The Player-Learner Experience: A Comparison of Game Masters and Pedagogical Practices

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ABSTRACT
The game master (GM) in a tabletop roleplaying game serves many roles, from planning and directing a game to teaching other players how to play. In many ways, this role mirrors that of an instructor in the classroom who plans, orates, and directs a lesson. There are several game design tools and techniques which good GMs use to successfully engage their players, and these design principles parallel how good teachers lead a class. This article serves three purposes: first, to highlight the parallel relationships between the GM-Teacher and the Player-Learner; second, to propose this comparison as a lens to understanding the art of designed playful learning experiences; and finally, to offer a practical guide (in the Appendix) to GMs and teachers alike in interaction design, emphasizing the Player-Learner's experience as a critical factor for enjoyable play and effective learning.

Keywords
roleplaying games; game mastering; pedagogical principles; design principles; interaction design

INTRODUCTION
Though the aesthetic experiences differ greatly, the fundamental roles of the game master (GM[1]) and teacher have much in common. Between running a game session or giving a lesson, both roles involve set-up and preparation (often with props); both roles encourage team building, provide rules and arbitration, mediate compromise, assist learning and performance, and bring joy to the experience (Garcia 2016; Kisala 2017).

The roles are most clearly overlapping when it comes to preparing scripts. Much like how a GM will prepare, use, and re-use adventure modules, teachers will design lesson plans — or "scripts" (Jalal et al. 2018) —, adjust them during the lesson, re-use old scripts, and adapt scripts from others (Jalal et al. 2018). Both the GM and the teacher share similar methods for adapting on-the-fly using prepared materials and responding to unexpected events during the session. Yet, the similarity between these two roles is not often discussed.

More often, when talking about RPGs and the classroom, scholars consider how roleplay can be used as a classroom activity (Cook, Dow, and Hammer 2017; Youakim 2019). For example, Cook et al. (2017) discuss the benefits of roleplay, such as emphasizing group success over individual

achievement, and how roleplaying can support interactive learning. This is achieved through shared fiction, vicarious experience, practice, social interaction, freedom/play, personal growth, disruption of the classroom, investment, and vulnerability. The researchers also explain how roleplay can encourage building and maintaining relationships through reading emotions, making eye contact, teamwork, listening, empathy, awareness of others' social signals, and treating others with respect.

Garcia (2016) was one of the first to directly draw this comparison for modern tabletop roleplaying,[2] writing that the GM is a teacher and facilitator, and that teachers can adopt the flexible practices of GMs to enrich their classrooms. Though, in a later publication, he confesses that his original description of GMs "was a role that was much more prescriptive and punitive in its relationship with players than what is described in [contemporary RPGs]," which now treat the GM as more of a referee and an arbiter than a teacher (Garcia 2017).

Another connection identified in the literature is the similarity between different kinds of learners and different kinds of players. For example, Smith and Cole (2019) use Gardner's theory of multiple intelligences to consider how different individuals might prefer different aspects of tabletop roleplaying games. In this way, types of learning may influence types of play. Other researchers have examined the connection in reverse, applying player types to learning environments (Gil, Cantador, and Marczewski 2015; Heeter 2009).

Thus, in comparing these two sets of roles, we have the GM-Teacher and the Player-Learner. Yet these roles are not only tied in pairs, but to each other as well. Frankos describes their interplay as crafting a collaboratively designed experience:

> "*The image of a DM [GM] working together with many different players to participate in an activity comprised of rules, input, and feedback should seem reminiscent of a classroom informed by modern pedagogical theory, wherein an educator works together with many different students to participate in a knowledge-generating environment comprised of classroom rules, student participation, and instructor feedback. It is the DM's job to manage gameplay among many players, just as it is the instructor's job to manage a classroom of many students. In either case, participants work together as equals to generate enjoyable, engaging, and memorable experiences.*" (Frankos 2018, 3)

In this work, I highlight a few overlapping interaction design techniques between successful GMs and successful teachers. These principles are summarized in Table 1. This comparison serves as a lens to understanding the art of designed playful learning experiences, and as a practical guide in the art and science of interaction design (see the Appendix for expanded examples). The strategies suggested here are neither comprehensive nor systematically derived, but demonstrate the claim through theory and example.

The purpose of this article is not to provide a framework that will work for all contexts of education or gaming, but to solidify the symmetry of these roles by grounding this argument in relevant but diverse theory. Within the art of designed, playful learning experiences, these principles are a preliminary lens for considering the parallels: good pedagogy as good gamemastering and good gamemastering as good pedagogy.

Principle	Key Points	Relevant Literature
Plan an Interest Curve	Manage the flow of intensity and rest	**Schell's interest curve** (Schell 2008); **flow** (Csikszentmihalyi 1997); **4C/ID** (Gee 2003; van Merriënboer, Clark, and de Croock 2002; Scardamalia and Bereiter 1991); **cycles of expertise** (Gee 2003; van Merriënboer, Clark, and de Croock 2002; Scardamalia and Bereiter 1991)
Remove Unnecessary Barriers	Remove extraneous challenge and irrelevant information	**Cognitive Load Theory** (e.g., Sweller 1994); **play as reduction** (Burghardt 2006; Korhonen, Montola, and Arrasvuori 2009)
Give Rewards	Reward meaningfully early and often	**Emotions in multimedia learning** (Um et al. 2012); **reward psychology** (Lameras et al. 2017); **motivation** (Birk, Mandryk, and Atkins 2016; Richter, Raban, and Rafaeli 2015; Deci and Ryan 2000)
Show Affordances and Highlight Variation	Emphasize content structure and available means of interaction	**Affordances** (Aslam and Brown 2020; Cardona-Rivera and Young 2013; Gibson 1983; Linderoth 2013; Norman 2013); **Variation Theory** (Laurillard 2013; Marton and Booth 2013; Marton and Pang 2006)
Guide, Encourage, and Collaborate	Be open, honest, curious, and on their side	**Sociocultural Theory** and **Zone of Proximal Development** (Vygotsky 1981); **Social Learning Theory** (Bandura 1977)
Give Feedback	Give clear, direct, and immediate feedback early and often	**Nine events of instruction** (Gagné 1985); **principles of game-based learning** (Gee 2005); 4C/ID (van Merriënboer, Clark, and de Croock 2002)
Personalize	Tailor the experience to their interests	**Goal Contents Theory** (Legault 2017; R. Ryan 2009; Tyack and Mekler 2020); **personalization** (e.g., Busch et al. 2015; Orji, Mandryk, and Vassileva 2017)
Create Autonomy	Provide meaningful choices and agency	**Self-Determination Theory** (Deci and Ryan 2014; Legault 2017; R. Ryan 2009; R. M. Ryan and Deci 2017); **Causality Orientation Theory** (Legault 2017; R. M. Ryan and Deci 2017)
Create Relatedness	Create space for cooperating and building	**Self-Determination Theory** (Deci and Ryan 2014; Legault 2017; R. Ryan 2009; R. M. Ryan

	relationships	and Deci 2017); **collaborative learning** (Laurillard 2013)
Improvise	Read the room; plan to adapt	**Improvisation** (Bailey 1993; Barrett 1998; Berliner 2021; Grant 2005; Johnstone 1992; Ralya 2014)
Invite Interactivity	Do more often than show or tell	**Active learning, learning by doing,** and **the generation effect** (Gee 2007; Laurillard 2013; Silberman 1996; van Merriënboer, Clark, and de Croock 2002)
Manage Behavior	Make and enforce simple, consistent rules together	**Classroom and gaming table management** (Barbetta, Norona, and Bicard 2005; Watkinson 2019); **players as co-producers** (Gee, 2005)
Arbitrate with Equity	Evaluate in favor of their present experience and future potential	**Fair grading** (Frankos 2018; Wormeli 2018)

Table 1: Summary of Principles. These principles are derived from psychological theories of learning and motivation and from design suggestions in prior literature on gaming and education.

