

Gaming the Systems: A Component Analysis Framework for the Classroom Use of RPGs

Abstract: In recent years, as *Dungeons & Dragons* has entered the mainstream American cultural zeitgeist, the use of role-playing games has exploded in settings such as therapy and education. There is anecdotal and emerging academic evidence that RPGs can promote personal growth of participants in both academic and therapeutic settings. However, it has been challenging to capture the impact of RPGs on learning in classrooms. We submit that this is because both the term “RPG” and the term “learning” are too broad. There are myriad RPGs available, with different skill sets required to play. Similarly, there are many different types of learning an educator may be looking to develop in their students. Building on the 1983 work of Gary Alan Fine, the 2008 work of Klabbers, and the 2011 work of Mariais, Michau and Pernin, we propose two things. The first is a schema describing the structures of an RPG within the educational context. The second is a matrix designed to identify the kinds of learning that an educator wants to promote in students through use of Learning Role-playing Games (LRPGs) (Mariais, Michau, and Pernin 2012), then match that learning to specific elements within an RPG that will support those objectives. Educational objectives include specific content learning; social emotional skills such as turn taking or teamwork; executive functioning skills; math fluency; and reading skills. Future work will include application of this conceptual framework to actual classroom settings and potential use in therapeutic settings.

Keywords: learning role-playing games, education, learning objectives, conceptual framework, growth

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1. INTRODUCTION

As the world begins to emerge from the earliest stages of the COVID-19 pandemic and examine its impact on all aspects of society, it has become clear that there is a disconnect between traditional pedagogy and curriculum and the needs of the 21st-Century student. As educators have faced the demand to pivot their instruction we can look to what students choose as leisure activities as potential new methods of teaching. One thing that has been made abundantly clear is that students of all ages and ability levels choose to spend their free time and resources on many different types of games. Without teacher or parent input, students are intrinsically motivated to pursue success in these games, whether they are team sports, video games, board games, etc. Examining the ways in which games introduce, reinforce, and measure player progress toward specific goals can allow teachers to recreate those systems and structures in their classrooms. Co-opting these elements of gaming to an educational setting can reach learners who are not served by traditional methods of instruction and assessment.

Given that the push for increased focus on social-emotional learning (SEL) has gained momentum, especially after COVID-19 forced schools to go to remote learning, a learning tool that taps into existing structures of motivation within student and promotes social-emotional skill development has the potential for great success in the classroom. To that end, we propose that role-playing games, with their combined emphasis on taking a perspective different from one’s own (Bowman 2010, 8), group collaboration, and flexibility of setting and gameplay would be an efficient and meaningful classroom experience across a variety of educational settings. However, in order for teachers to make effective use of games as pedagogical tools, a shared vocabulary must be developed. This vocabulary must not only describe role playing games in terms of their concept, aim, tone, and structure, but also align those descriptors to specific skills that games demand of student players.

We are beginning that conversation with a conceptual matrix through which educators can guide

their selection of RPGs to meet the needs of their students within the context of their classroom. It is our goal to merge the work done in game analysis with the continual work of curriculum development through this matrix. Educators will be able to use this tool to define their specific goals for their students and identify elements of games that would give students the tools needed to meet those goals, or conversely, use this matrix to build their own Learning Role-Playing Games, or L RPGs, as coined by Mariais, Michau, and Pernin (2012, 25). But first, we must further define what we mean by both learning and RPGs.

2. WHAT IS LEARNING?

Explicit semantic learning is what many people think of when discussing learning, e.g., has a child memorized important facts and vocabulary from the curriculum? However, there are many other kinds of learning that educators weave into their lessons. For example, classrooms must support social-emotional learning, executive functioning skills, problem solving, application of multi-step processes, and conceptual analysis of content, not just rote knowledge.

There are many variables in a classroom setting that make it challenging to quantitatively investigate the efficacy of games in the classroom (de Fritas 2017). A lack of empirical research on L RPGs and a lack of materials to support teachers exacerbate this issue (Garcia 2016). A first step is to address the fact that current anecdotal descriptions of RPGs for learning have not drilled down specifically enough into what the educator is teaching via L RPGS and the specific areas of learning being supported through the use of the L RPG format.

