

Designing for Learning Through Play: The MAPeD Framework for Conceptualizing Learning Games

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Abstract: Despite learning games' long history of use and recognized pedagogical potential, the actual results of implementing them in practice have been inconsistent. Existing frameworks for learning game design often prove too complex to be applied, overly narrow in their focus, or reinforce a faulty binary opposition between learning and play. This article introduces a new framework for learning games, a theoretically grounded yet accessible model for researchers and designers. It places games in a two-dimensional space made up of two axes: practice-discourse and authorial-player control. To evaluate the utility of the framework, a validation study was performed with fourteen practitioners from the fields of game design and education. Thematic analysis of the results revealed widespread recognition of the framework's clarity, simplicity, and adaptability. Participants highlighted the value of the framework as a reflective and communicative tool for designers and stakeholders. The study shows that the framework has potential as a practical and domain-agnostic tool to support the conceptualization, communication, and refinements of learning games.

Keywords: Game-based learning, Frameworks, Learning game design

1. Introduction

Play is widely recognized as one of the fundamental ways through which humans learn. Playful activity supports the development of physical abilities, cognitive skills, and social understanding throughout childhood (Ginsburg et al., 2007; Lillard et al., 2013) and continues to play an important role in adulthood (Whitton, 2010). Given that play-based learning is so pervasive in society, it should come as no surprise that game-based learning is an attractive avenue for educators to explore (Plass et al., 2020).

Educational games are lauded for their potential to motivate students (Prensky & Thiagarajan, 2007; Plass et al., 2020), engage them with complex problems, and deepen their understanding. Learning games can provide students with opportunities to engage with subjects in an environment where the cost of failure is minimized (Bowman, 2018) and with opportunities to adopt identities that they would otherwise not have a chance to experiment with (Gee, 2007).

However, educational games often struggle to live up to their pedagogical promise, with inconsistent effects on learning which appear to be highly dependent on the context of their use (Jürgen, 2026), or to achieve large-scale adoption by the educational community (Jesmin et al., 2025; Silva & Silveira, 2020). This is because the fulfilment of this pedagogical potential is, in fact, contingent on the games being properly designed (Winn, 2009; Zapusek & Rugelj, 2014).

In response, an educational game designer may search for frameworks to guide the process. Some of the frameworks available, while rigorous in their design and well-grounded in research, are too complex. Others focus disproportionately on computer-mediated games, which excludes the important analogue educational games that have been developed since before the digital era. Finally, existing frameworks often adopt a binary opposition between learning and play, conceptualizing them as being in tension with each other, rather than engaged in a dialogue (Arnab et al., 2015; Djauti et al, 2008; Kickmeier-Rust, 2009). This can lead users of the frameworks to the false assumption that they must choose between educational priorities and gameplay: an assumption that has contributed to the common perception that educational games are just not fun (Fiadotau, Sillaots, & Ibrus, 2019; Flanagan, 2009). This all creates a disconnect between the research and practice of educational game design.

The Message, Agency, Practice and Discourse (MAPeD) framework, which this article introduces, seeks to respond to these challenges. It aligns learning and play by integrating learning and game design theory in its construction. This enables the user to contrast games based on the learning and game design principles that they are leveraging. This produces a conceptual tool that can be used in several stages of the design process and helps to ensure that neither educational desires nor gameplay decisions are overvalued in the production of the game.

This article outlines the key elements of the MAPeD Framework and reports the results of a validation study conducted with educational game designers, educators, and commercial game designers. The study evaluates

the clarity, utility, and applicability of the framework. By engaging directly with practitioners, the research seeks to demonstrate the framework's potential for educational game designers.

2. Background

A short review of pre-existing frameworks can be used to highlight the gap a new framework can serve. Having reviewed a sample of 25 different frameworks, four major types of framework can be identified in the literature. These are: 1) process frameworks, used to provide a workflow or step by step instructions in the design of educational games; 2) analytical frameworks, used to analyse a particular game; 3) component-based frameworks, providing a list of components that may go into a game; and 4) heuristic frameworks, offering general recommendations and considerations.