BACKGROUND

This work is situated near what Frankos refers to as *gaming pedagogy*, "a branch of critical pedagogy that identifies the effective design principles of games and then applies these principles to course design [...] reproduc[ing] the experience-based, autotelic, intrinsically-motivating properties of games within the classroom, making education more fun and effective" (Frankos 2018). This approach treats teaching as a design science, which Laurillard argues has been recognized as true since the 1990s (Laurillard 2013). Since then, many pedagogical design patterns have been developed toward the research of teaching as interaction design (Bergin 2012).

Similarly, this line of work is related to game-based learning, which takes as a major premise that "under the right conditions, learning [...] is biologically motivating and pleasurable for humans" (Gee 2005). In this way, learning is part of the pleasure of games, which contributes to why GMs and teachers have such similar roles. Some related work has been done toward understanding games in the classroom, linking play to education, such as Gee's famous "good video games + good learning" principles, which includes several concepts described below, such as the value of feedback, player agency, and rewards (Gee 2007; Silberman 1996; van Merriënboer, Clark, and de Croock 2002; Gee 2005; 2003; Scardamalia and Bereiter 1991). In their qualitative literature review, Kangas, Koskinen, and Krokfors (2016) found that the teacher plays a significant role in all phases of using games in the classroom, working "as an agent that bridges the game world and the real world" (a role quite similar to the GM, I argue). Other design work has been done by Scott Nicholson, who argues that the trivia game model of classroom gaming fails to engage more than one student at a time, and that a good educational game intrinsically integrates the content with the game mechanics (Nicholson 2011). In summary, previous work on game-based learning in the classroom focuses on understanding how principles of game design can be applied to

education. This article builds on that work by drawing comparisons between the teacher's role in conducting a class and the GM's role in conducting a roleplaying session.

But before we deeply explore this comparison, we must first understand: what is a GM? Tychsen et al. (2005) define the functions of a GM as they pertain to the four genres in which GMs exist. Although I focus on the traditional GM of tabletop roleplaying games (what they refer to as pen-and-paper RPGs), Tychsen et al. also consider GMs of LARPs, CRPGs, and MMO(RP)Gs, each of which demands a distinct set of functions from the GM. Ultimately, according to Tychsen et al., the GM's responsibilities include:

- **Narrative flow**, such as resolving events, on-the-fly updating the narrative, developing scenarios and content, and providing dynamic narrative feedback
- **Engagement**, such as entertaining the players, managing the flow of communication, providing an engaging level of challenge, mediating interpersonal conflict
- **Environment**, including developing and communicating the fictional setting and its inhabitants
- **Rules**, including creating, implementing, and enforcing rules and educating players on how to follow them (notably: this includes both ludic and social rules)

Already with this definition we can see how the GM's role mirrors that of a teacher. The teacher too manages the flow of conversation, mediates conflicts, provides challenges, sets the environment, implements rules, enforces rules, and most of all, educates.

This work draws on relevant literature in psychological theories of learning and motivation, as well as prescriptive principles for both GMs and teachers. In this way, although I do not cite direct evidence that successful GMs and teachers use these principles, similar philosophies are being suggested in prior works (e.g., Laws 2002; Bergin 2012; Barbetta, Norona, and Bicard 2005).

In the rest of this article, I expand on several specific principles of interaction design which the effective GM and teacher both use for engaging their audience. As stated earlier, these principles are neither comprehensive nor systematically derived; instead, I focus on my own interpretations of the most practically useful principles shared between GMs and teachers. Expanded practical examples of implementing these principles are provided in the Appendix.

PRINCIPLES OF THE GM-TEACHER

Planning the Interest Curve

The GM-Teacher considers the flow of the activities when planning: creating moments of intensity and rest, varying the dynamics of the content, and always giving something new and something familiar.

The successful GM-Teacher's first tool is the interest curve. An interest curve describes the Player-Learner's interest with the activity over time (Schell 2008). In the ideal interest curve, all of these steps will occur in this order:

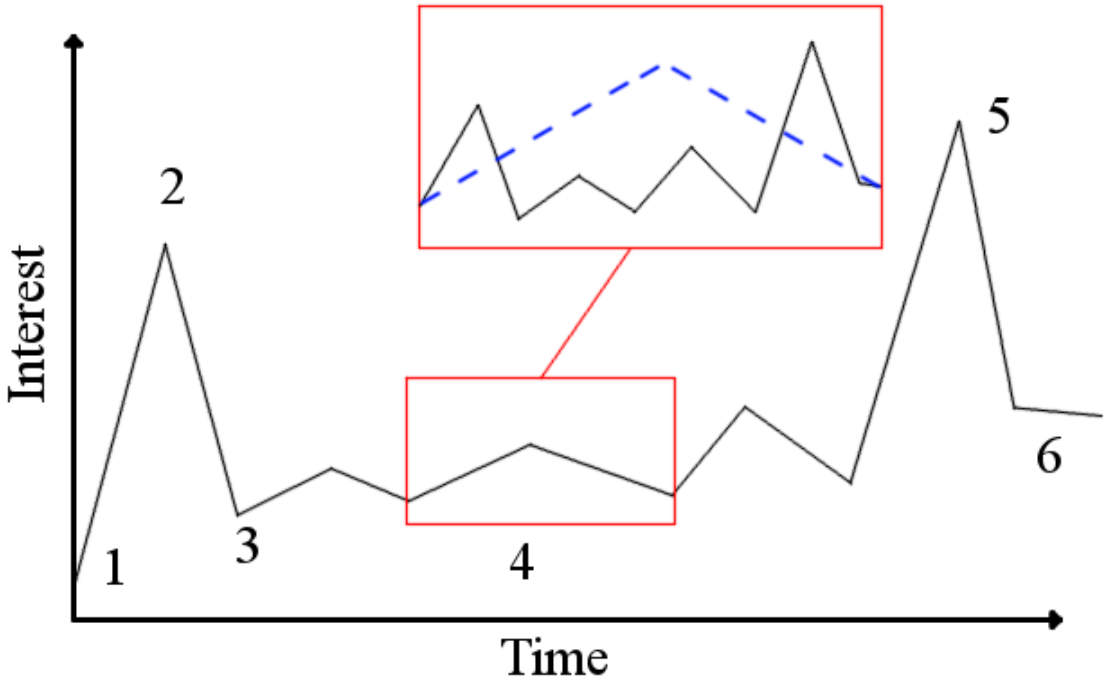

Figure 1: The Ideal Interest Curve. Figure and labels designed by the author, inspired by Schell (2008).

1. The Player-Learner will enter the activity with some initial interest.
2. An exciting hook will pique their interest immensely (e.g., Whalen 2019).
3. The hook will lull, transitioning into the main activity.
4. The main activity consists of a series of peaks and troughs of interest, rising with intensity, falling into rest, such that each peak and trough is higher in interest than the last.
5. An intense finale will fully enthrall the Player-Learner.
6. The Player-Learner will exit the activity with more interest than before.

