How can Game Design Theories and Gaming Environments be Implemented in Instructional Design to Support Learning at the Secondary level?

by

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Submitted in partial fulfillment of the requirements for the degree of

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We accept the Process Paper as conforming to the required standard.

Greg Lewis, Major Project Faculty Supervisor, Faculty of Education, Vancouver Island University  Date: November 15, 2020

Dr. David Paterson, Dean, Faculty of Education, Vancouver Island University  Date: November 15, 2020

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Abstract

Traditional models of secondary level education run the risk of reinforcing maladaptive learning processes that persist long after successful graduation. With considerations to the opportunities presented in B.C.’s New Curriculum, this Process Paper addresses issues present in traditional face-to-face formats by incorporating alternative methods for content delivery and assessment considerations. One method for alternative delivery that has the potential to circumvent some of these maladaptive trends is to deliver content through Gamification, Game-Based Learning (GBL), and organize curriculum through patterns of feedback that are often present in video game design. These systems can be supported under the guidance of B.C.’s New Curriculum and blended-learning approaches. This paper details a potential framework for incorporating game design and is organized around a Critical Challenge Question- “How can Game Design Theories and Gaming Environments be implemented in Instructional Design to support learning at the Secondary level?” Based on a review of foundational and current research trends in both education and in-game design, the Major Project, as another Key Deliverable, seeks to deliver a research and evidence-based example English/Language Arts course constructed using the gaming and GBL principles explored within the paper itself.

Major Project Host URL: http://newgameplusmodel.weebly.com/  | Major Project Creation:
https://docs.google.com/document/d/1O6eRGYELVxA8fCC5i7CrkR29sjy6FQqe31
t2RAwLgk/edit?usp=sharing  | Example Unit Plan: https://docs.google.com/document/d/1shdMimZizjxKlwmJuPvjd4OyLen7lqNSvT0MMCxk4/edit?usp=sharing  | Minecraft Project Resources from the Unit Plan (for Educator Usage): https://drive.google.com/drive/folders/1gnYmdlNelycGmfoDOIkjdsOgYmb7-UQF?usp=sharing

Keywords: Gamification, game-based learning environment, gamified learning, assessment, competence-based grading, standards-based grading, video games, secondary education, student choice, self-determined learning, intrinsic motivation
Acknowledgements

Though everyone deserves their own essay of recognition, I only have the one page, else there’d be a new paper entire. I feel compelled to personally express thanks to Teresa Farrell, to Avi Luxenburg, and to Katarina Rout. I would outright not have had what it took to become a teacher without these three in their own way, let alone their role in developing the passion for teaching that I hold dear.

To Matt, Sandra, Nicole, Sheryl, and Shannon, for the camaraderie, commiserating, and excitement you shared with me throughout OLTD and the MEdL program. Each of you kept my spirits high, my passions afire, and made me feel like I belonged. Thank each of you, dearly.

To Mary O’Neill, who supervised me at the tail-end of my B.Ed and marketed the OLTD program to me then with such passion and excitement that I felt smitten with the idea to try it out. Her cascade of positivity, enthusiasm, her eye for detail, ironclad patience, and kindness made all the difference over the last four years. You are wonderful, and someone I already dearly miss speaking with regularly.

To Greg Lewis, one of the most genuinely passionate, delightful people I have ever had the pleasure of learning from and working with. Greg, your incredible positivity, easy-going approach, and your endless reservoir of confidence and passion blew me away. I am so grateful for how quickly your guidance could peel me off the floor when I was doubting myself. My greatest regret about hitting send on this paper is that my opportunities to work with you and to get hyped about awesome subjects is going to be a bit more challenging. Thank-you for believing in me and supporting me so much.

To my wife Shannon, who did not once complain or express any kind of frustration for the hours and hours I spent locked away, the inane jargon-filled rambling I did over exciting and nerdy stuff, or the outright patience you show me every day. Your constant strength and cheerfulness make the world so much more colourful. Thanks for putting up with my nonsense, both here, before, and to come. And finally, Lydia and Cameron, who by virtue of being alive at the right times, convinced me to be the person I wanted you two to eventually become. Thank you for giving me the courage to try out teaching.
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Chapter 1 – Introduction

Justification and Rationale for Change

Our traditional model of education endures and is resistant to change, despite a wide-spread acknowledgement and acceptance that it has no shortage of problems for students, educators, administrations, and parents alike. Many adaptations have been made, attempted, shorted, implemented, and yet—despite varying degrees of success that involve significant improvements in areas, setbacks in others, and zero-sum results—a lot of the core complaints that are connected to frustration in the classroom, expectations that do not match real-world applications, and victim-blaming continue to prosper long after individuals move on from general K-12 education. Some attempts, such as British Columbia’s 2017 implementation of the “B.C. New Curriculum” (B.C. Ministry of Education) have served to help answer these common and valid frustrations. Our curriculum has changed, and expectations have moved away from content mastery and towards a focus on personal growth and development. In a sense, the New Curriculum offers a genuine liminal space for education to change and prioritize personalized learning opportunities.

What remains challenging, and potentially undermining this entire curricular change, is that assessments, and therefore how teachers choose to deliver and evaluate content, are still unclear and the path forward is still largely in discovery. This is not at all a bad thing. We recognize that, in light of change, we too get to learn, grow, and adapt to what I perceive is a positive step in education’s history as we have an opportunity to renew our focus back on learning and personal growth. There is tension, however, in that ambiguous, or unclear assessment expectations can create situations where it would not be unreasonable or uncommon for teachers to fall back to what is familiar to them. This is especially salient when our education system remains structured to accommodate the ‘status quo’ and naturally resists infrastructural change.

However, without real change occurring in the student experience itself, it stands to reason that
school will continue to feel like school, and the problem of low motivation, lack of confidence, and a lack in understanding that to learn, one must experience failures and setbacks and wrestle with them as an individual persists— which can lead resistance to the well-thought and desirable changes promoted in B.C.’s New Curriculum. In light of changes needed for an improved student experience, there exists a tangible need to adjust how content is delivered so we can break away from the elements of instruction and assessment which we know require adjustment to meet the opportunities presented in B.C.’s New Curriculum outline. In addition, there is a desire for educators to prepare our students for a continually adapting and changing world that is rich in technology. It is self-evident that education looks to provide students with the tools of thought that help our students become capable of adapting and growing alongside the demands of technology and a continuously online society.

**Purpose of the Major Project and Project Intent**

The purpose of this Major Project is to provide educators with additional strategies for developing content through the inclusion of games and game-based learning principles. Gamification and the use of games for learning can be implemented poorly or implemented as a trade-off of intended learning outcomes for higher levels of engagement. This does not have to be the norm, however. Just as we use ID templates, such as Understanding by Design Learning (UbD), Universal Design for Learning (UDL), the ADDIE model, or other planning templates to improve the quality of instruction, GLE and GBL activities require critical thought and planning in order to leverage their powerful learning qualities (See Appendix A.) A designed template for approaching the inclusion of games in the learning process is valuable and needed to maintain academic rigour while simultaneously enjoying the high-engagement environments and latter learning processes that games can offer. Likewise, it is posited that certain weaknesses that are present in the traditional learning format, such as insufficient/untimely feedback systems, community-building focuses, or power and authority dichotomies, can be addressed through the implementation of GLE within a traditional classroom.
The intention of this design project is to demonstrate how a Gamified/GBL ID framework can be used to provide an alternative and engaging format for intended learning outcomes. By uniting current educational research, established ID considerations, and research into game principles, I believe that game design principles can be readily used to retrofit or create learning activities that are an exceptionally powerful, and often underutilized, part of an educator’s toolkit. Many philosophical approaches to gaming lend itself powerful ID considerations and contending with these principles in the ID phases of course design further improves an educator’s focus on their intended learning outcomes and plans to address learner challenges proactively. The potential to take ‘alternative’ paths to meet specific learning outcomes with less restrictive criteria can lend itself to a greater reward and incentive for students to take creative approaches to curriculum as a means of ‘beating’ the curriculum’ as a game.