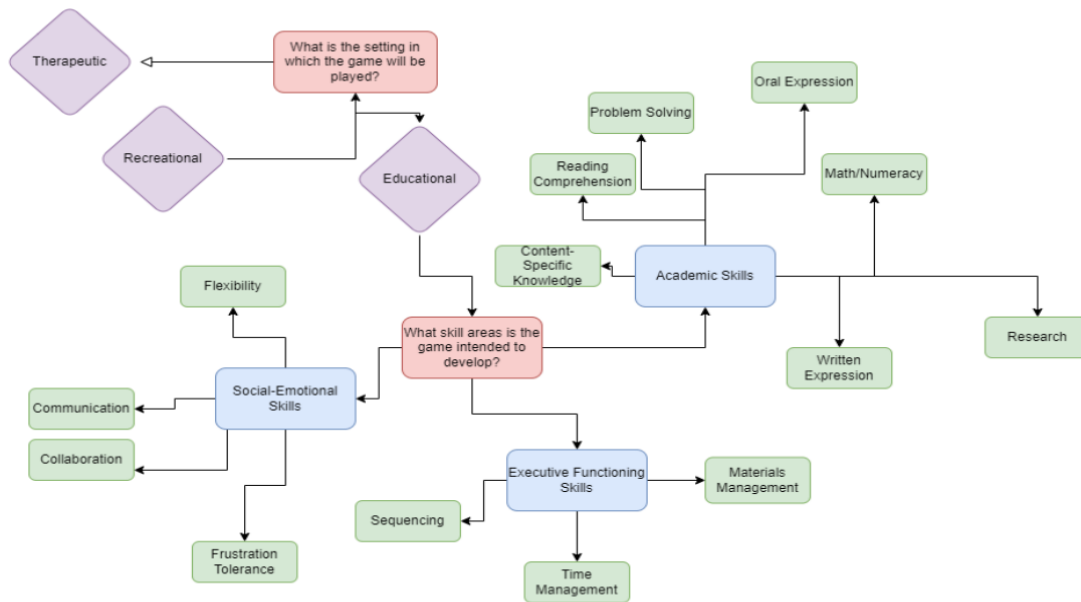
The educator must identify what it is that they are hoping to support through the use of L RPGs. These goals can then be used to match an existing potential L RPG to the desired outcomes or to take various components that support specific skills and create one's own L RPG to fit their specific classroom needs. To help teachers determine exactly what skill areas a teacher may want to address, we developed the following flowchart (see Figure 1).

2.1 RPGS: Collaborative Storytelling Games

We have drawn on the work of Klabbers (2018), Montola (2008), and Mariais, Michau, and Pernin (2012) to define RPGs. Klabbers (2018) suggests that games feature three things: actors, rules, and resources. Actors are the participants; the rules are the limitations and boundaries for gameplay; and resources are the ways in which participants may work within the rules to get to their goals. Role-playing games, as a subset of games, include all of Klabbers' key game features, but additionally RPGS have an imaginary game world, a power structure within that world, and characters that are personified by players (Montola 2008). Additionally, role-playing is a primarily qualitative shared experience rather than a quantitative one, such as can be found in competitive games (Montola 2008). There is a wide variation in the RPG genre. Some are turn-based and involve rolling dice, while others are done by journaling, pulling cards, or pulling blocks from wooden block towers.

2.2 Learning in Role-Playing Frames

Often the argument is made that the motivation provided by games is their most important feature with regard to their potential for learning, but we believe that it is at least as important that games are able to facilitate the kind of learning engagement—on a cognitive, affective, and sociocultural level—that promotes learning in ways other media cannot (Plass, Homer, and Kinzer 2015, 277).

Figure 1: Gaming the System Flowchart

In agreement with Plass, Homer, and Kinzer (2015), thoughtful selection and use of RPGs in the classroom can make use of the unique experience of games, specifically LRPGs, to improve student achievement and growth in a wide variety of skill areas.