Importantly, these six steps are recursive: within step 4, you can put all 6 steps in again: the interest curve can exist at any level of abstraction. A given scene in a TV show might demonstrate this interest curve, but you'll also see it if you zoom out to the course of the episode, or the course of the season, or even over the full duration of the show itself.

In addition to varying the intensity, there is another parameter that designers can use to vary the pace, and that is the type of activity itself. In action games, a fight will end with a cutscene, perhaps followed by an interactive dialogue, then some open world exploration, and then another fight. Not only do the intensities vary, but the activities themselves are a change of pace.

The interest curve is supported by Csiksentmihayi's flow theory (Csikszentmihalyi 1997), which states that the experience should balance between anxiety and boredom, fluctuating with variety. The principles of variety from van Merriënboer's Four-Component Instructional Design (4C/ID) model and the cycle of expertise (Gee 2003; van Merriënboer, Clark, and de Croock 2002;

Scardamalia and Bereiter 1991) also speak to this framework of cyclically — and with variety — engaging ever more deeply.

Good pacing is also a common heuristic in playability research (Desurvire and Wiberg 2009; Pinelle, Wong, and Stach 2008), and likely developed as a result of properly managing the user's attentional resources (Bunce, Flens, and Neiles 2010). Notice too that the interest curve is a similar concept to the learning curve, and the design for both is very similar (cf. Linehan et al. 2014).

Removing Unnecessary Barriers

The successful GM-Teacher will add, drop, or change rules to simplify the structure of the content as it meets the needs of the group. There is no tolerance for additional hassle which serves only to frustrate the Player-Learners. This is not to say there is no challenge, but there is no challenge which the GM-Teacher himself does not intend to give.

"I know the rules for grappling are dense and confusing, but check what pages 117-124 of the rulebook have to say about it and then we'll decide if you can take another action."

"I know the textbook is dense and poorly written, but please read Chapter 3, pages 60-124, it's talking about very important information."

Supposing the GM-Teacher has taken the time to plan out an interest curve, why does he permit that curve to be broken by a book he doesn't fully defend? Surely of the numerous pages, only some of this information is truly vital to the work at hand. Yet, the GM-Teacher is the only one who knows "ham from spam" — targets from distractions — and as such he's the only one who can help the Player-Learners cut through rambling texts. Even as I write this, the page you're reading is not the clearest way these principles could be communicated to exactly you who is reading this now — I don't know your prior knowledge and interests and I can't design for which parts will connect with you well. Once you understand the ideas that took me several pages to write and you several pages to read, you'll be able to summarize it for yourself in a few bullet points and be able to teach someone you know with only a brief verbal exchange.

Removing unnecessary barriers is about cutting away what's clunky or hindering — identifying what's actually relevant and important and simplifying the rest. Rules can get in the way of engagement, and this principle is about adjusting content to meet the engagement needs of the Player-Learners (Garcia 2016). This technique supposes (a) that given a limited time to learn, someone can learn many concepts poorly or a few concepts well, (b) that the latter is preferable, and (c) that the GM-Teacher knows which concepts those ought to be. If all of these criteria are met, then it's time to pare down the material.

This principle is derived from research on managing cognitive, attentional, and perceptual loads (e.g., Sweller 1994). According to Cognitive Load Theory, performance is improved by the reduction of extraneous load (Bobis, Sweller, and Cooper 1993). Moreover, removing unnecessary barriers is a fundamental principle of play: play differs from "serious" behavior by the reduction of the activity itself through abstraction, exaggeration, and/or modified sequencing or targeting (Burghardt 2006; Korhonen, Montola, and Arrasvuori 2009). In this way, the

distillation of serious tasks (via both simplification and guided emphasis) to more manageable practice tasks for novice learners is a major principle of the nature of play.

Giving Rewards

The successful GM-Teacher frequently rewards the Player-Learners for their participation.

The GM-Teacher has prepared an interest curve and cut out the chaff, yet still her Player-Learners are not fully engaged because she hasn't considered the reward structures of her design. Whether it's new abilities, new knowledge, a better tool, or something to consume, the successful GM-Teacher is always handing out some kind of reward. Rewards are given at the micro-level (moment-to-moment), the meso-level (hour-to-hour), and the macro-level (month-to-month), and they serve a few distinct purposes:

Rewards show gratitude for engagement

The micro-level reward says "thanks for participating." It reminds the Player-Learner that their engagement is valued. These are the gold coins collected after a battle or the experience points from solving a puzzle. These are the candies handed out in the classroom and the encouraging stickers on returned assignments. The meso-level reward says "thanks for focusing," and pays the Player-Learner for giving their attention and hard work. This is the big treasure chest at the end of the session. This is the short but exciting video at the end of class that flaunts the cool applications of the day's lesson. The macro-level reward says "thanks for committing." This is the culmination, what the Player-Learner is here for: this is the closure of the narrative arc that gives them a story to tell and a sense of heroism. This is the result of their class project which combines their interests and the course material and extends outside the classroom, creating a meaningful takeaway for the Player-Learners.

Rewards motivate the goals

Why do the Player-Learners problem-solve, investigate, and collaborate? They engage because each challenge is a stepping stone toward their goal and toward the promise of rewards for completion. At any moment, the Player-Learner has multiple goals at short-term and long-term levels that provide micro and macro rewards respectively. The successful GM-Teacher ensures the goals and progress toward these goals are always clear.

Rewards are marks of progress

The trophy on the wall, the full bookshelf and framed degree — rewards are symbols representing achievement and progress. They show how far the Player-Learner has come and encourage them to keep going. Yet, perhaps more importantly…

Rewards are progress of themselves

The legendary sword and the code from a previous assignment are not only marks of achievement, they enable the Player-Learner to advance. The magic spell can be used to reach new places, the coins can be spent on new equipment. The highlighted book chapters can be used as quick reference, in addition to the stack of useful reference materials collected over time. Code functions from the last assignment can be plugged into the next one to write an even more complex program. These rewards tell the player, "thanks for what you've done so far; these will

prepare you to do even more." It's a positive feedback cycle: more power means more rewards means more power.

Rewards are a thoroughly researched topic in human psychology. In game-user research, reward structures have been found to have differential positive effects on engagement (Nagle et al. 2014; Wang and Sun 2011). Rewards may even increase the Player-Learner's confidence and tolerance of failure (Lameras et al. 2017). It is important to note, however, that external rewards have been shown to sometimes lead to a decrease in intrinsic motivation for already highly-motivated Player-Learners (Birk, Mandryk, and Atkins 2016; Richter, Raban, and Rafaeli 2015; Deci and Ryan 2000).[3] For this reason, it's best to use intrinsic rewards:[4] rewards that are themselves part of the experience, that empower the Player-Learner and carry meaning within the context of their tasks. This is the difference between emotionally motivating learning and "chocolate-covered broccoli" (Moseley and Whitton 2014). By providing relevant rewards, the GM-Teacher creates a positive emotional valence to the experience that helps focus attention and cognition on the key elements (Um et al. 2012).

Showing Affordances and Highlighting Variation

The successful GM-Teacher sees the experience as a system of variations and affordances and guides the Player-Learner to see this system as well.

Affordances are described in Gibson's affordance theory, expressing properties of both the environment and the interacting agent (Aslam and Brown 2020; Cardona-Rivera and Young 2013; Linderoth 2013; Norman 2013; Gibson 1983). For a given Player-Learner and a given object, there is a set of interactions that are available, and a set of interactions that are perceivable. A Player-Learner can pick up a book, can read a book, can take notes from a book; these are the interactions which a book affords to a Player-Learner assuming some prerequisite capabilities on the Player-Learner's part. Some books may afford referencing, unbeknownst to the Player-Learner (a hidden affordance), or appear to afford referencing despite being a disreputable source (a false affordance).