Despite their differences, most existing frameworks suffer from two overarching limitations. The first of these is a tendency to reinforce the notion that the designer must choose between education and play. While the vast majority of the frameworks ostensibly emphasize the need to align the game's learning purpose and engagement purpose for it to be effective, most of them then go on to present the concepts as antagonistic to each other. Kickmeier-Rust (2009) contrasts the purpose of the game between two poles: that of training and fun. Djauti et al. (2008) treat games and learning as separate from each other. Zarraonandia (2015) contrasts the ludic goals and the educational goals of educational games, a position that is also present in Plass et al. (2020). The AGSM framework keeps learning and play as separate elements (Djafarova et al., 2023), and the LM-GM model divides mechanics between learning and game mechanics (Arnab et al., 2015). This binary opposition between the learning and the playful aspects undermines the frameworks' stated goal of helping create educational games that are both engaging and meaningful as educational tools.

The second limitation found in most existing frameworks is their level of complexity, which places too high a cognitive load upon the designer and thus limits the frameworks' practical utility. The more objects a designer has to hold in their mind at once, the harder it is for them to focus on the design. If the framework is so large that it becomes unwieldy, it is less likely to be used or, if it is used, is more likely to be used poorly. The LM-GM framework has 73 elements divided between learning mechanics and game mechanics (Arnab et al., 2015). The Integrated Design Framework for Playful Learning has 31 elements across three levels with nine categories (Plass et al., 2015). The complexity of these frameworks significantly undermines designers' ability to meaningfully apply them in practice.

Any proposed framework should address the gaps in the field by focusing on being easy to apply, communicate, and produce educational games which align with the goals of the designer.

3. Methodology

3.1 Framework Development

The framework represents work done over the course of six years teaching students how to design educational games. The method of developing the framework draws on Jabareen's (2009) seven phases for conceptual framework construction. The process started by mapping existing frameworks in the literature (phase 1), which were then reviewed and categorized (phase 2), based on which core concepts were identified (phase 3). The next three phases (deconstruction and elaboration, concept integration, iterative synthesis and refinement) were conducted by the author over the course of four years teaching in the Digital Learning Games (DLG) master's program at Tallinn University. The focus of this article is on phase seven: the validation of the conceptual framework, focusing on the framework's usability, relevance, and applicability.

3.2 Expert Validation

This study draws inspiration from the process Djafarova et al. (2023) adopted to validate their ASGD framework. This study diverges from the previous one in two key ways. First, a briefing on the framework was provided instead of the workshop, as this is the more likely method for the framework to be transmitted through the community. Second, it takes a more qualitative approach by using semi-structured interviews, allowing for the capturing of greater depth and nuance in the data.

To investigate the perceived relevance, utility, and applicability of the MAPeD framework, fourteen participants were recruited based on their experience in the fields of educational game design, serious game design, and/or commercial game design. This was done to capture a wide range of practitioner perspectives, reducing potential domain-specific biases in the fields of both learning and entertainment game design. A full anonymized breakdown of the participants is provided in Table 1.

Table 1: Experts who participated in the validation process

Identifier	Education level	Background
P1	MSc Educational Technology	Doctoral researcher, working on games to support language acquisition
P2	MA Game Design	Commercial game developer since 2020; doctoral researcher in learning games
P3	PhD	Game designer and lecturer in game design
P4	MSc Game Design	10 years game studio experience; specializes in narrative design
P5	MSc Game Design	Worked on EU-funded game projects; teaches game art design at a university
P6	MSc Game Design	Game studio experience as programmer and producer; has taught game programming
P7	PhD Information Technology	Lecturer and researcher on game psychology; worked on EU-funded game projects
P8	BA	Serious game designer of 20+ years, author of handbook on wargaming
P9	MSc	Chair of serious games competition, university lecturer; 10+ years using serious games in business
P10	MA Security Studies	25+ years' experience in wargame design and facilitation, researcher and lecturer on wargaming and serious games
P11	MFA	30+ years as game designer; professor, author of multiple books on game design
P12	PhD Political Science	Running military training exercises using roleplaying since 1990s; instructor at military academy; researcher on games
P13	MSc Computer Science; MBA	Corporate trainer and facilitator, 20+ years' experience of using games
P14	MSc Game Design	Head of indie studio, 10+ years experience in the industry