Klabbers (2018) describes a fourth aspect of RPG game play as the magic circle: the diegetic world within which gameplay takes place (Ed. note: see also Huizinga 1958; Salen and Zimmerman 2003). Mariais, Michau, and Pernin (2012) use similar descriptors—actors, resources, and rules, respectively—but do not detail the “more than the sum of its parts” aspect of RPG play that Klabbers gets at through the magic circle lens. Although the work of Mariais, Michau, and Pernin has been key to our understanding of LRPGs, we see this as a limitation of their work, and a key learning benefit of LRPGs.

Additionally, the foundational work of Gary Alan Fine (1981; 1983), proposed that RPG participants simultaneously inhabit three cognitive frames of reference when playing an RPG. The first frame is analogous to the “actors,” used by Klabbers (2008) and Mariais, Michau, and Pernin (2012): participants as themselves, a person in the real world. The second frame is the frame of the participant as a strategic player of the game—interpreting the rules and using the resources (Klabbers 2008) or functions (Mariais, Michau, and Pernin 2012) to work towards a win condition. The last frame, the diegetic frame, is the frame where the role-play happens, and the participant acts as if they are the character within the game. This can be compared to Klabbers’ magic circle.

2.3 Material + Structural + Context = Function

We framed the descriptor of the participants, setting, time restrictions, frequency of play, and other practical realities of the classroom setting under the term *context*. Although in many educational settings the overall context of the setting cannot be significantly changed, contextual elements must be taken into account by both teachers and players for the game to function, e.g., size of groups, playtime of the game, player experience, background knowledge, and other logistical considerations.

Table 1: Authors' terminology compared with Fine (1981, 1983), Klabbers (2008), and Mariais, Michau, and Pernin (2012).

Our Terminology	Fine	Klabbers	Mariais, Michau, and Pernin
Context	Frame 1: Player as person in real life	Actors	Actors
Materials	Frame 2: Player as player	Resources	Functions
Structural	Frame 2: Player as player	Rules	Rules
Functional	Frame 3: Diegetic	Magic Circle	<i>Not Noted</i>

The *materials* of the LRPG are the resources, game pieces, curriculum, required academic content standards, character sheets, and other tangible and intangible items that the game is made out of. We may think of materials as tangible objects. However, in an educational context, the materials are not just dice and in-game items, but the required concepts and standards embedded in the learning. For example, a United States kindergarten level mathematics Common Core standard is for students to be able to count to 100 by 1s and 10s (Council 2010, 11). This standard could be one of the important “material” elements of the game. Much as a player needs to be able to understand and utilize a character sheet or a die, understanding and utilizing required learning standards is crucial to play and success in an educational RPG.

The *structural* elements of the game are the rules and norms that are either explicitly established within the game itself, or as a part of the overall classroom/group culture that are expected to carry over into the game experience. These structures form the foundation that players will need to be successful within the game.

The structural and material elements of the game must be selected within the exigent classroom context to get the best possible result for all players. If educators are thoughtful in designing LRPG experiences with relevant material and structural components, they are more likely to get the desired functional outcome—both engagement with, and practice of, the fundamental learnings they desire to teach their students. The *functional* experience of the game is composed of the structure, context, and material of the game. This function is also the learning ecology (Brown 2000)—a complex system that contains adaptive, dynamic elements to create a whole that is bigger than the sum of its parts. Choosing a game that specifically supports or challenges students in a purposeful way is a key part of creating the desired functional outcomes.

2.4 The Conceptual Matrix

Considering all of the factors that impact the successful implementation of LRPGs in educational settings, combined with the lack of a cohesive vocabulary to discuss these factors, it becomes evident that educators need a more specific set of criteria by which to analyze RPGs for pedagogical usage in the classroom. Educators must study the relationship between challenge and reward for both enjoyment and potential benefit in pedagogical settings (Bowman 2010). So, how can we describe the interaction

between the structural, contextual and material aspects of games in relation to their functional outcomes in an educational setting? Specifically, how can we analyze and describe games in terms of their effectiveness at teaching, reinforcing, or assessing specific skills?