To design an interaction is to see these affordances and express them clearly, removing false perceptions and emphasizing the possible. In this way, the GM-Teacher guides using the "problem-posing" model of education by posing both problems and available methods for solving them (Garcia 2016). The affordances tell a narrative, they give a structure to the problems to show each problem's relevance and relation to the others (Laurillard 2013).

This principle relates strongly to Variation Theory, which recommends providing an experience of all aspects of variation within a concept, such as through the use of contrasting cases to clarify the structure of the concepts being explored (Laurillard 2013; Marton and Booth 2013; Marton and Pang 2006). Within the games industry, this is known as "challenging assumptions," or providing challenges which force the player to add nuance to their existing mental model to account for specific variations, combating functional fixedness (Duncker 1945; Keren 2017).

In this way, by highlighting affordances, comparing and contrasting them across cases, Player-Learners can attend more actively to the differences and build a robust mental model (Laurillard 2013). This is further related to Schwartz's "time for telling," or the principle that eliciting discovery — provoking curiosity and the desire for knowledge — followed by

explanation is more effective than twice as much explanation (Laurillard 2013; Schwartz and Bransford 1998). Only when the learner believes an inquiry to be relevant will any significant and meaningful learning occur (Laurillard 2013).
Variation also serves to clarify the internal, often hidden structure, by clarifying the relation between the main point and component information, lest the Player-Learner "horizontalize" all information as equally important and without relation (Laurillard 2013). An emphasis on variety and affordances acts as "constructive alignment," helping to build concepts up in complexity through meaningful, relevant distinctions (Laurillard 2013).

Guiding, Encouraging, and Collaborating

The successful GM-Teacher is on the Player-Learner's side and provides help or encouragement when needed.

This principle is derived from social learning theories of constructivism (Schunk, 1996), including Vygotsky's Sociocultural Theory and the Zone of Proximal Development (Vygotsky 1981) and Bandura's Social Learning Theory (Bandura 1977). In this way, the GM-Teacher is positioned as a social link, a Vygotskian "more knowledgeable other," (Doolittle 1995) to extend the Player-Learner's capabilities beyond their normal reach. Yet in acting as a resource, the GM-Teacher withdraws their own agency in favor of the Player-Learner's. English teacher Monika Kisala phrases this as: "wise as we may be, we only show the goal, never lead the way"[5] (Kisala 2017).

When done poorly, the relationship between GM-Teacher and Player-Learner takes on an "us versus them" mentality. Guidance and encouragement help to break down that barrier and join sides. Despite the GM-Teacher being the one presenting obstacles, she does so collaboratively. Breaking down the barrier of ostensible hostility means communicating intentions and efforts:

- *This is what I want for the story, what do you want? How can the story serve us both?*
- *I'm hoping that this exercise will teach you…*
- *How do you hope this encounter will go? What are you expecting?*
- *What are you hoping to gain from this course?*
- *Here's how I reward XP.*
- *Here's my rubric for how I will be grading your submissions.*

Communicating intentions early and often is good general practice for interpersonal coordination, and especially useful when the relationship is one of challenger/challenged. Not only can communication reduce hostility, it can align expectations. Sometimes simply asking "What are you expecting?" will give you a completely different answer from what you anticipated. Sometimes Player-Learners won't have an answer at all. By asking these questions upfront, the GM-Teacher creates the opportunity for alignment before risking misunderstandings.

When success occurs, this is a chance for encouragement, praise, and reward. Without this crucial step — if the reward for challenge is simply more challenge — this will only increase the perceptions of hostility. Recall the interest curve: dips in challenge or intensity are moments for reward and recovery before the next engagement. Creating a safe, rewarding environment encourages productive risk-taking, exploration, and learning (Gee 2005).

When misunderstandings do occur or failures take place, this becomes a risk of hostility, but an opportunity for guidance, re-alignment, encouragement, and renewed cooperation and effort. That opportunity comes in the form of feedback.

Giving Feedback

The successful GM-Teacher provides clear, direct, and immediate feedback on the results and efficacy of Player-Learner actions.

Nowhere is feedback clearer than in an intense action game. Your avatar runs and jumps but overshoots the ledge. "Okay, got it, jump earlier next time, or don't jump as high," you say. Immediately — not even a second later — you respawn and try again. Over and over, this rapid iterative process of action-feedback-modify continues to cycle. This is the fundamental learning process.

Good feedback is an absolutely vital component of learning, as demonstrated by its role in the 4C/ID model (van Merriënboer, Clark, and de Croock 2002), flow theory (Csikszentmihalyi 1997), Gagné's nine events of instruction (Gagné 1985), and Gee's principles of game-based learning (Gee 2005), among other theoretical and practical guides to games and education. Specifically, feedback is a necessary step in the learning loop: a learner takes an action, sees the result, and updates their mental model (Andersen and Roepstorff 2021) — the Player-Learner will draw feedback from the environment regardless of the GM-Teacher's input (saying nothing is still feedback, for example), yet the GM-Teacher has the opportunity to provide more useful, direct feedback for more efficient learning. Regardless of its form, feedback is defined in these models as the response on which the Player-Learner decides whether to modify their behavior, and if so, how.

Feedback has been classified in various ways: motivational, reinforcement, informational, cognitive, corrective, and formative, to name a few (Balzer, Doherty, and O'Connor 1989; Bitchener 2008; Nelson and Schunn 2009; Shute 2008). Generally, though, successful feedback is relevant, copious, timely, diverse, specific, and actionable (Seering et al. 2019). Good feedback is targeted to the recipient's needs, uses positive-valenced language (e.g., praise), and qualitative corrections or suggestions; this kind of feedback is typically well-received and increases the recipient's self-efficacy (Boyer et al. 2008; Clark et al. 2010; Seering et al. 2019). On the subject of when to deliver feedback, immediate feedback increases learning efficiency, while delayed feedback can promote better self-regulated learning skills (e.g., self-correction and error detection); however, for most cases (especially novice learning), immediate feedback is recommended (Shannon et al. 2013).

Personalizing

The successful GM-Teacher personalizes the planned experience to what will engage each Player-Learner most. She knows what will engage her Player-Learners most because she asked at the beginning of their interactions and regularly checks whether their shared goals and experiences, both small and large, are fitting the interests of each person.

When you go to the gym, you don't use the same weights or treadmill speed as the person before you did. When you go to the optometrist, they specialize your prescription lest they make your

eyesight effectively worse than it started. Why is it, then, that GMs use pre-written modules? Why do teachers give one lecture for all students, one homework assignment, one test?

Efficiency, of course! It would be ridiculous, utterly impractical, to give a personal lecture to each student, or hand-craft a campaign for every player. Yet, there are small gestures that can make big differences to the Player-Learner's understanding and enjoyment of the experience. Through personalization, the GM-Teacher improves her interest curve and better guides the Player-Learners by "culling together and mediating the mutual interests" (Garcia 2016, 169).

Personalization has been thoroughly studied in games and education (e.g., Busch et al. 2015; Orji, Mandryk, and Vassileva 2017). From player models (A. M. Smith et al. 2011) to dynamic difficulty adjustments (Zohaib 2018), games attempt to create a flexible experience that adapts to the needs of the player and motivates engagement (Gee 2005). So too has it been in the classroom, as personalized learning approaches have been developed using intelligent tutoring systems (Polson and Richardson 2013), learning management systems (Weaver, Spratt, and Nair 2008), and other tailored technologies, such as adaptive educational games (Peirce, Conlan, and Wade 2008). But technology isn't a requirement for personalization: a successful GM-Teacher can adjust her plans to match the needs and goals of her Player-Learners.