A semi-structured interview protocol was developed to guide the conversations. The protocol was made up of eleven questions split between five sections. Section 1 gathered demographic and experience data. Sections 2–4 of the protocol covered the design requirements that were identified above, while section 5 was introduced to invite open-ended feedback and expose the author to a broad range of considerations that the other sections may not have captured. The questions were open-ended, and in the case of short answers, follow-up questions were used to explore deeper. The initial protocol was piloted with an educational game designer and lecturer on the subject at Tallinn University, and the questions were refined based on this.

The interviews were conducted either face-to-face or via videoconferencing and audio recorded in both cases. Data analysis followed a thematic analysis approach, using the six phases outlined by Braun and Clarke (2006). Familiarization with the data was achieved by repeated listening to and hand transcription of the interviews. Initial coding was done by using a digital collaborative workspace to facilitate visual clustering of responses. A card-sorting method was used to group and extract preliminary themes. The results were then reviewed and refined in collaboration with a research colleague who had not taken part in either the generation of the interviews or the initial coding. This was done to minimize the author's subjective bias in the analysis.

3.3 Ethical Considerations

The research was conducted based upon the ethical guidelines for research of Tallinn University. No participants of the study were members of a protected class or under the age of consent. The participants were made aware of their rights, including their ability to withdraw from the study. All participants gave verbal consent to participating, being recorded, and quotes from their interview being used. The resulting recordings were manually transcribed. All the data was stored on a secure external hard drive, in compliance with GDPR and institutional data protection policies.

4. Framework Overview

The Message, Agency, Practice, and Discourse (MAPeD) framework is structured as a two-dimensional matrix with the key words providing labels at the poles (Figure 1).

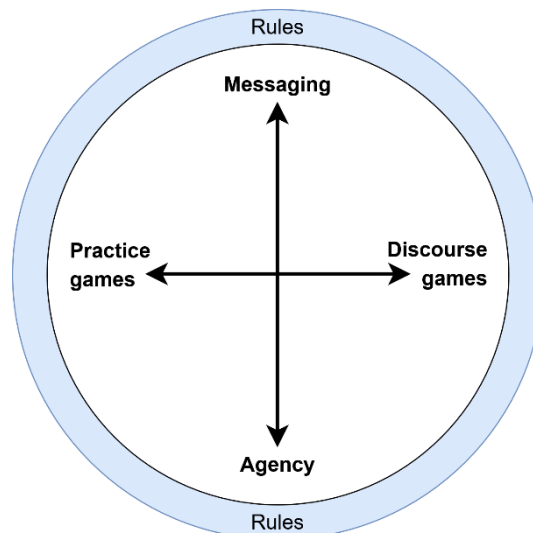


Figure 1: MAPeD framework

The horizontal X axis spans a continuum between practice games and discourse games. The continuum integrates several key overlapping concepts from educational theory and game design. On the game design side, these include the level and types of challenge (Adams & Rollings, 2010; Denisova et al., 2020), balance between realism and abstraction in games (Alexander et al., 2005; Kickmeier-Rust, 2009), and the different types of uncertainty in games as discussed by Costikyan (2015). From the field of education, the axis draws on the concept of knowledge transfer, specifically low-road and high-road transfer (Perkins & Salomon, 1992). Low-road transfer relies on repeated practice and occurs when the learning situation is similar to the real-life context in which the skill is applied. In contrast, high-road transfer requires the learner to consciously reflect on the connection between the learning situation and the actual context of skill application, as the two are in some way dissimilar (Perkins and Salomon 1992). The connection between the concepts mentioned above is best illustrated by describing the two poles of the axis.

Practice games emphasize the training of distinct skills in environments that resemble real-world contexts. They are typically characterized by performative challenge (Denisova et al., 2020) and a focus on fidelity in both physical and functional aspects of the game (Alexander et al., 2005). They are commonly associated with performative uncertainty and uncertainty of perception, as outlined by Costikyan (2015). The quintessential exemplar of a practice game would be a flight simulator: a game that is expected to be highly realistic and useful for developing a practical skill through repeated practice until the skill becomes automatic.