As gaming formats often seek to set players up for winning, there is room for participating students to creatively ‘game the system’ so long as criteria for the intended learning objective is explicitly communicated. As games are inherently progress-oriented in nature, it is beneficial to consider, and even promote some small aspects of “exploiting a loophole” in the progress framework, as students doing so are often exploiting a system they are able to demonstrate expertise within (Koster, 2005, p. 114). This provides a much-needed liminal space in education to focus on transferrable life skills and lateral-thinking processes without the loss of curricular expectations. In consideration for educational planning, this means that assessments need to remain flexible, yet explicit in regards to the intended learning outcomes of the educational activity (as we do not wish students that are ‘exploiting a loophole’ to be exploiting the learning outcome, but rather, the system in which that learning is communicated) and less concerned with the rigidity and overall fidelity of the gaming framework in its entirety. This allows students who have a firm grasp of the learning environment or the learning outcomes to continue progression beyond their own mastery, as “exploitors are often the most expert
players of a game” because they can “see the places where the rules don’t quite jibe” (Koster, 2005, p. 114).

Developing mastery within a learning setting by testing the boundaries of an education-specific GLE or GBL format has two major perceived advantages, namely that: the student will be able to continue their learning development beyond the restrictions of the format while continuing development of general, problem-solving life skills, and; that the educator will be given explicit feedback as to elements of their design which require further instructional design intentions. This area for experimentation is synonymous with Universal Design for Learning Guidelines as it appeals to a format that is high in a multitude of engagement factors, provides multimodal opportunities for students to represent their learning, and provides students with many avenues to take action and express themselves (CAST, 2018, Universal Design for Learning Guidelines), even if that means exploiting a gamified system.

These considerations and perceived opportunities for students to ‘exploit’ a system are not intended to undermine the virtue or the value of employing GLE or GBL constructs within the classroom, but instead to pre-emptively address concerns that incomplete or failed attempts at creating a robust, exceptionally designed GLE or GBL system are problematic and not worth attempting. As ID is cyclical and reflexive in nature, there is still value of a failed attempt in gamifying content or employing the use of games as a learning tool even if the system requires revisiting. Students continue to learn and make progress within their system, and attempted changes to the system offer some divergent advantages in promoting UDL guidelines and transferrable skills to develop around areas of the ID which will inevitably require revisiting. A robust and focused Instructional Design Template (IDT) then would be a powerful tool for educators to gamify, employ the benefits of game design principles, reap the benefits of curricular and transferrable life-skill development in their students, correct for areas of exploitation or
adjust delivery to improve consistency, and not lose sight of their course-specific curriculum objectives so long as the intended learning outcomes are explicitly stated.

**Implementing Game Design Principles**

We are fortunate, however, that many educational goals—such as expanded cultural awareness, strategic reasoning, and creative and critical thought, have noticeable overlap within the products of the video game business sector. Both the fields of education and game design create systems and learning activities that mutually establish rules, conventions, content attainment, and are usually rich in feedback, assessments, and dialogic interactions. Given the high rate of consumer adoption and the continued growth of the video game industry, research establishes that learning can take place under carefully chosen and well-designed video game systems and that video games are an inherently powerful educational tool that are not often leveraged.

Using game design principles within the realm of Instructional Design (ID) has the potential for producing change that will support the direction of B.C.’s New Curriculum by establish strong systems for improving feedback, motivation, and participation in life-long learning processes for students and educators alike. Within this context, this investigation of the research is framed around a Critical Challenge Question.

**Critical Challenge Question**

This study explores scholarly publications that support the Critical Challenge Question, ‘How can Game Design Theories and Gamification Constructs be Applied to Improve Instructional Design (ID) for Courses at the Secondary Level?’ It is hypothesized that designing curriculum and content around game design principles stands to offer educators a greater degree of flexibility and transferrable skills in contrast to traditional models of education, and presents certain advantages to engagement, autonomy, and feedback systems that make the format a valuable tool in lesson planning.
Key Deliverables

The IDT for creating well-structured GLE or GBL course content is hosted on http://newgameplusmodel.weebly.com/ for public access and licensed under CC0 for ease of educator adjustment, adaptation, and future expansion or improvement to design considerations. This IDT will provide the foundation for educators to approach most GBL and GLE ideas they have in mind and begin the process of structuring game design principles around their own curriculum’s intended learning outcomes.

Following the creation of the IDT, this project will seek to create an exemplar of using the IDT to create a senior English Language Arts (ELA) unit and include rationale for design choices made. The intention here is to showcase how the IDT provides foundation for the creation or retooling of curricular content to be delivered in a GLE or GBL format, alongside examples of evaluation that fit the context of learning taking place in a GBL or GLE setting.

Finally, resources that can help educators connect with different Gamification and GBL resources, such as community hubs, videos, basic Freedom of Information and Protection of Privacy Act (FIPPA) resource links and exemplar, as well as examples of educators developing their own approaches to GLE, GBL, or Gamification will be curated for public access. The intention on this final deliverable is to ensure swift access to approaches and strategies beyond the IDT and research conducted here, as experiences in the field are valuable in complimenting and adjusting for design considerations that occur in active teaching.

Definition of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Commercial-</td>
<td>A commercially available game that is designed for entertainment and not explicitly for educational</td>
<td><a href="https://www.igi-global.com/dictionary/com">https://www.igi-global.com/dictionary/com</a></td>
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<tr>
<td>Off-The-</td>
<td></td>
<td>global.com/dictionary/com</td>
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<td><strong>Shelf (COTS)</strong></td>
<td>consumption. While the constructional and delivery of</td>
<td>complement-off-the-shelf-</td>
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<td>Games</td>
<td>COTS games are primarily for entertainment, they may</td>
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<td></td>
<td>also feature educational elements depending on the</td>
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<td>context presented.</td>
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<td><strong>Competency-Based Assessment and Grading (CBG)</strong></td>
<td>Different from SBG, in that CBG requires learners to</td>
<td><a href="https://aurora-institute.org/cw_post/what-is-the-difference-between-standards-based-grading/">https://aurora-institute.org/cw_post/what-is-the-difference-between-standards-based-grading/</a></td>
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<td>demonstrate proficiencies in specific competencies,</td>
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<td>rather than earning credit for meeting standards. CBG</td>
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<td>requires demonstration of competency, or proficiency</td>
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<td>to receive credit, whereas SBG may differ in having a</td>
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<td>minimal standard to meet which may not communicate</td>
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<td></td>
<td>competence or proficiency to the desired or intended.</td>
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<td><strong>Digital Literacy</strong></td>
<td>“Digital literacy is the ability to interpret and design</td>
<td><a href="https://www.teachthought.com/literacy/the-definition-of-digital-literacy/">https://www.teachthought.com/literacy/the-definition-of-digital-literacy/</a></td>
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<td>nuanced communication across fluid digital forms”</td>
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<td>(TeachThought, 2019). In context of this paper, digital literacy refers to the ability to derive meaning from online-dominant platforms, such as games, the internet, and digitally-hosted resources, and determine the value, truthfulness, and expression that is present within this expanded field of media coverage.</td>
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<td>Exp / Experience Points</td>
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<td>A common unit of measurement for progression and achievement within COTS, MMOs, and RPGs. Experience points are generally achievement awards, and quantify the degree of which a character/player has progressed throughout a game. Experience points can be thought of as a simulated measurement of real-life, as the more experienced a player is, the more equipped they are in finding success relative to their experiences in new challenges or increasing difficulties within the game/life.</td>
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<tr>
<th>Game-Based Learning (GBL)</th>
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<td>The use of games, or designed activities, that inhere within the learning activity itself. Often features transferrable skills between the game and real-world scenarios. Examples may include simulations, board games, adjustments to established pastime games such as sports, or role-play scenarios.</td>
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<table>
<thead>
<tr>
<th>Game Design Principles</th>
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<tr>
<td>Game Design Principles refers to the art and technique of applying design and aesthetics for the construction of Serious, COTS, or Simulated games. Game Design</td>
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Principles vary depending on the intended purpose of the medium and are an actively explored field of social science known as Ludology, or Game Studies.