Every Player-Learner has personal goals. Sometimes this will be their reason for playing: telling the story of their character, socializing with others, or just spending time out of the house. Sometimes this will be their reason for taking the course: pursuing a career or hobby, seeking a particular skill, or just being curious about the subject. Sometimes the Player-Learner will have no intrinsic reason at all: "I have to take this course," or "I'm just here because Raj asked me to play." Goal Contents Theory posits that intrinsic goals (e.g. personal growth) are more strongly linked to beneficial well-being outcomes than extrinsic goals (Legault 2017; R. Ryan 2009; Tyack and Mekler 2020). Therefore, identifying and catering to the Player-Learners' intrinsic goals will create a better psychological connection with the experience. Even if the Player-Learner enters the experience with no conscious goal, the GM-Teacher can help foster an intrinsic goal by linking the experience to the Player-Learner's intrinsic interests and desires.

In maximizing how much the Player-Learner can relate the experience to their interests, the GM-Teacher maximizes the rate at which they learn and engage. It's unlikely that there will be time to personally tailor the experience perfectly to everyone, but there can always be *something* for everyone, and that's what this principle is about.

Creating Autonomy

The successful GM-Teacher ensures that the Player-Learners always feel that they have a choice and their choices are meaningful.

Autonomy is one of the strongest forces in human motivation and a basic psychological need (Deci and Ryan 2014; Legault 2017; R. Ryan 2009; R. M. Ryan and Deci 2017). For the Player-Learner to feel enabled to engage, they must believe engagement comes from their own volition. And the best way to convince Player-Learners that they have agentic control over their engagement is to make it so. Through a sense of ownership, a sense of control, and a sense of personal investment, the Player-Learner will be empowered to take actions to support their own

engagement. Or, as Garcia puts it, the successful GM-Teacher "should know when to back off" (Garcia 2016).

However, the Causality Orientation Theory, a branch of Self-Determination Theory, emphasizes the role of personal dispositions, i.e., an individual's autonomous, controlled, or impersonal orientation (Legault 2017; R. M. Ryan and Deci 2017). Through this lens, autonomy is not only determined by the activity but also the Player-Learner's past experiences and psychology: some Player-Learners may struggle to act autonomously even when given the choice; yet the autonomy orientation is positively associated with self-esteem, self-actualization, well-being, satisfaction, and other psychologically positive outcomes (Deci and Ryan 1985; Weinstein, Przybylski, and Ryan 2012). Therefore, a successful GM-Teacher not only provides autonomous opportunities but encourages and supports an autonomous approach in the activities.

Autonomy builds on other principles. To provide choices is to show Player-Learners what the affordances are, what the options are. To make those choices meaningful is to personalize the experience to them. In a way, making a meaningful choice is reward itself, because their volitive action reinforces intrinsic motivation in the experience.

A successful GM-Teacher creates autonomy by presenting *meaningful* choices: choices which have significant consequences, and where the Player-Learner has full agentic control over the choice *and* enough information to judge the decision (Iten, Steinemann, and Opwis 2017; 2018). Missing any one of these three components, the choice is rendered meaningless.

Creating Relatedness

The successful GM-Teacher encourages the Player-Learners to interact and cooperate with each other, building relationships and connecting with broader communities.

In addition to autonomy, relatedness is a basic psychological need and powerful motivator (Deci and Ryan 2014; Legault 2017; R. Ryan 2009; R. M. Ryan and Deci 2017). The Relationships Motivation Theory describes the value of mutually supportive high-quality relationships in intrinsic motivation (Deci and Ryan 2014). For Player-Learners to be truly engaged with the experience, they must be engaged with each other and the broader communities.

Relationships matter, especially when it comes to learning through collaboration (Garcia 2016; Laurillard 2013). When learners relate to each other, they engage in activities such as peer modeling (learning from how others work) and cognitive elaboration (practicing articulation and critique) (Laurillard 2013). Moreover, their relatedness motivates them to practice with each other, generating more experience than they would by working individually (Laurillard 2013).

Improvising

The successful GM-Teacher is not afraid to improvise material, instead expecting that she will have to, and she plans for potential situations which will require improvisation.

Things will go wrong. The best laid schemes will go awry and askew. What then? How does the GM-Teacher ensure a proper interest curve, give rewards, personalize, when the experience goes haywire?

Entire books have been written about how to improvise well (Johnstone 1992; Ralya 2014). What are the basics? First, improvisation is rooted in mutual trust and deep, intensely active and empathetic listening (Bailey 1993; Grant 2005; Ralya 2014). It requires a tolerance for ambiguity, a courage in the face of risk, and a flexible resourcefulness (Barrett 1998; Berliner 2021; Grant 2005). Above all, it is a matter of creating a shared circle of expectations, agreeing with additions, and building on them (saying "yes and…") (Johnstone 1992; Ralya 2014). Improvisation is not about each individual's contributions, rather it is about the process between them; the subject of conversation acts as an anchoring point, a third vertex in the triangle between GM-Teacher and Player-Learner that keeps them both focused on the shared dialogue (Grant 2005).

When improvisation works between teacher and learner, it creates a "relational space [...] where personal meaning is awakened and where inherent knowledge is developed" (Bergum 2003, 125). This relationship enables "pedagogic creativity, a coming into being of a clearing that is vibrant with pedagogic possibilities" (Aoki, University of Alberta, and Department of Secondary Education 1991, 45).

The successful GM-Teacher is a master of improvisation. Having internalized these principles, she is able to dynamically decide where the experience should go and shows her Player-Learners the way. It requires flexibility, adaptability, and a deep understanding of both the material and the Player-Learners. When done well, the Player-Learners barely notice something was amiss at all.

Beyond this, the successful GM-Teacher knows how to read the room. She carefully watches the facial and body language of her Player-Learners to personalize the moment-to-moment experience, fine-tuning the interactions to her planned interest curve. She asks herself: are they bored? Do they feel involved with the conversation? Do they feel like they are contributing as a welcomed member of the group? And if any answers suggest they are disengaged, she finds a way to include them in the activities.

Inviting Interactivity

The successful GM-Teacher involves the Player-Learners actively and interactively.

This may go without saying, that the relationship between the GM-Teacher and the Player-Learner should be active and interactive, but I will say it anyway: it should be fiercely active, and intensely interactive. If this is to be a designed interaction, there must be interaction. Research has long praised the effects of active learning, learning by doing, and the generation effect (Gee 2007; Laurillard 2013; Silberman 1996; van Merriënboer, Clark, and de Croock 2002), and the experience cannot be personal and autonomous if there is no input from the Player-Learners. This principle is typically achieved through the other principles, such as having a strong and continuous feedback cycle, lively improvisation, and designed moments of Player-Learner control.

Managing Behavior

The successful GM-Teacher doesn't see improper behavior as the fault of the Player-Learners, but rather as a misalignment between expectations.

Any improper behavior from the Player-Learners, whether boredom, disruption, etc., is not the fault of the Player-Learners. Rather, this comes from a lack of clarity in the agreements of the interaction.[6] A successful GM-Teacher identifies when this agreement is misunderstood and attempts correction.