Discourse games, in contrast, focus on reflective and cognitive challenges (Denisova et al., 2020). Rather than requiring fast (and often near-automatic) responses, they encourage critical thinking and engagement with the game system. They are more likely to be abstracted from real-world contexts than practice games, thus reflecting the processes associated with high-road transfer (Perkins & Salomon, 1992), and offer more pauses to reflect. The player of discourse educational games is in effect engaged in a dialogue, either with the game system or with other players, trying to build and establish a deeper understanding of complex problem spaces. Seminar wargames (Caffrey, 2019) or other forms of roleplay, which pose conceptual, open-ended problems and rely on collaborative problem-solving, are exemplars of this form of educational game.

The Y axis contrasts **messaging**, associated with the designer's intent, with **agency** that the player exerts on the game. This mirrors the discussion by Alvarez et al. (2007) of the complex dynamics between the game designer's goal and the player's decisions in serious games. The continuum represented in the Y axis integrates multiple concepts from game design, such as the concepts of player agency (Emirbayer & Mische, 1998; Nguyen, 2019), the distinction between narrative vs. ludic poles (Aarseth, 2012), and the tension between narrative anticipation and player unpredictability (Costikyan, 2015). It also draws on the distinction between teacher-centric vs. learner-centric instruction in educational design. On the higher end of the Y scale are interactive narrative games such as *Bury Me My Love*, which focus on delivering a pre-scripted story in which the player is given relatively limited agency, and the gameplay largely serves to advance the narrative. An example from the lower end of the scale is *Minecraft* and other sandbox-style games, where the player is afforded greater agency, enabling them to engage with the game on their own terms and resulting in very different experiences for different players.

By positioning an educational game within the conceptual space afforded by the two axes, the user of the framework can reflect on several key considerations. It can help them conceptualize what type of learning the game promotes, what type of in-game challenges the learning is associated with, and how knowledge transfer occurs. It also helps the user define how the game balances player agency and clear messaging. The fact that both axes integrate game design concepts with those from education avoids the disconnect between gameplay and learning. The framework is thus designed to be useful both for educators who want to select games for their classrooms and for educational game designers who need a starting point to conceptualize their game. The following section discusses how the framework's utility and applicability was viewed by practitioners.

5. Validation Results

5.1 Overall Reception

The initial reception of the MAPeD framework among the 14 participants was positive, with responses ranging from cautiously positive to eager to apply. The more cautious respondents highlighted that the framework has utility as part of a larger design toolkit: "You can't build a whole house with this, but it can be one of the tools" (P11). They also acknowledged it as "a fairly nice point to start thinking about how you want to design your educational game" (P4).

The more enthusiastic responses expressed interest in immediately adopting the framework, suggesting that it filled a significant need. One participant asked: "When is it being published and how soon can I start using this?" (P8). Another was very forthright in stating that "as a designer, I need it" (P1). Another participant, in discussing the framework's use for guidance or inspiration, noted: "I wish I had thought of this, this is great" (P11).

An important observation to emerge from the interviews was that attempting to push too far in any of the cardinal directions in the design space could force the design out of the realm of educational games. For example, over-emphasizing authorial control could reduce player agency to the point that the end product may no longer be considered a game; whereas attempting to provide limitless player agency would result in free-form play, rather than a structured game, making the delivery of learning objectives problematic.

There was some discussion among the participants about the internal logic and consistency of the framework's axes. Specifically, questions were raised about the inverse relationship between message-broadcasting and agency, as portrayed on the Y axis. Notably, those who raised such concerns did not reject the framework, but were interested in the scholarly debate and discussion that might emerge from the framework.

5.2 Strengths of the Framework

Three recurrent themes emerged when discussing the strengths of the framework: clarity, simplicity, and range/flexibility.