If a teacher's goal is to improve turn-taking skills in their class, they may choose *Dungeons & Dragons* (Gygax and Arneson 1974), as the simulated combat demands players take turns effectively. If a teacher's goal is to improve collaboration between students, they may choose a game like *To Serve Her Wintry Hunger* (Dewey 2018), as it demands players to use their character's individual skill set to accomplish a shared goal that no single player can accomplish alone. Alternatively, an educator may build their own RPG for classroom use, taking into consideration the skills needing to be taught or reinforced.

To aid in this process, we have developed a draft skills matrix around the conceptual frameworks of materials, structure, and context, with the goal of helping educators achieve the desired function of this pedagogy (see Table 2). This matrix is based on the understanding that to teach and practice a desired academic, social-emotional, or executive functioning skill, it should be a purposeful featured component of the classroom experience. The matrix is not intended to speak to any pre-game or post-game class discussion, processing, or debriefing. Educators are strongly encouraged to consult David Crookall's (2014) "Engaging (in) Gameplay and (in) Debriefing" for further learning about the debriefing process.

3. LIMITATIONS AND FURTHER WORK

While we believe that the discursive structure represented here by both our definitions of the elements of games and the proposed matrix will be useful in providing educators with a foundation upon which they can build a successful practice of integrating LRPGs as pedagogy, we acknowledge that there are several limitations to our current work. We view this work as a first step in a much larger and longer process of integrating LRPGs meaningfully into classrooms.

One significant limitation of this work is that this framework is theoretical and has not yet been tested and evaluated. The worth of this work will be proven as more teachers make the leap of using RPGs as part of their instructional practice and we intend this work to be a tool to help them begin to do so.

Also, we must recognize that every element of the gameplay experience cannot be accounted for before play. Returning to the magic circle concept, we must remember that some of the functional outcome of gameplay (the "magic") only reveals itself as play progresses. We account for some of this in discussion of the "context" as an important consideration, but even so, there will be vitally impactful experiences for players that educators could never predict or plan to occur. Our goal is not to ignore that potential for "magic" to happen, but rather give educators a clearer method for choosing or creating games for classroom use with the very intention of allowing this to occur in a purposeful setting.

We have several avenues for future work on this project. First, we will find educators to use our matrix and either select or design a LRPG experience for their classrooms. We will then elicit feedback regarding where our work needs revision and incorporate that feedback into future work. It is our goal that this matrix and descriptive model serves as a starting point for educators to purposefully and critically examine the value that RPGs could add to their instructional practices alongside similar resources (e.g., Westborg 2023, this issue).

Table 2: The Conceptual Matrix

<p><u>Context:</u> Describe the players (age, grade, RPG experience etc). Describe the setting (time allotted for play, institutional culture, etc). What experiences do students have with role playing games? Games? Collaboration? Describe gameplay resources available. What other factors impact gameplay?</p>			
<u>Desired Outcome</u>	<u>Structural Elements</u>	<u>Material Elements</u>	<u>Contextual Elements</u>
	Examples of rules & norms that structure the play experience, i.e., What does the game tell me to do?	Examples of material or conceptual elements needed for play, i.e., What do I need to have or know in order to play the game?	Constraints & considerations for setting within which the play will take place, i.e., How can I make this game work in my specific circumstances?
<u>Academic Skills</u>			
Content Specific Knowledge	Rules include expectations of use of content material, vocabulary, and concepts for character and/or plot advancement.	Materials support use of content knowledge, such as equations, timelines, sentence starters, key vocabulary.	What background information do students currently have? What knowledge do you intend to teach through this game? What specific vocabulary will students need?
Reading Comprehension	Rules written in a format/reading level appropriate to the reading level of students. Puzzles, advancement connected to demonstration of reading skills as appropriate to class reading level.	Embedded reading content is a significant component of gameplay or advancement. Players are given copies of reading for use in annotation, close reading, note taking.	Is the reading level of the text(s) appropriate to the reading levels of the students? What specific vocabulary will they need? What vocabulary or concepts will you teach? What kinds of texts will be embedded in the game?
Problem Solving	Gameplay focuses on collaboration, sharing resources, or puzzle solving with norms that support equity of voice and collaborative thinking.	Hands-on components support student thinking while solving puzzles.	Is the developmental level of the players a good match for the challenges presented in the puzzles? What experiences with puzzle solving do they have? Will they need direct instruction?
Written Expression	Gameplay focuses on journaling, letter writing, reflection, persuasive writing etc. as part of diegetic experience.	Gameplay includes journals, open-response questions, sentence starters, rubrics, etc.	Which forms of writing do the students already know? What forms do they need to practice through this experience?