Teachers will be more familiar with this principle in the form of classroom behavior management techniques. A dozen such techniques were described by Barbetta et al. (2005), including:

- Define misbehavior by what the Player-Learner gains from it, rather than how it may appear on the surface.
- Player-Learners may not know why they are misbehaving, or not recognize the underlying problem, so the GM-Teacher should assess behavior directly rather than asking the Player-Learner why they are misbehaving.
- When one approach to behavior correction isn't working, try something else.
- Involve Player-Learners in the development and enforcement of rules (see also players as co-producers (Gee, 2005); rules should be measurable, observable, framed positively, have clear and realistic consequences, be few and concise enough to remember and enforce, and be reviewed and enforced frequently.
- Misbehaviors may not mean the Player-Learner *won't* follow the rules, but rather that they *can't*; by keeping this in mind, the GM-Teacher can help enable Player-Learners to adhere to the rules.
- Follow a pre-corrective process for behavior adjustment (cf. "SMART" goal-setting, O'Neill 2000).
- Plan for the time required to transition between activities. (More broadly, plan for realistic human behavior and psychology, such as the limits of attention and the costs of context switching.)
- Rather than ignoring all misbehaviors or none of them, choose wisely which ones need your attention and efforts most.
- Set clear expectations and consequences; enforce and reinforce them consistently.
- Rather than seeing the GM-Teacher as the only behavior manager, consider the broader social network of potential behavior managers: the Player-Learners themselves, friends, family (especially parents, for students), and more.
- Remember that the experience itself is a behavior management tool. By keeping the experience fast-paced, highly interactive, and with positive, clear, and immediate feedback, the GM-Teacher minimizes the room for misbehavior to emerge.

Despite originating as a classroom feature, behavior management extends naturally to the gaming table. RPG designer and educator Stuart Watkinson reflects on his experiences as a player and teacher, saying "The tables and games I enjoyed the most had Game Masters who were using classroom management techniques, but in this case, at the gaming table" (Watkinson 2019). Similar to Barbetta et al. (2005), his suggestions for behavior management include rule-setting, reading the room to gauge behavior, and being consistent in rule enforcement.

Arbitrating with Equity

The successful GM-Teacher arbitrates the rules in a way that maximizes both the Player-Learner's enjoyment of the experience and their chance at doing better in the future.

One of the core roles the GM-Teacher plays is as an arbiter, a judge interpreting the rules as written. Closely linked to improvisation, this job requirement demands the GM-Teacher to be able to interpret ambiguous situations and make decisions that will not only improve the Player-Learner's experience, but increase their chances of success in the future.

For GMs, this means interpreting how rules interact, how challenging the game should be, what a fair reward is, and so forth. For teachers, this is grading and assessing student performance. In both cases, the answer to "how should I judge?" is "whatever works for *these* Player-Learners, in *this* moment." Rules and assignments may need to be bent to fit the flow and the interest curve. Rewards and grades may need to be customized to the needs of the Player-Learners. Good arbitration is differential (Wormeli 2018).

DISCUSSION

This article proposed 13 principles supported by a range of psychological theories of learning and motivation which are anecdotally used by both GMs and teachers. That is to say, although I have not described direct evidence that GMs and teachers are using these principles, this fact is inferred from literature which prescribes similar principles in both domains. For example, Laws recommends understanding players' interests (a prerequisite to Personalizing) and Improvising (Laws 2002). Similarly, many comparisons can be made between pedagogical patterns like the "Gold Star" (a form of Rewards). "Fair Grading" (Arbitrating with Equity), and "Differentiated Feedback" (Giving Feedback and Personalizing) (Bergin 2012).

These principles serve as a preliminary lens for considering the parallels between the roles of GM and teacher, and between player and learner, as a tool for understanding the art of designed playful learning experiences. This work remains theoretical; future research should empirically test whether GMs and teachers use these principles in practice and measure the efficacy of each principle. Note also that, in practice, there may be many overlaps between these principles. For instance, rewards can be used as feedback, and improvising is a tool for personalization.

How can you make use of these principles, and this article? As a GM-Teacher, each principle can be a prompt for reflection. For example, am I providing my Player-Learners with autonomy, feedback, and personalized content? For researchers, these principles can be operationally defined and measured. For example, one could observe GM-Teachers and count/classify the use of rewards, and then compare the results with Player-Learner evaluations to determine correlations between the number and type of rewards and how well the experience was received.

CONCLUSION

The roles of GM and teacher align in many ways in their relationship with their players and learners. Within this interaction, the techniques of good game design mirror pedagogical principles achieving the same goals. Both the successful GM and the successful teacher plan an interest curve, remove unnecessary barriers, give rewards, show affordances and variation,

collaborate, give feedback, personalize, create autonomy and relatedness, improvise, invite interactivity, manage behavior, and arbitrate rules. In this article I highlighted this parallel relationship between the GM-Teacher and the Player-Learner. This comparison is not only useful as a lens to understanding the art of designed playful learning experiences, but also functions as a practical guide to both GMs and teachers in the art and science of interaction design.

Future work may consider applying these design patterns empirically to test their efficacy, for example to determine which strategies are most effective or which areas of learning are best suited to this approach.

Endnotes

1. Also referred to as the Dungeon Master (DM) in the context of Dungeons & Dragons (Gygax 1989) and many other names throughout tabletop roleplaying games, such as judge or storyteller (Garcia 2016).
2. Historical wargaming has earlier roots in military training (Peterson 2012).
3. This touches on an important distinction that our current education system necessitates testing and grades — an external reward. The ongoing debate of how schools can learn from games in this regard is, however, beyond the scope of this paper.
4. Although Cognitive Evaluation Theory no longer uses the term "intrinsic rewards," (Tyack and Mekler 2020) I use it here to mean the satisfactions inherent to the activity.
5. Notably, she is explicitly referring to both GMs and teachers.
6. Of course, there is an exception to every rule. The exception here happens only when someone does not agree to the rules of the interaction, for example, malicious intent breaks the typical agreement that all persons engage the activity with good intentions. Resolving these more thorny conflicts is beyond the scope of this paper but typically results in the group banning any malicious actors.
7. It is critical to note that there are many pressures on teachers in our current educational system, and many reasons beyond ignorance or incompetence for being unsuccessful. I do not fault teachers who exhibit unsuccessful behaviors, but simply use this language to identify where techniques of interaction design may prove useful for improvement.
8. This example dips into the difficult debate of how much a GM should prepare or improvise (Ralya 2014), which is not my point. I argue simply that the affordances should remain clear as a design heuristic, and that the only reason to hide affordances is as an intentional experience design choice for advanced Player-Learners.

APPENDIX — PRACTICAL EXPANSIONS

This appendix expands on examples of usage for each of the 13 principles described in the article.

Planning the Interest Curve

A successful GM might start a campaign with a compelling mystery or storyline, something to hook the players into the adventure, and plan to start each session itself with a hook, maybe an intense combat or a political intrigue *in medias res*. She might then vary the activities between combats, conversations, puzzles, and comedy, increasing the stakes of the story until the finale peaks in intensity and a thread of the plot is resolved, perhaps leaving a cliffhanger to start the next session with.

An unsuccessful GM ignores this curve because she aims for other goals, such as realism (despite most other game elements not being realistic), challenge (despite a 3-hour combat being more boring than difficult), or agency (it's not her fault the session had a bad interest curve, her players made uninteresting choices). Although a roleplaying game is an open-ended experience, it is first and foremost a *designed* experience, when done well, and this means the GM can be designing the adventure such that every path through it will lead to a well-paced flow.