<table>
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<tr>
<th><strong>Games</strong></th>
<th>A game is fundamentally a structured form of play. For the purposes of this paper, games typically refer to video games, but are not isolated to video games only. Games, in context, are inclusive of board games, sports, pen-and-paper games, socially created games, and other forms of electronic-based game systems. In each example, game design principles inform the process through which participants, or players, actively engage within the theoretical confines of the system to solve problems or challenges, with some form of incentive included in doing so.</th>
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<tr>
<td><strong>Gamification</strong></td>
<td>The implementation of game elements into non-gaming environments and/or systems. Examples might include the implementation of a points/score system such as upvoting/downvoting and total aggregate scores, leaderboard systems for ranking or comparison with peers, and/or rewards for significant achievements.</td>
</tr>
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[https://en.wikipedia.org/wiki/Game](https://en.wikipedia.org/wiki/Game)  
[https://tophat.com/blog/gamification-education-class/](https://tophat.com/blog/gamification-education-class/)
<table>
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<tr>
<th><strong>Gamified</strong></th>
<th>A learning environment established around principles of video game design and game elements. Often features the inclusion of Gamification and Game-Based Learning opportunities to support learning outcomes.</th>
</tr>
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<tr>
<td><strong>Serious Games</strong></td>
<td>Video games which are purposefully designed to be “serious” rather than a form of entertainment. The primary focus of a Serious Game is to impart skills or proficiencies for players that are transferrable to real-world scenarios, such as health care, economics, or digital literacy.</td>
</tr>
<tr>
<td><strong>Minecraft Editions</strong></td>
<td>Different versions of Minecraft exist, and each operate under a different platform for coding. The original Minecraft (2011) was developed and released the company <strong>Mojang Studios</strong> runs on “Java” to power its application software. Relevant to this project, it is important to note that Microsoft’s <strong>Xbox Game Studios</strong> later purchased <strong>Mojang Studios</strong> and has since developed a multitude of Minecraft editions which are often cross-compatible with other operating systems and hardware. For purposes of this project, the original <strong>Mojang Studios</strong> created Minecraft, which is still in use today.</td>
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active usage by the player-base, is referred to as the
“Java Edition” of Minecraft, and the Microsoft cross-compatible versions are referred to as the “Bedrock Editions” or “Pocket Editions” and are frequently abbreviated as “MCPE” by the gaming community.
Within the scope of MCPE is the version of Minecraft published by Microsoft specifically for educator’s use, referred to as “Minecraft Education Edition” or “MEE” for reference. The MEE version of Minecraft features unique tools for classroom management but lacks regular updates and has notable restrictions comparative to the MCPE and Java Editions of Minecraft.

**MMO / MMORPGs**

An initialism for “Massively Multiplayer Online” or “Massively Multiplayer Online Role-Playing Game” respectively. Games that fall under the MMO/MMORPG genre are story-driven online-only games which incorporates exceptionally high volumes of players on a single server, which provides technical opportunity for players to engage in an expanded community.

[https://en.wikipedia.org/wiki/Game_design](https://en.wikipedia.org/wiki/Game_design)
<table>
<thead>
<tr>
<th><strong>Role-Playing Games (RPGs)</strong></th>
<th>An overarching genre of games where players control the choices and actions of a character in an imaginary world. Traditionally, role-playing games require the player to imagine they are the character they are controlling and progress through levels, statistic improvements, and challenges within a constructed narrative.</th>
<th><a href="https://www.techopedia.com/definition/27052/role-playing-game-rpg">https://www.techopedia.com/definition/27052/role-playing-game-rpg</a></th>
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<tr>
<td><strong>Seed / World Seed</strong></td>
<td>A world seed, or ‘seed’ in reference to Minecraft, is a series of numbers which are normally generated at random during the creation of an in-game map. Because in-game maps and worlds are procedurally generated (meaning an algorithm was used to prevent a truly random and non-cohesive or non-coherent fusion of data), ‘seeds’ allow for otherwise randomly generated maps to be <em>consistently generated</em>. In the context of Minecraft, using a seed will produce the same map and features consistently.</td>
<td><a href="https://www.pcgamer.com/best-minecraft-seeds/">https://www.pcgamer.com/best-minecraft-seeds/</a></td>
</tr>
<tr>
<td><strong>Simulation</strong></td>
<td>A format for designing games which simulates real-world environments and have players role-play as individuals within the simulated environment.</td>
<td><a href="https://www.igi-global.com/dictionary/simulation-game/26961">https://www.igi-global.com/dictionary/simulation-game/26961</a></td>
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</tbody>
</table>
Single-Point Rubric (SPR) | A form of rubric, or competency/standards-based grading which focuses the intended learning outcomes around a singular criteria point. Assessment is typically dichotomous and determined based on whether a student has met/not met the learning outcome. The SPR features a feedback structure which expands beyond met/not met methods of grading.

Standards-Based Assessment and Grading (SBG) | Assessment that is organized around explicit standards. Standards-Based Assessment gauges student proficiency based on their ability to demonstrate understanding or mastery in relation to the expressed standard, typically found in the provincial curriculum.

Brief Overview of the Project

This paper has been constructed to demonstrate the application of various gamification elements, as well as research in effective pedagogical practices, to support the development of an IDT for incorporating games and game elements into curriculum constructs. The IDT framework will provide a guide through which educators can organize their intended learning outcomes, curriculum, and course content in conjunction with game elements or game-based learning they are interested in exploring and using within a classroom. Following the creation of the IDT and incorporation of current research into its platform, this project will feature an exemplar of the IDT used to create a GLE and GBL unit for a secondary school level English Language Arts course. This exemplar will feature the design
considerations that were made throughout its conception (See Chapter 3) and hosted alongside the proposed IDT on a static website for public access. In addition, curated resources—such as draft of a FIPPA Backgrounder and Consent form, external webpages on how to gamify, and a beginner’s selection websites hosting examples and/or ideas for how to incorporate games and game designs into curriculum—will be hosted as supplementary and supported resources. The IDT, exemplar, and curated resources will be hosted at http://newgameplusmodel.weebly.com/ and made readily available for educators that wish to add GLE or GBL as tools for content delivery to access and include in their pedagogical repertoire.
Chapter 2 – Literature Review

Introduction

Large-scale institutional and educational changes are too difficult to implement overnight. Generating meaningful change would require prolonged success that originates from ‘grassroots-approaches’ and structures to demonstrate the success of a new format, and subsequently, the uptake and improvement of life-long learning patterns. This is not an argument to say that our current system is without its merit, but instead, an argument to support adjustments to our current practice that can enhance the quality of a student’s learning experience and their general well-being. As the video game industry continues to rapidly grow and demonstrate positive market trends (ESAC, 2018), it stands to reason that its consumers are finding self-motivated reasons to willfully engage in problem-solving tasks and work-oriented behaviours that are present and frequently within the media format. As we know consumers purchase games of their own volition, it is further justified to explore the relationship between education as play and games as a form of a work. In doing so, educators can find means of adjusting their practice to include elements that games typically use to make ‘work’ feel instead like ‘play,’ which can dramatically impact how students perceive of their learning environment.