Clarity was the most widely cited strength of the framework, with eleven of the fourteen participants pointing it out. The visual representation of the two-axis space allowed the participants to quickly grasp the interrelationship between the concepts, aiding in understanding the framework as a whole. One participant stated that the framework "makes sense as soon as you look at it" (P8).

Responses indicate that framework is not just understandable at a conceptual level, but encourages reflective practice. For example, one participant commented: "The more I think on it, the more I start putting actual game design I have done or game design I have studied on different aspects of this" (P4).

While the participants were confident in their ability to understand and apply the framework, they were less confident in the ability of others from different backgrounds (e.g., teachers with limited familiarity with games) to do the same. Seven of the participants emphasized the need for it to be clearly explained and worked through to have the most utility, especially as the framework contains no definitive criteria for where to position a game on each axis.

Simplicity emerged as another key strength of the framework, as referenced by eight of the respondents. Two respondents independently described the framework as "elegant and simple" (P11, P12), with one further calling it "expansive in its simplicity" (P12), which suggests that the framework manages to cover a wide range of conceptual aspects without compromising on ease of use. This simplicity removes some of the cognitive load of applying the framework, allowing the designer to "think about all the factors we have to balance" (P6). The functionality afforded by the framework's simplicity was also seen as likely to increase the adoption among practitioners.

Range and flexibility were seen as other significant strengths, cited by eight participants. The framework was seen as lightweight enough to be adapted to multiple contexts and compatible with a wide range of pre-existing design practices. Most importantly, as one respondent noted, the framework is “domain-agnostic, not limited to a particular type of learning or a particular type of game” (P3). This quality is highly desirable, as educational games exist across multiple media, including digital, digitally-mediated or hybrid games, and purely analogue games. The framework is also agnostic to the type of learning which is taking place.

5.3 Utility and use Cases

The three themes above formed the basis for discussion on the purposes that the framework could address and the specific use cases it could be applied to.

Seven of the participants recognized the utility of the framework as a communicative tool to foster discussion among members of a design team: in the words of P12, “a good way to bring people in[to the conversation].” Participants pointed out that the framework offers a vocabulary and conceptual space to address design problems and to ensure the alignment of goals within the team.

The communicative value of this framework was seen as extending beyond the design team, becoming an effective tool for communicating with external stakeholders like clients, educators, and sponsoring bodies. The simplicity and clarity of the tool allows for non-experts to engage with the discussion around and definition of the purpose and structure of an intended educational game. As one participant noted, it is “easier to get input from other people when you show this framework to them” (P1), while another highlighted that “I can have that type of conversation with someone because I can refer back to the diagram” (P8).

The framework’s usefulness for focusing down ideas was highlighted as a strength by five participants. The framework helped participants to clarify and “get down in writing” the learning pathway that they wanted the game to support. This allowed the participants to identify when game mechanics may diverge from the intended learning pathway. An example of this was the discussion of how time-based pressures can interfere with the quality of discussion in discursive games. One respondent observed that the framework helped to “focus down specific objectives for a game,” going on to remark that “trying to get everything out of every game is a fool’s errand” (P12).

Participants identified several concrete contexts where the MAPeD Framework could be used effectively.

Initial conceptualization of a game: a tool to start developing an educational game idea and to establish the focus and goals of the game clearly. One respondent suggested that “all those starting a [learning] game project should” use the framework (P7).

Ongoing reflection and refinement: a tool for sense-checking and seeing how the design has shifted through the process. One respondent suggested that projects do regular check-ins using the framework as a tool to see how the project has evolved: “You can treat it as a sliding scale, ... position your game, and then if it doesn’t fit with what you want the game to actually do, you can change the design and turn some knobs to see how it can be moved” (P2). Another highlighted how this could help to maintain a focus on specific learning objectives by providing “a way of orienting designers on where they could go and where they shouldn’t go” (P12).

Client–stakeholder communication: the framework could facilitate discussion with clients and other stakeholders, helping the design team explain and negotiate the game’s mission and design vision. This would help “a game sponsor to think twice about the purpose and objectives of a game” (P12).