A successful teacher might start a course with a peek at some of the most exciting applications of the knowledge to come or some physical, palpable experience. Maybe she varies the activities in the classroom, never lecturing for more than 15 minutes at a time, instead bouncing between lectures, hands-on activities, open discussions, and peer-to-peer engagement, ending with a finale in which students demonstrate what they learned through acting and song or a fast-paced friendly competition. A successful teacher might start the lesson with a homework problem in a way that is meaningful but requires a technique the students haven't learned yet, and by the end of the lesson the students return to this problem, now finally able to solve it.

An unsuccessful[7] teacher ignores this curve because she thinks that the extra work to engage her audience is time out of the classroom that could be used to teach more material. But there's a flaw to this logic: by ignoring the interest curve, the material she teaches falls on deaf ears: bored ears, tired ears, uninterested ears, and the time is wasted regardless. Although classroom time is useful for conveying information, it is first and foremost a *designed* experience, when done well, and this means the teacher can be designing the lesson such that students will be enthusiastically attending and the teacher can efficiently deliver the content that she means to express. As Frankos (2018) writes, "Innovating fun and useful classroom activities requires serious time and consideration." Though it may be difficult to engage students critically, is this not the teacher's duty and ambition?

Removing Unnecessary Barriers

How can GMs remove barriers? When an adventure necessitates mundanity like eating or finding a place in town to stay, if this isn't part of the story the group wants to experience, then the GM can hand-wave it away.

"You find an inn, pay for rent, and sleep the night," the GM might say. "How much does it cost?" asks a player. "Not much, you don't need to worry about that." Of course, there are groups that

care to micro-manage every last detail, but for this hypothetical group, most would rather get back to the adventure they were having.

How can teachers remove barriers? Many reading assignments can be reduced to a few pages, a few key concepts. Or the teacher can assign the full text but give the students his copy, in which he has taken the time to highlight the most important information. Formatted assignments can come with a format template. Calculators can return to the classroom after students demonstrate the ability to perform without one.

This is the self-reflective question on which this principle is based: "What is the Player-Learner gaining by taking the time to do this subtask?" If the answer is not something the GM-Teacher is trying to teach, there may be room to cut.

Giving Rewards

The unsuccessful GM-Teacher does not give rewards, or gives them without consideration of why: why is this reward meaningful to the Player-Learner? Why is this reward meaningful in this moment as opposed to another?

The successful GM-Teacher gives rewards early and often, using rewards for all four purposes: showing gratitude for engagement, motivating goals, marking progress, and providing progress. She is considerate of the timing of the reward so that it has the most impact, and so that it is meaningful to the Player-Learners. She sees rewards as affording new potential.

Showing Affordances and Highlighting Variation

A successful GM will describe the player's relevant options whenever possible. "You see a tree that you could probably climb. The man looks gullible and thirsty, and may loosen his lips with a drink." For future encounters, these variations will be made explicitly clear, and used to expand on the players' understanding of the world. "That flat stone wall has no hand-holds, but it seems brittle enough that a piton could create purchase. That guard seems wary and sober as a judge, but she wears thick glasses and does not seem to notice the dark hallway to her left, which you could reach."

An unsuccessful GM will assume these affordances and variations are clear, making no effort to correct the players on their false assumptions. Inevitably, this results in the players attempting a path of action for many minutes before coming to the conclusion that their action is infeasible or impractical. A successful GM is more honest: "I haven't prepared anything[8] for what you're trying to do, and I don't think this approach will work."

For a successful teacher, describing affordances looks very similar to removing unnecessary barriers and providing scaffolding (Vygotsky 1981). This is because the classroom takes place in the real world, where there is a near-infinite action space. By highlighting particular routes of action, this cuts away many other less practical paths. A successful teacher will say things like, "For this research project, I recommend using this database. You might try these keywords and then follow the citations you find. For this code assignment, you could try either using *for* loops or *while* loops, but you will realize that one is easier than the other."

An unsuccessful teacher gives no such guidance, releasing the students into the savage wilderness of the real world with no sense of where to begin or what makes for a helpful resource. An unsuccessful teacher does not share the professional vision and wisdom he has built up over years, setting the students up for failure when they cannot parse true affordances from false ones. When lecturing, an unsuccessful teacher will use pieces of many examples, potentially obfuscating the important differences among them. A successful teacher will stick to one example for simplicity and showcase every variation on the concept, using dynamic animations and multiple representations to provide a more complete demonstration of one example (Laurillard 2013). He leaves other examples for later, as reinforcement and practice.

Guiding, Encouraging, and Collaborating

Example questions the GM-Teacher can ask toward collaboration were provided in the body of the paper. Further examples would quickly become very specific to circumstance.

Giving Feedback

The unsuccessful GM gives no clear feedback. Unbeknownst to the players, the choice they made in the first session is why there is currently an assassin after them, despite no indication of cause and effect for another three sessions. The unsuccessful GM sees this ambiguity as realism, since real life also fails to give clear, immediate feedback.

The successful GM puts the affordances and consequences of the experience first. Before the players even made a choice in the first session, it was clear that their choice would incite anger, though they did not know what. Immediately after that choice, however, the GM described a short vignette of an assassin preparing their blades. It would be days before their characters would encounter this enemy, but the players learned immediately the consequences of their actions.

The unsuccessful teacher delays on grading essays, coding assignments, and quizzes. Two and a half weeks later, when the class has moved on and unloaded the memories of the last unit, they get their assignments back: a couple of chicken scratches correcting their grammar, and the grade "7/10" on a quiz that neither suggests why answers were wrong nor what a good answer would be.

The successful teacher is prompt and thoughtful. Rather than correcting grammar, she provides a couple of sentences of qualitative feedback on the strength of the argument in the essay, giving general suggestions for how to make it stronger in the future. She provides her rubric and answer key for students to compare, and sets aside class time shortly after the assignment is due for questions and discussion of the material.

"I don't have time for this," the unsuccessful GM-Teacher says. "I have too much to say, too much to do in too short a timeframe." But consider this: without proper feedback, the Player-Learners won't understand what was covered or why the story changed. To spread yourself too thin across material is to waste your time and theirs. Designing an interaction requires careful management of scope, careful trimming of what's important and what's not.

Personalizing

A successful GM balances two objectives: setting the campaign to the story she'd like to see emerge and enabling the players to tell their own stories. At the beginning of the campaign, she surveys the players for what they want to see, and is upfront about what is and is not possible for the campaign. Together, the GM and players come to a shared understanding of how the campaign will be something everyone can feel a part of.

A successful teacher similarly balances the material of the curriculum and the students' wants and needs. She asks the students about this on the first day of class in a round table discussion, where each student gets a chance to talk about themselves and find connections between each other. Rather than going around the room once and having each student say their piece, she makes it a group activity to find commonalities between students and, ultimately, she compiles a short list of interests that the class as a whole would enjoy that the course could be linked to. She also gives this survey as a take-home or online worksheet to give shy and introverted students more space and comfort in expanding on their interests privately.

Creating Autonomy

A successful GM presents meaningful story beats. The players can save a hamlet or their best friend, but they cannot save them both. The story could continue in either direction, becoming very different depending on whether the players choose friendship or citizenship as the more important virtue.