This study seeks to explore the Critical Challenge Question, ‘How can Game Design Theories and Gamification Constructs be Applied to Improve Instructional Design (ID) for Courses at the Secondary Level?’ As games are inherently designed to build positive feedback loops, are readily consumed as a form of entertainment media, it is believed that similar approaches can be included in educational practices to improve student involvement for intended learning outcomes.

Research that identified best pedagogical practices that also yield positive effects for personal growth was compiled to inform the creation of this design project’s deliverables. The literature was then used to develop an ID template that educators could use to improve learning experiences for their students. This instructional approach, underpinned by best practices, was intended to be built with the
flexibility to be used across secondary-level courses and to be modified according to the educator’s choice in content. The scope of this undertaking is large and requires gradual progress to assess effectiveness in full.

Three key areas of current practice are identified and warrant exploration: the perceived lack of engagement and motivation in students regarding their classroom experiences; the disconnect between evaluating student success and the current reporting structure; and finally, the challenges in general practice regarding students’ perception, understanding, and use of feedback.

Research into Gamification and Game-Based Learning (GBL) demonstrates that these areas of concern can be addressed through an alternative approach ID. Key takeaways for the implementation of a Gamified Learning Environment (GLE), a Game-Based Learning (GBL) platform, or a Gamified learning approach have been considered in response to each key area.

Gamification to Support Learning

This study benefits from the intersection of research in educational psychology and the concurrent, rapid growth of the video game industry as a societal and culturally relevant touchstone (Gee, 2003; Gualeni, 2016). A review of the research determines that existing challenges faced in traditional learning environments can be improved through refined practices—such as the implementation of Gamified Learning Environments (GLE), Game-Based Learning (GBL), and Gamification of classroom structures—and attempts to do so are considered within individually autonomous classrooms (Brühlmann, 2013; McCurrach, 2019; Tung, 2019). By creating a foundation for Gamifying instructional course design, in conjunction with what we know are strong instructional design frameworks, it’s posited that a greater degree of student self-efficacy, motivation, and subsequent growth can be achieved (Barr, 2013; Gee, 2003; Ke et al., 2019; Ryan & Deci, 2020; Ryan et al., 2006).

Research into the effectiveness of institutionalized education has shown support for ‘grassroot’
structural changes that are made to support deeper engagement, motivation, and learning. Of particular note to this study are findings relevant to the use of Gamification in supporting intrinsic motivation and how assessment and feedback practices inform the learning process (Carless et al., 2010; Ryan & Deci, 2020; Ryan et al., 2006; Vansteenkiste et al., 2005).

A previously common structure of face-to-face (F2F) K-12 education was where an educator would provide content knowledge to their students and assess their ability to retain information. Now, with the internet readily available to most learners, a traditional content-focused method of instruction has started to come into conflict with student ability to actively retrieve information on their own via the internet. It can be argued here that a teacher’s role as a distributor of knowledge is transitioning more into one of facilitation and skill-development instead, as students still require assistance in refining how they access and understand the information they find in online formats. As knowledge is now available and often accessible online, K-12 classrooms are shifting into environments that are more focused on the navigation and evaluation of knowledge—rather than retention of content itself. As learners are no longer dependent on the physical classroom to attain knowledge, K-12 educators are put into a position where they can choose to shift away from content-focused instruction and instead focus on improving the development of internal regulation patterns and increasing intrinsic motivation for students. This shift should ideally serve to accommodate students that are entering their adulthood and to help to further ‘futureproof’ their education by ensuring they are equipped to independently continue their growth and skill development over time. Systems that encourage exploration and evaluation, such as Gamification, can present opportunities to facilitate these changes.

**The Effectiveness of Game-Based Learning and Gamified Learning Environments**

Gamified Learning Environments (GLE) present themselves as feedback-rich, high-engagement spaces for facilitating independent and intrinsically motivated growth. The consistent growth of Gamification and the video game industry has demonstrated a positive yield in engagement, growth of
creative and critical thought, and remarkable overlap with the goals of education (ESAC, 2018; Gee, 2003, 2005; Ke et al., 2019). The Entertainment Software Association of Canada (ESAC, 2018) reports that 64% of Canadians are engaged in some form of video gaming each month and commit to an average of 10 hours of playtime per week—which speaks to the positive attachments people have to game formats.

Likewise, evidence shows that video game culture no longer adheres to popular negative stereotypes and perceptions. The average age of Canadian gamers is 39, the majority of parents play video games with their children once per week, Canadian men and women equally identify themselves as gamers, and greater than half of surveyed Canadians report playing both offline and with others in an online environment (ESAC, 2018). Furthermore, half of surveyed Canadians believe that games yield positive results in developing technical skills and can improve problem-solving strategies in their lives. Evidence derived from the business sector demonstrates a penchant for gaming to be strongly correlated with elements of engagement and intrinsically derived motivation. ESAC’s (2018) findings have shown that gaming has become culturally pervasive across a multitude of mobile and fixed formats. Research into what makes games engaging and self-motivating while simultaneously existing as a form of frustration, challenge, and/or work reveals powerful motivational design structures that can be leveraged to facilitate better practices in education (Barr, 2013; Gee, 2003; Horn & Staker, 2015; Ke et al., 2019; Ryan et al., 2006; Yee, 2005).

**Key Findings:** Game-Based Learning, Gamified Learning Environments, and the Gamification of standard resources are a widely varied strategy for educational content delivery and instruction. With the growth of gaming as a pastime, there is reason to believe that the inclusion of Game-Based Learning activities, the implementation of a Gamified Learning Environment, and/or the Gamification of standard practices in education could yield improvements to student-driven interests and subsequent interest in classroom learning.
Self-Determination Theory (SDT) in Gamification and Gamified-Learning Environments (GLEs)

Key to the research conducted on Gamification in education is the consistent and recurring pattern of Ryan & Deci’s Self-Determination Theory (SDT) and how it factors into games as a tool to leverage and support intrinsic motivation for learning (Ryan & Deci, 2000b, 2020; Barr, 2013; Brühlmann, 2013; Ryan et al., 2006; Vansteenkiste et al., 2005; Yee, 2005). SDT provides a framework for interpreting the complexities of intrinsic motivation within individuals and holds value for instructional design philosophy as it provides quality control measures.

SDT operates on the assumption that people are inherently interested and invested in their learning and growth while also seeking quality relationships with others (Ryan & Deci, 2020). However, these principles for operation are not automatic and do require supportive conditions to build intrinsic motivation. SDT argues that when we are most interested and invested in improving ourselves, an individual will feel that they are autonomous in their decision making, will feel competent within the aspects of the challenge itself, and will feel that they have support from those that they value a social relationship with—or hold a personal connection to the content or environment itself (Ryan & Deci, 2000b, 2020).

As interest and engagement are also found to be key factors in predicting student success, engaging formats that invoke intrinsic interest and motivations show strong positive correlations to meeting, or exceeding, intended learning outcomes (Hattie, 2018).

Cognitive Evaluation Theory (CET) in Gamification and Gamified-Learning Environments

Within SDT two sub-theories support the expression of SDT principles in relation to external events and variables. These are necessary considerations as SDT refers to the inner workings of an individual’s motivation but does not inherently account for contextual variables such as extrinsic rewards (monetary, praise vs punishment, grades, status, etc.) that support, or antagonize, intrinsic motivation (Ryan & Deci, 2000b). Nor does it fully encapsulate the expression of motivation within a
power dichotomy such as a classroom. According to SDT’s sub-theory of Cognitive Evaluation Theory (CET), external events affect intrinsic motivation based on how an individual perceives the event and how the event influences their sense of competence and autonomy (Brühlmann, 2013; Ryan & Deci, 2000b, 2020). Events that support competence will improve intrinsic motivation so long as the events are still supportive of an individual’s perception of SDT: that they perceive that they can act autonomously; with competence; and have a relationship to the material, social setting, or context that is not being threatened. In this respect, rewards such as grades, evaluations, deadlines, competition, interpersonal standings, and all other externally-imposed goals can be perceived as challenging to an individual’s self-determination and can run the risk of being considered as a negative, controlling measure on their behaviour.