Oral Expression	Gameplay focuses on in-character verbal interaction, non-combat solutions, collaborative world building, etc.	Gameplay includes in-game diegetic conversation sentence starters or prompts to support students.	What expectations do students currently have? What will need to be taught/ modeled?
Math/ Numeracy	Gameplay focuses on dice rolling, quick mathematical calculation, numeracy, etc.	Character advancement focuses on adding up XP, combat focuses on beating certain number thresholds, puzzles involve math content, etc.	Which skills do students already have? Which skills should be highlighted and practiced?
Social Emotional Skills			
Communication	Rules include turn taking, focus on collaborative solutions, require specific kinds of communication between players, etc.	Gameplay includes in-game diegetic conversation sentence starters or prompts to support students, safety tools, etc.	What structures are already in place in the classroom that can be built upon?
Flexibility	Rules make space for changing circumstances or require players to alter their style of play as the game progresses.	Game includes situations in which players need to come to a consensus to advance, decisions are made collectively, players make choices that impact other players, players must solve a problem in multiple ways, etc.	What are the norms and expectations for managing disagreement in the classroom? How skilled are students in communicating their needs? How much processing time is needed for students to consider each others' ideas?
Collaboration	Gameplay specifically requires or encourages working together, low combat, collaborative world building, etc.	Game includes shared, limited diegetic resources, use of safety tools, etc.	What is the social power dynamic between the students? What are the norms and expectations for managing disagreement in the classroom? Do students have the appropriate vocabulary to express their needs and offer help or support to others?
Frustration Tolerance	Gameplay involves puzzle solving, "Choose your Own Adventure" style pathways with opportunities to change choices, low/ adaptable stakes for player failure, etc.	Game includes visual representations of progress, e.g., maps, % of damage done to enemies. Also includes safety tools.	How is this process modeled and supported in the classroom? What practices are in place to support students who struggle to process their emotions? How is equitable "airtime" secured for all students in this class?

Executive Functioning Skills			
Organization	Rules expect students to keep track of and be able to reference different sources of information and materials. Rules require students to go through steps in a procedure to advance.	Game includes physical components to keep track of, mindful structuring of character sheets, diegetic resource management, etc.	What are the current organizational systems in the classroom? What systems do you hope to teach or practice?
Time Management	Gameplay has a finite amount of rounds, a limited time to play, etc.	Game includes timers, round trackers, visual cues for initiative order, etc.	How can the teacher support students in keeping track of time within the class period?
Sequencing	Gameplay involves timelines, generational storytelling, first-then-next narrative. Rules require students to go through steps in a procedure to advance.	Game includes graphic organizers, step-by-step directions, materials that can be organized sequentially, etc.	Are there current supports with sequencing in the classroom that can be utilized to support this?

4. CONCLUSION

As the modern workplace continues to evolve away from what the “factory model” of education was originally designed to support, it has become vitally apparent that students require integrated skill sets that include, but are not limited to, “traditional” academic learning. RPGs offer a unique opportunity to support student development in multiple skill areas as well as apply knowledge learned in the classroom to novel situations and changing circumstances. The purpose of this paper is to provide teachers with a roadmap for purposefully integrating RPGs into their instruction. We have provided teachers with a method of organizing and categorizing the skills goals for their classes and a tool for analyzing existing RPGs or creating new games for classroom use. This method will allow teachers to create more dynamic and responsive classroom experiences tailored to the specific needs of their classes, thus producing the integrated skill sets that modern life demands.

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