An unsuccessful GM creates "railroads," the term for a game whose story is linear, where no meaningful choices occur. The players might still be offered choices, but the choices don't impact the story, or the players don't actually have the freedom to choose, or the players are missing information to make a meaningful decision. The prototypical example is the "quantum ogre." The story goes like this: you come to a fork in the road, each path nearly identical to the other. Were you to take the left path, you would encounter an ogre. Were you to take the right path, you would encounter an ogre. The GM has prepared an ogre encounter, and you will make a choice and receive the encounter.

There are many ways the quantum ogre problem can be addressed, and others have written to great lengths discussing the nuances of the dilemma. Yet here I focus on the agency of the choice. Suppose the paths were markedly different: one having ogre tracks and the other having giant tracks. Suppose in each path, the players fought the (mechanically) exact same combat encounter, but one looks like an ogre and one looks like a giant. Even this minor change instills agency in the players, for they made a choice about the narrative of their story. A successful GM could take this choice and extend it: perhaps this act of trespassing and aggression will either anger the ogres or the giants, and that will set the story on two very different tracks.

A successful teacher presents meaningful choices in his classroom. For their history research project, the students are allowed to research any subject within the scope of the material. For their coding assignment, they can create a game or application of their own choosing, so long as it uses the concepts of the course. At the beginning of the course, each student can choose whether to weigh their weekly quizzes or monthly exams more heavily. In a way, a successful teacher is enabling his students to personalize their own experiences, giving them control over their

engagement. Because of this, his students will be much more interested in participating, for they too have architected the experience.

An unsuccessful teacher does not give space for choice because that means more work for him. If each student has a different assignment, this is harder to grade and grade fairly. Rather than developing a general rubric that handles any submission, he would prefer to set his rubric specific to the matters of the assignment he created and grade the minutiae, because it is easier to tell whether the student included a particular fact in their essay than to tell whether a student understands an abstract concept.

Creating Relatedness

An unsuccessful GM will hold game sessions in isolation, where the players may not get much chance to interact with each other. The story may include multiple players, but rather than being "multiplayer," the game plays more like multiple single-player experiences.

A successful GM will find every possible way to weave the players' stories together, inviting interaction and cooperation (or competition) such that, by the end of the campaign, the player characters' lives are woven together in a tangled thread of relations. But he doesn't stop there, because the GM further ties this story to the wider stories of the world and the RPG community.

An unsuccessful teacher grades assignments in isolation and rejects group activities. When assignments are shared with the class, such as student lectures, they are largely passive and non-interactive for their peers.

A successful teacher enables and supports peer learning, peer mentoring, and peer feedback. He makes time for group discussion, group exercises, and team bonding. He does this in a way that not only allows learners to share ideas about the class, but gives space for the students to meaningfully socialize, such that they can develop close, meaningful relationships with each other and feel competent and autonomous in their pursuit of social learning and collaboration.

Improvising

An unsuccessful GM will not stray from the pre-written material. This creates a friction with the players' autonomy, because there are clear barriers to what they cannot do: they can't stray from the path. An unsuccessful GM will not bend the rules for anything. If a quite obscure rule interaction comes up, she will stop the game to spend half an hour figuring out how to resolve the issue.

A successful GM, upon seeing the same rule interaction, will improvise. She will make an educated, reasonable estimate of the ruling and conclude to look into the issue after the game. In this way, the game keeps moving, rather than grinding the experience to a boring halt. She watches Player-Learner expressions as feedback to her own performance and adjusts accordingly. She reincorporates previous material (Ralya 2014), calling back to players' previous choices and bringing their contributions back into the story. A successful GM is willing to stray from her notes if the players do something interesting and off the beaten path, or if what she planned is not working and she needs something else to engage her Player-Learners. She preserves their autonomy by enabling creativity, inviting exploration, and constantly engaging in a tacit feedback

loop to reassure that the experience is engaging for all. And in doing so, the experience is made more unique for it, more personal and more authentic.

An unsuccessful teacher gives a lecture with no room for questions. She knows best, of course, she knows what information is the most important, so she focuses on that. Why let students' questions ruin the flow of her lecture? An unsuccessful teacher fiddles with technology for half the class when the sound isn't working for a short video she wanted to show. The students try to help at first, but then grow bored and weary, until finally she gives up and the students who are still awake watch a soundless video. When a student is disengaged, an unsuccessful teacher blames them for it: the student is simply not motivated to learn.

A successful teacher follows her students' curiosity, because this is what they are most interested in. Not only does this personalize the lesson and give students autonomy, the teacher herself might learn something from the excursion as they go down the rabbit hole together and discover knowledge. If a student disengages, she notices this and pivots slightly to appeal to this student's interests, having collected that information earlier. Perhaps there is a sports analogy she can make about the material, or a pop culture reference which will perk up their ears.

Instead of reviewing previous material herself, a successful teacher calls upon students for this task, like the "last time on…" montage at the start of a TV episode. By prompting her students for this review, they not only gain the practice of recall, but the teacher learns what they attended to most, and perhaps what they forgot or misunderstood. Thus she can tailor the upcoming lesson to correct their mental models and build on what interested them most.

A successful teacher recognizes technical issues and looks for quick, creative solutions. Maybe each student can pull the video up on their phones. Maybe the video isn't necessary and she can diagram the information on the board. Maybe she can send the video in an email after class for students to watch on their own time. A successful teacher prioritizes precious class time because putting the students' experience first promotes their learning and engagement.

Inviting Interactivity

This principle is typically achieved through the other principles.

Managing Behavior

A successful GM-Teacher is a management leader, inviting the Player-Learners to construct and moderate their experience together. Behavior is managed through clear expectations and communication, cooperation, and gathering and providing feedback.

An unsuccessful GM-Teacher enforces arbitrary, often unclear rules with inconsistent consequences. When the GM-Teacher is thought of as belligerent, fickle, or stringent, it is often because they are missing one or more of these heuristics for setting and enforcing manageable rules.

Arbitrating with Equity

An unsuccessful GM interprets the rules as written, never bending in favor of the players. Or worse, he always bends the rules in favor of his own whim and story ideas, defeating the players' autonomy and quashing their input.

A successful GM rules favorably toward the players in two circumstances: when the rules are ambiguous, or when the players are demonstrating behavior that the GM wants to encourage. A successful GM knows that in unclear situations, there is no reason to fault the players for the rules being imprecise. He also knows that if he rewards good behavior by bending the rules in their favor, the players will be more likely to repeat their rewarded actions. Thus, he gives extra bonuses when his players are creative, compassionate, and thoroughly engaged.

An unsuccessful teacher grades viciously. He follows the rubric as he wrote it ten years ago, never bending in favor of the learners. Or worse, he bends the rubric to meet a grading curve, encouraging competition and forcing students to root against their peers' success (Frankos 2018).

A successful teacher uses grades to help the learners understand where they can improve. His grades are personalized feedback, rewarding learners for putting in their best effort, and the grades reflect each student's privilege and circumstances. Grades given this way are meaningful, pushing the students to become better rather than disappointing and discouraging them from trying further, or leading them to exploit a faulty system for the sake of points in a system.

A successful teacher provides feedback on homework and practice assignments, but does not record them in his gradebook. Practice is for learning. If there is no room for risk and failure and exploration, if every attempt is permanently tracked, then students cannot be curious, and they cannot reach their potential as learners. As Wormeli (2018) puts it, "No adult would put up with being graded on his or her route to come to know a concept." To this point, many teachers are now exploring alternative grading systems, such as contract grading (Frankos 2018). Ultimately, a successful GM-Teacher finds the system that works for his Player-Learners, enabling them to take risks without fear of harsh judgment, to explore and connect, and to grow unabashedly.

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