These findings support Horn & Staker’s (2015) “Jobs-to-be-Done” application through identifying that the student has specific needs (‘jobs’) they are looking to complete—namely feeling successful and making progress—as a measure of competency (pp. 139-154). Disharmony between self-determined “Jobs-to-be-Done” and the teacher/curricular expectations can create rifts in motivation and application. In contrast, video game design often sets forth a prescribed curriculum (depending on genre and narrative) but implements a structure of feedback and improvement that is distinctly less antagonistic to the challenges identified in SDT (Ryan et al., 2006). Most video games present skill-building content to users when it is timely and relevant, provide feedback that is generally informational rather than critical and provide a space where players are autonomous and motivated by their need to feel successful (Gee, 2003, 2005). In this regard, games contrast with standard classrooms that seek to motivate through external measures as student focus is organized around the retention of stress-related resources— such as the preservation of intellectual or social standing (Hobfall, 1989).

Research conducted on Massively Multiplayer Online (MMO) environments provides an empirical model for understanding player motivation. In MMOs, players tend to filter their engagement
and motivation through either ‘Achieving,’ ‘Social,’ or ‘Immersive’ approaches (Yee, 2005) which have instructional design implications for gamified classrooms. These motivational approaches can provide educators with areas of focus to emphasize when Gamifying a classroom. Though varied in genre, playstyles, and executions, the general format and structuring of game design presents a variety of strategies through which students are invited to participate from a place of self-interest rather than through externally determined practices.

Organismic Integration Theory (OIT) in Gamification and Gamified Learning Environments (GLEs)

Organismic Integration Theory (OIT) proposes a taxonomy of motivational types that arranges individuals on a spectrum from amotivated behavioural and regulatory styles to fully self-determined and internally regulated styles—based on how motivations do or do not emanate from the self (See Appendix B). When classrooms engage in external regulation practices (such as leveraging rewards and punishments, compliance, and classroom social pressures), students are predominantly restricted to lower-level extrinsic motivation and external regulation for their behaviours only (Ryan & Deci, 2020). Likewise, students that find themselves internally regulated and intrinsically motivated beyond the context of the classroom do not benefit or have cause to respond, to classroom regulation practices (Ryan & Deci, 2000b, 2020). Students with high degrees of motivation are individuals that tend to derive motivation and regulation from their own autonomous system of values and can find their own sense of interest, enjoyment, and inherent satisfaction from a variety of content and contexts. This speaks to a strong sense of autonomy that they filter their external experiences through (Ryan & Deci, 2000b, 2020).

OIT helps detail the nature of extrinsic motivations when met with controlling factors, authority, and a general perception of how much autonomy an individual feels they have given the context of a situation (Ryan & Deci, 2000b, 2020). The traditional classroom is externally regulated through grades and processes which stem from a perceived authority and not from the learner. This creates power struggles, and motivation decreases as rewards are identified as having a controlling aspect (Brühlmann,
In Gamified formats, however, the development of skills and learning processes are not the central focus and are not perceived as controlling. Instead, rewards are established as achievements of autonomy, progress, process, or overcoming a deliberate challenge. Hiebert et al., (1996) explained this as *problematizing* subject-matter knowledge— allowing students to search, inquire, and resolve challenges through the active application of the knowledge they have, or will acquire, through the process. Gamification and GBL, when done well, create environments where subject problematizations are structurally inherent and deliberately designed to teach specific skills (Gee, 2003, 2005; Hiebert et al., 1996).

Adopting an approach that problematizes subject matter helps shift student perspectives of achievement away from performance contingencies and towards a focus on informational feedback that can be used to overcome the subject challenge. Ryan et al., (2006) express this process as reflections of SDT— as rewards that take the form of *informational feedback* (intended to provide information, not to adjust or control behaviour) are shown to enhance autonomy and intrinsic motivation, and are critical to student achievement. Through the repeated practice of integrating informational feedback, an individual’s perception of autonomy and sense of competency will improve over time and a stronger relationship to the content and context will develop (Ryan et al., 2006; Ryan & Deci, 2000b; Carless, 2015).

Ryan & Deci (2000b) expand on this positive feedback cycle by connecting informational feedback to the development of intrinsic regulation patterns of motivation— as “feedback, communication, [and] rewards” are “[conducive] toward feelings of competence during action” and “can enhance intrinsic motivation for that action” (p. 70). Providing informational feedback is a means of relationship building that facilitates the development of competence and the acknowledgement of an individual’s autonomy. Ryan & Deci (2000b) continue by positing “that feelings of competence will not enhance intrinsic motivation unless accompanied by a sense of autonomy or, in attributional terms, by
an internal perceived locus of causality” (deCharms as cited in Ryan & Deci, 2000b, p. 70). As a result, the structure of well-designed video games provides patterns for delivering informational feedback (rather than punitive feedback) that can support autonomous approaches to problem-solving. While this is certainly not a simple endeavour, a GLE or GBL format provides an opportunity to leverage voluntary approaches of problem-solving as it relies on the active participation of students to engage with a problem in their own way.

**Key Findings:** External regulation and extrinsic motivation patterns commonly used in schools have shown insufficient evidence to support their wide-spread use and effectiveness. Intrinsic motivation and environments that support autonomous decision-making—such as the development of competency, and personal connections to environment, materials, or people—are stronger approaches to encourage student achievement. Redesigning classroom practices to facilitate and encourage intrinsic motivation is strongly supported as a means for improving learning outcomes. GLE/GBL/Gamified formats are potential avenues to support non-controlling measures of instruction, as the formats prioritize problem-solving through the provision of informational feedback, rather than reward/punishment systems that are based on performance contingencies. Building lasting self-determined regulation, motivation, and learning processes are consistently found to improve student achievement within learning environments.

**Gamification as an Improvement to Traditional Practices in Instructional Design (ID)**

SDT and its sub-theories hold value when applied to GBL or a Gamified ID. Ryan et al., (2006) found that both the enjoyment of a game, as well as the preference to play again, were significantly accounted for by psychological need satisfaction. Intuitive controls and interactions appear to enhance the sense of enjoyment and preference of games as they directly correlate to feelings of in-game competency and in-game autonomy. Video games are conceptually organized structures for play and player-derived experimentation that presents the opportunity for players to follow specific rulesets— or
invent their own— to overcome obstacles or attain goals (Ke et al., 2019). Good video games are organized around supporting autonomous options and experimentation regarding problem-solving: often, this means a game is non-linear and problems are solvable in more than one way—which again, supports the concept of autonomy and competence in SDT (Hunicke, et al., 2004).

Good games typically provide a complex system that is inherently supportive of self-determined learning as well as the provision of opportunities for lateral thinking processes and critical literacy skills (de Bono, 2014; Gee, 2003). Hunicke et al., (2004) note that good video games are a unique form of entertainment in that their consumption is relatively unpredictable and that video games are intended to be interpreted backwards and forwards to strengthen design considerations. This makes GBL and game design principles inherently dialogic with the user— a factor that removes an aspect of control from a subject/authority structure and emphasizes a Constructivist means of problem-solving and growth (Bahktin, 1981). In contrast, students in most K-12 classrooms experience learning as an activity they are subjected to, rather than one they interact with, as learning is often confined to what the classroom teacher provides. A dialogic approach offered through Gamification can offset those negative effects.

Implementing game design as a theoretical framework offers an opportunity for dialogue and socially constructed meaning-making that mirrors how learning occurs outside of the classroom. Games are intentionally designed systems that build behaviour via interaction (Hunicke, et al., 2004). These approaches, when applied in a classroom structure, emphasize that learning itself is a dialogic and socially constructed process that requires equal participation between the provided structure and the consumer (teacher and student respectively). A good GLE or GBL format is one where the content interacts with the user and responds to, or changes, with their inputs.