Support for educators: a tool to help teachers look beyond the marketing and evaluate what is actually happening inside the game when deciding which games to use in their classroom. This can be useful across educational settings “[whether] you are in a kindergarten or high school” (P1).

5.4 Limitations and Areas for Improvement

While participants agreed the framework was useful and relevant, the discussion also highlighted some of its limitations.

Large-scale multi-quadrant games and the resultant design uncertainty: several participants brought up that large-scale games like *World of Warcraft*, *EVE Online*, and *Dungeons and Dragons* seem to transcend the boundaries of the model. The common element between these large-scale examples is that they can be broken down into several smaller games involving different levels or activities. These smaller games may be easy to map to the framework individually, but belong in different positions on one or both of the axes. An approach to

navigate this is to view these games not as singular units but as comprised of multiple relatively discrete entities united by narrative framing, aesthetic presentation, etc.

Limited applicability for serious games outside of learning: while it can be argued that all games embody a form of learning (Gee, 2007; Prensky & Thiagarajan, 2007), some serious games are not primarily focused on education. The framework does not speak, for example, to the design or use of games as therapeutic interventions, such as *SnowWorld* (Keefe et al., 2012), or the use of *Tetris* for the reduction of PTSD (Iyadurai et al., 2018). In addition, art games, which emphasize artistic ambiguity and openness to a variety of possible player interpretations over specific learning outcomes (Parker, 2013), may not fit easily within the framework. Finally, games that are used as methods of gathering information from the playing audience such as *FoldIt*, *Eyewire* and *EteRNA* (Curtis, 2015), do not have this fundamental element of their design accounted for.

6. Conclusion

Educational game design is an inherently complex process, further complicated by the lack of clear guidance on how to approach the topic. While multiple frameworks have been proposed, they often have distinct critical limitations. Some frameworks become so large and complex that practitioners may struggle to apply them, while others are so broad as to be difficult to put into action, and still others only describe how to create one specific type of game.

The MAPeD framework was developed to address these limitations by offering a model that is both theoretically grounded and straightforward enough for practitioners to apply. In contrast with many of the existing frameworks, which place play and learning as oppositional elements, the MAPeD framework integrates them into complementary axes, thus ensuring that the integrity of both is preserved in the conceptualization of the games. This helps the designer to not lose sight of the game for the learning objectives or vice versa. The framework provides clear guidance to designers, supporting them as they clarify the learning objectives of the game and focus on the mechanics that will facilitate these objectives.

Findings from validating the MAPeD framework with experts indicate that practitioners recognize the practical value of the framework. Participants consistently highlighted clarity, simplicity, and adaptability as the framework's major strengths. These qualities support the use of the framework as a tool for reflection, communication, and collaborative development of educational games. The framework was viewed as being flexible enough to be integrated into a variety of existing design processes, while still providing a distinct lens to support the designer across these contexts.

Nevertheless, the framework is not without limitations. While participants found it easy to apply, many emphasized the need for it to be clearly explained with examples and discussion. Some also pointed out the absence of definitive criteria to assess the positioning of games within the framework, leaving its application largely based on the user's subjective assessment.

The model also struggles to accommodate large-scale or multiple playstyle games whose constituent parts map onto different quadrants in the framework. The working assumption is that the framework can still be used to break down specific levels or units of play, if not the large-scale games in their totality.

Finally, it is debatable how much utility the framework would offer to serious games whose primary purpose is not education, such as therapeutic interventions or data-gathering games.

As with any representation or model of a complex phenomenon, the MAPeD framework cannot claim to be complete or definitive. Its long-term validity rests upon its adoption, application, and refinement within the field of educational game design. To this end, the framework needs to be subjected to intense academic scrutiny and debate, and tested in diverse educational and design contexts. Future iterations will be needed to account for edge cases, to define clearer criteria for placing games within the conceptual space, and to create worked examples. This will increase the practicality of the framework and deepen its usability. Ultimately, the MAPeD framework should be seen as a tool to aid in the development of more focused and cohesive educational games.

AI Statement: AI was not used for any data gathering or analytical purpose in this work. AI tools such as Grammarly and ChatGPT were used for grammar and spell checking and phrasing suggestions only.

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