several dimensions of accessibility needs – motor, sensory, or cognitive – that can be translated into different practical features in tabletop gaming. Moreover, considering human diversity as part of tabletop GBL implies intersectional consideration of these needs, with an emphasis on the potential barriers and hindrances for player in-game actions.

To this extent, inclusive design is seen as recognizing accessibility for people with and without disabilities, by including the voices and representations of players in the game. As explored above, these premises are organized in Figure 3 – a conclusive conceptual framework to support the inclusion of accessibility needs in tabletop gaming. The framework is centered around the premises of inclusive design, mediated by the wide range of players' needs/individual factors and the potential co-existence of them, as recognized by the notion of intersectional accessibility.

To operationalize this framework, assessing players/learners is a fundamental axis. The assessment of the accessibility needs for GBL must be done in a comprehensive, de-medicalized manner to comply with the paradigms discussed above. A feasible strategy can include increasing students' participation in the development or adaptation process, considering their needs and visions.

6.1 Limitations and Future Directions

The research done on the scope of TEGA reinforces the scarcity of approaches in the field of tabletop game accessibility and inclusivity, with a clear supremacy of digital games, that needs to be tackled in the future. Only if these needs are considered in a broader manner, analogue game-based learning can become a widespread reality, framed on the inclusive education paradigm shift. Nevertheless, it is important to reinforce that the present study has inherent limitations as a conceptual approach that need to be further explored through empirical research designs. This includes future studies approaching accessibility and participatory strategies to achieve it.

Furthermore, accessibility models and practices emerging from the industry of board games are not considered to this extent, due to their nature. This can be seen as a bias that also generates constraints on disseminating these findings to the commercial sector. Such a premise highlights the need to fill the gap between industry and academia to better consider human diversity in tabletop game design.

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