**Support for Struggling Learners**
To that end, GBL and game design can provide struggling learners with similar approaches used to support gamers in advancing through different difficulty levels. Barr (2013) notes that it is generally accepted that games will increase in difficulty and complexity over time and engagement. This is the case with K-12 learning as well. There are methods employed within video game philosophy that help adjust challenge levels to the difficulty preferences of the player—often taking the form of an adjustable selection of ‘easy, normal, hard’ or ‘casual or expert’ difficulties which change the complexity of the game. This allows for mitigation of Koster’s (2005) principle that “failure must have a cost” and having the “Mastery Problem” dealt with, as it allows customization of what the cost and difficulties will be while circumventing feelings of psychological distress in spite of the existence of imminent challenge (pp. 120-122). Barr (2013) does consider that the idea of failure carrying a cost is potentially controversial when transposed to a classroom but raises the contention that failure to learn already carries a cost in an educational context—as upper-level courses, post-secondary education, and degree programs are intentionally designed to scaffold learning on previously attained skills.

Failure to learn carries the consequence of increased struggles for students seeking to move on and achieve higher education. Promoting students to the ‘next level’ of educational standards before they have demonstrated competence not only does a disservice to students but is also an example of rewarding failure, which subsequently weakens their learning experience and does little to prepare them for their next challenge (Barr, 2013). If we consider implementing Barr (2013) and Gee’s (2003; 2005) advice in applying similar difficulty/choice approaches to education—the same opportunities that game designers take to create engaging challenges tailored to meet specific skill levels—we have the potential to improve the experience of struggling students and potentially build feelings of competency and motivation in connection to curricular expectations.

Enhancing Learning Experiences with Game Design Principles

Applying Game Design Principles to a Learning Model
As technology integration is becoming more important for business and societal practices on a global scale, there is a need to expose students to technological practices so they can develop digital literacy skills in addition to their standardized curricular learning (Gee 2003; Tung, 2019). Gee (2003) expresses that, as a format for learning, video games yield powerful and relevant methods for facilitating learning while building technological and cultural context:

If principles of learning are good, then better theories of learning are embedded in the video games many children in elementary and secondary school play than in schools they attend. Furthermore, the theory of learning in good video games fits better with the modern, high-tech, global world today’s children and teenagers live in than do the theories (and practices) of learning that they sometimes see in [traditional] school. (p. 5)

When we treat video games, and games in general, as a format of text, as is appropriate to the subject of multimedia formats, Gee (2003) proposes that learning takes place as “situated cognition” in the sense that “thinking is tied to bodies that have experiences in the world” (p. 9). There is no reason why this ‘world’ could not be digital and providing opportunities to include games that are an established part of real-life is arguably a more authentic learning process than learning presented in the standardized classroom format. Standardized classrooms often present a format for systemized learning that is simply not mirrored in most societal settings and does not accurately demonstrate how we learn through situated experiences throughout our lives. Gaming creates an opportunity for communities to develop through situated and immersive environments, as digital formats and games market themselves a shared experience—a “semiotic domain” as Gee (2003) puts it—where people “think, act, and value in certain ways” and communicate in a variety of modalities (p. 19).

This is critical for two particular reasons, the first of which is related to the complexities of communication and expression over online formats—particularly for those not well-versed in digital semiotic domains (such as the application of email etiquette, memes, subtext, emoji expression use,
etc.). The second critical aspect here is that the ability to understand and participate within a semiotic domain, regardless of what that semiotic domain functionally is, provides a sense of community and shared language for expression (Gee, 2003). It follows that situated learning should take place as a form of *semiotic expression* that is not isolated to a classroom if we wish students to transfer their learning into other environments. This not only builds on the SDT framework for understanding intrinsic motivation and external application, but it also appeals to collaborative learning and success within online learning settings. The need for shared expression is foundational to learning practices and is core to the development of a learning community (Bates, 2016).

Motivation and community-building systems that are frequently employed in video games provide a means to improve classroom practices and can offer a space to authentically develop digital literacy. Engagement within a digital, semiotic domain promotes familiarity and competency within online communication formats, which helps introduce students to the growth of digital critical literacy. As competency builds with familiar use and engagement, students experience a reinforcement of a connection with the digital format and classroom community, which further facilitates the SDT goals of improving intrinsic motivation while learning content through a “situated, experiential, and embodied form of learning and thinking” (Gee, 2003, pp. 72-110). For good game design, Gee (2005) details 16 specific learning principles of good games that are directly connected to effective learning practices and can be adapted or included in classroom practice (See Appendix C.) Likewise, Koster (2005) details aspects of game design elements that conceptually mirror Gee’s specified learning principles (See Appendix D.) By implementing and adjusting educational content delivery to adhere, connect, or be based upon these 16 principles, there is the potential to further improve student motivation and engagement when coupled with problematized content and effective instructional design layouts.

**Key Findings:** Approaches used in good game design mirror effective instructional design practices in education, specifically regarding metacognitive practices and situated learning. Cultural
relevant and value in applying to 21st Century digital skills and societal norms are potentially more advantageous and more authentic learning experiences for building intrinsic motivation and a sense of community than standard classroom learning.

**Applying Game Design Principles into Assessment Practices**

Studies conducted on the implementation of formal performance grading have shown consistent negative results for emotional well-being and achievement of learning outcomes when compared to non-formal grading and assessment practices (Högberg et al., 2019; Klapp, 2015; Ryan & Deci, 2020). Implementing grades is nuanced, complicating the reasons why grading practices can yield negative learning effects when contrasted to feedback and competency-based systems (Krijgsman, 2017).

Some theories for the negative correlative growth pertain to an increase in stress due to the comparative nature of the grading communication system which could be a confounding variable that is responsible for increased stress levels in children, the reduction of self-esteem received from feedback connected to grade-point achievement, and lower life satisfaction due to negative associations of competency that stem from children’s reported learnings (Högberg et al., 2019). The authors further noted that when grades and high-stakes testing become more commonplace in educational facilities, and increased demands on teaching requirements subsequently incur, pressures directly correlated to grading tend to permeate regular teaching practices. This demonstrates a connection between institutionalized pressure on teachers that directs evaluations to meet institutional expectations rather than the learning needs of the individuals within their room.

Klapp’s (2015) study also found that grades disproportionately hurt students of low-ability and correlated with a decreased likelihood to finish secondary education, created a greater gender gap discrepancy between males and females within age-groupings, and harmed students’ self-perceptions of their abilities during a vulnerable developmental age.
All findings show that graded systems negatively impacted growth and learning achievement when compared to ungraded formats, yet there exists little in the way of large-scale empirical research conducted to understand how grading affects motivation for learning and later achievement in life despite how ubiquitous grading policy is across global institutions.

Research suggests concern over the implementation of grades as a form of feedback, assessment, evaluation, and reporting (Butler as cited in Ryan & Deci, 2020; Klapp, 2015; Krijsman et al., 2017; Ryan & Deci, 2020). While we can account for individual motivational factors and classroom design, a critical aspect of teaching is still dependent on feedback processes and the evaluation of student capabilities. The detrimental effects of traditional grading on student motivation and well-being, along with the ineffectiveness of grading in communicating what an individual knows, is capable of, and their future capacity for learning is well-documented (Högberg, 2019; Klapp, 2015; Krijgsman et al., 2017).

Furthermore, we know that there are positive correlatives pertaining to assessment practices in the form of ‘self-reporting grades’ and ‘Response to Intervention’ (RTI) (Hattie, 2018). However, both ‘self-reporting grades’ and RTI are feedback-oriented processes and require a student-specific understanding of the quality and performance of their current work to maintain intrinsic motivation. In either scenario, the student is best served when they have a clear understanding of the criteria for their learning objectives (Cooper, 2010, p. 60-64), an understanding of their current skills relevant to the criteria (Carless, 2015), and are presented with a “Well-Ordered Problem” (Gee, 2005, p. 36)—all scaffolded processes to improve the skill sets they need to overcome a challenge.

GBL and GLE then present opportunities to adjust assessment practices to be in line with current research, as Gamified structures inherently lend themselves to criteria-based assessments by way of problematized subject matter (Hiebert et al., 1996). As challenges in a game are meant to be strategic problems to be solved with explicit ‘win’ and ‘lose’ conditions, they naturally promote a form of
standards-based learning as well as an opportunity for feedback to be taken as informational rather than judgmental.

Likewise, grades undergo a conceptual shift as well. Instead of continuing to act as a form of external control, they become positively reinforcing progress systems, as games are often structures to present points and total scores as a form of reward for mastery and further promote a sense of autonomy and competency while positively reinforcing the skill-building behaviour.

**Feedback Literacy**

The development of feedback literacy is critical in establishing the skills required for students to self-assess, self-report, and meaningfully engage with their feedback. To best enable students to evaluate their ability and learning based on criteria, the development of feedback literacy is critical. Carless & Boud (2018) propose that feedback literacy has four predominant features that contextualize the process of internalizing and using feedback for growth: appreciating feedback; making judgments; managing emotions and affect domains; and taking action. Both authors propose strategies for encouraging the process of internalizing feedback through two enabling activities—providing opportunities for peer feedback and the use of exemplars with students.

These suggestions are, again, consistent with SDT in that feedback is best served when affective domains are managed (feedback is non-threatening to self-efficacy or relationship perception) and emphasizes that action must be taken (intrinsically regulated and motivated) (Carless & Boud, 2018; Carless, 2015; Carless et al., 2010; Ryan & Deci, 2000b, 2020). Jung et al., (2010) support these findings by noting that the provision of specific performance feedback increases the quality and quantity of problem-solving ideas, with even greater effects present when explicit goals are made known.

Likewise, Gee (2005, p. 36) identifies a similar principle in gaming, where features of a “good game” include “Well-Ordered Problems” (explicit goals to overcome) and Information “On Demand” and “Just in Time”—where useful skills and content are provided when it can be immediately put to use and
whenever a player feels like it could be useful. Across the literature, it appears that explicit objectives, or explicitly stated problems to solve, help facilitate the internalization and effectiveness of feedback in learning. When delivered with an opportunity to apply feedback as a skill, as game design typically encourages players to do to overcome new challenges, feedback becomes a tool for improvement rather than a critique of the individual’s competence.

Carless & Boud (2018) emphasize that feedback must be accompanied by purposeful coaching (explicit feedback) and frequent opportunities to apply feedback into active practice. Under traditional assessment formats (such as grading) it becomes difficult to apply the feedback that is delivered in the form of a mark as the mark often indicates an “end-point” and closing of a feedback loop instead of a continuation, or “feedback spiral,” where feedback is a form of scaffolded learning (Carless et al., 2011; Carless, 2019, pp. 712-713).

Competency-based systems, such as standards-based grading and criteria-based assessment, can rectify such a challenge and are frequently present in game design (Tung, 2019). Systems focused on mastery provide powerful connections between student assessment, course learning, and formative feedback that can be integrated and applied (Diefes-Dux, 2018; Sadler, 2005). If an individual requires proficiency to proceed—either within a video game environment or within a skill-focused content curriculum—feedback becomes a vehicle for specific and targeted improvement measures to be made for the player/student and then used to overcome their challenge. Furthermore, the application of feedback spirals and criteria-based assessment enhances feedback literacy, which in turn, provides legitimacy and accuracy towards the effectiveness of student self-reporting that is internalized and supportive of engagement and intrinsic motivation (Carless, 2015). This allows for learning to remain a continuous experience with feedback providing targeted and deliberate areas for growth and further prevents grades-as-feedback from interfering with SDT principles of intrinsic motivation.
**Key Findings**: Ample opportunities for feedback delivered to peers, from peers, and opportunities to apply formative feedback to learning goals are critical instructional design considerations. Gamified structures of assessment, which usually rely on proficiency evaluations, provide an alternative framework to assess student learning that resists some of the motivational challenges that traditional grading and assessment formats create. Focusing on explicit feedback and presenting explicit problems to be solved can help build feedback literacy and create a cyclical format to support learning.

**Conclusions**

This study sought to provide evidence and context to address the Critical Challenge Question, ‘How can Game Design Theories and Gaming Environments be implemented in Instructional Design to support learning at the Secondary level?’ An examination of the current and predominant theories in academic literature supports the contention that GLE, GBL, and Gamification are meaningful strategies to employ in K-12 education and can improve student performance, motivation, and well-being. Best practices in employing GLE, GBL, or other Gamified systems revolves around making changes to instructional practice to encourage student choice, personal investments for improving intrinsic motivation factors, and providing a system of assessment which does not evaluate performance alone, but instead employs combinations of feedback-rich activities and competency-based assessments. GBL, GLE, and Gamified constructs provide alternative engagement considerations that recontextualize learning environments and are increasingly pronounced in adherence within the business sector and a meaningful area of inclusion within schools based on the literary findings.

These principles and research findings, when integrated with considerations from the video game design sector as a means for providing cultural relevance, interest, and a form of dialogic text-based narratives, will provide the foundation for my gamified course framework that can be modular...
and incorporate GBL activities over time. The design and development of the GLE is detailed in Chapter 3 of this Process Paper.
Chapter 3 – Procedures and Methods

Major Project Development

The primary purpose of this Major Project was to provide educators with additional strategies that could be used to enhance learning activities by including options for games and game-based learning principles. It was identified that there is both merit and challenges faced in implementing new technology and tools for learning without a foundation to work from. To meet this perceive need, and to answer my Critical Challenge Question, “How can Game Design Theories and Gaming Environments be implemented in Instructional Design to support learning at the Secondary level?,” I came to a conclusion that the most appropriate and useful tool I could provide educators with would be an Instructional Design Template that could be widely-applied to a variety of goals, appeal to Gamification and research into effective game design, and to incorporate a foundation for teaching with games and gaming principles. For an exemplar of these components in action, I chose to create a game-based mini-unit to demonstrate how the IDT could be used to craft GBL and GLE opportunities for learning.

A personal goal I wanted to achieve was to provide something that would be easy to access, intuitive to use, and to synthesize several well-researched pedagogical viewpoints, considerations, and practices that assist in establishing coherent and strong learning plans. However, my research showcased a variety of planning considerations to enhance learning that informed my IDT design and enhanced the creation of this project’s IDT to not be specific to gaming. Through introspection connected to what I had learned, it became clear that my target audience was educators that could see merit in including games and game-design principles within their established practice, but not feel beholden to force their inclusion. A primary directive of this IDT then is to inform that practice, but to also provide a template to follow for enhance lesson and unit designs regardless of including games themselves.
To this end, my key deliverables have been tailored to support educators that have an idea for GLE or GBL inclusion in their practice and seek a means to bring non-traditional learning tools into active practice, rather than risk the creation of a false dichotomy whereby GBL and GLE are in direct conflict with traditional forms of education at all times. This was a challenging consideration, as this project’s clear bias is an argument in favour of GBL and GLE as powerful tools for learning that can meaningfully address some of the challenges identified in traditional classrooms. However, on reflection and with consideration to Puente’s Puente’s SAMR model (2014a), the goal of GBL and GLE inclusions in the classroom are clear: they are at their best when they are treated as tools to design and enhance, improve, or present opportunities for student growth, well-being, and learning.

As tools, GBL and GLE should be used only when an educator feels there is value in employing the tool at that time, rather than attempting to falsely argue that GBL and GLE are the right approaches for all intended learning to take place through. GBL and GLE should, ideally, be considered as powerful strategies for learning that carry both distinct drawbacks and benefits, and they are best used when an educator can identify distinct connections for their employment that helps address potential gaps in content, engagement, and feedback cycles. And so, while my original intention of this project was to develop a fully-designed GBL and GLE course complete with resources, this project has ultimately shifted to the development of a path forward for those educators that, like me, wish to someday employ a GBL and GLE course that is robust, student-centered, and ultimately well-designed.

A simple internet search will reveal arguments for and against gamification and the use of games in education but seldom provides any deliberate means for how to do it yourself in an informed and well-researched way. The objective for the IDT this project promotes and the exemplar mini-unit then was to be provide access to educators without the need of arguing in strict favour for GBL and GLE as necessary inclusions in a classroom. Educators that are seeking these tools are unlikely to require convincing and are most likely seeking a means to breathe life to their own ideas and, likewise, are
thought to already have some measure of experience or background with a non-traditional educational format for instruction (such as video games) that they see value in including.

**Design Considerations**

*Instructional Design Template: "New Game+” Backwards Design Template (NG+ Template)*

My design plan was adjusted to focus on the initial creation of an IDT that synthesized powerful pedagogical models for lesson and unit planning with instructional design considerations that were specifically focused on the inclusion of new technologies and practices within classrooms. Having had the opportunity to explore a variety of planning models in the Online Learning and Teaching graduate Diploma (OLTD) program, I concluded that the models that best fit the goals established in my CCQ would be a synthesis of McTighe & Wiggins’ (Bowen, 2017) Understanding by Design (UbD) lesson template, Universal Design for Learning (CAST, 2018, Universal Design for Learning Guidelines) guidelines (UDL), the SAMR Design Model (Puentedura, 2014a) considerations, and include aspects from my research which I felt were left unaddressed in the Understanding by Design planning template through my own experience of using it.

These aspects, specifically in regards to Carless’ (2019) concept of *Feedback Spirals* and Ryan & Deci’s (2020, 2000b) SDT, have been incorporated in the adapted planning model to provide a holistic and comprehensive means for educators to approach new GBL and GLE endeavours when approaching their learning goals and planning documents. The intention behind these design considerations was to unite strong pedagogical practices into a holistic model which could therein be applied to the inclusion of educational technology, such as teaching with games or game-design principles.
Figure 1

First Page of “New Game+” Gamified Instructional Design Template

<table>
<thead>
<tr>
<th>PHASE 1: “AT A GLANCE” GOALS</th>
<th>PHASE 2 - GAMIFYING THE LEARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>My DESIRED RESULT is for learners to...</td>
<td>The EVIDENCE OF LEARNING I want to acquire is the learner's capability to...</td>
</tr>
<tr>
<td>•</td>
<td>•</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Pre-Planning Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What skills do students need to have pre-taught to use this tool effectively?</td>
</tr>
<tr>
<td>What feedback strategies does this game/game-strategy already use that could help build student success that is connected to your intended learning outcomes?</td>
</tr>
</tbody>
</table>

Note. Page 1 example of the NG+ Template created as a key deliverable for this project (1st draft). See Appendix F for the completed document.

The result of this IDT draft was the “New Game+” template (NG+ template) which culminates in a blank, 4-page framework that prompts users to respond to a maximum of 34 queries that will assist in creating GLE or GBL lesson formats. There is no curriculum police, and therein, it is not expected to respond to each prompt — instead, they are meant to serve as guiding questions to shape design considerations made while crafting a lesson, unit, or course. While this is can certainly be a time-consuming practice, the goal was to ensure that educators take a comprehensive examination of the learning activities they seek to present through a range of lenses and perspectives. The name “New Game+” is a homage to a gaming trope which features a ‘replayable’ option provided across variety of
video games. Typically, a “New Game+” mode will become available once a player has beaten a game and provides incentive to restart from the beginning with wither optional advantages or new challenge opportunities that will appear in their next playthrough. I felt this was an appropriate likeness to what a solid IDT was intended to do: to augment an educator’s pre-established understanding of good learning and their existing content, and offer expanded challenge, engagement, and enrichment in pursuing their next time teaching the content.

IDTs are inherently reflexive— we return to our plans after they’ve been taught, we keep what works and change what doesn’t— and I want to emphasize that this NG+ template both uses, and reflects, feedback spirals in the same way. As the premise of lesson creation is also reflexive in nature, questions have been phrased in the form of an introspective narrative to promote reflection on key considerations necessary for improved lesson planning as well as building a justification and rationale for the use of a tool or strategy in the construction of a learning activity.

Context has been supplied frequently, as educational terminology may vary, feel stiff with jargon, and feel unapproachable. I hope to make further refinements to emphasize clarity with repeated feedback and experience from using this template in active practice. The specific considerations that went into the creation of the NG+ template are explored as follows.

**Instructional Design Key Factors**

**Strengths of the Understanding by Design (UbD) Model**

McTighe & Wiggins’ “UbD Unit Template (version 2.0)” (See Appendix E) was chosen as the base model for the construction of the NG+ template and was the first key factor. McTighe & Wiggins base their ID around seven key tenets which guide the planning phase.
Figure 2

Seven Key Tenets of the UbD framework

1. Learning is enhanced when teachers think purposefully about curricular planning. The UbD framework helps this process without offering a rigid process or prescriptive recipe.

2. The UbD framework helps focus curriculum and teaching on the development and deepening of student understanding and transfer of learning (i.e., the ability to effectively use content knowledge and skill).

3. Understanding is revealed when students autonomously make sense of and transfer their learning through authentic performance. Six facets of understanding—the capacity to explain, interpret, apply, shift perspective, empathize, and self-assess—can serve as indicators of understanding.

4. Effective curriculum is planned backward from long-term, desired results through a three-stage design process ( Desired Results, Evidence, and Learning Plan). This process helps avoid the common problems of treating the textbook as the curriculum rather than a resource, and activity-oriented teaching in which no clear priorities and purposes are apparent.

5. Teachers are coaches of understanding, not mere purveyors of content knowledge, skill, or activity. They focus on ensuring that learning happens, not just teaching (and assuming that what was taught was learned); they always aim and check for successful meaning making and transfer by the learner.

6. Regularly reviewing units and curriculum against design standards enhances curricular quality and effectiveness, and provides engaging and professional discussions.

7. The UbD framework reflects a continual improvement approach to student achievement and teacher craft. The results of our designs—student performance—informs needed adjustments in curriculum as well as instruction so that student learning is maximized.

The Understanding by Design framework is guided by the confidence of evidence from two streams—theoretical research in cognitive psychology, and results of student achievement studies. A summary of the key research that undergirds UbD framework can be found at www.ascd.org under Research A Topic.


These specific tenets help inform how UbD enables student engagement through autonomous meaning-making and ties the construction of lesson design to established learning objectives, rather than approaching learning from a perspective of sequential content attainment. As I had the opportunity to experiment and expand upon the depth of this template in OLTD 512’s course on Instructional Design, as well as regularly apply the work constructed from this template into my practice, it felt a foregone conclusion that the “Three Stages of Backward Design”— “Identify Desired Results,” “Determining Assessment Evidence,” and “Plan Learning Experiences and Instruction”— were all critical facets of ID that warranted inclusion in the NG+ template (McTighe & Wiggins, 2012, pp. 2-6).

I have sought to model this template around UbD’s greatest strengths, specifically the establishment of the final learning goal, skill attainment, or understanding that an educator wishes students to obtain prior to the creation of lesson plans or lesson construction. This is valuable, as it maintains focus on the learning and achievement of an established learning objective rather than designing lessons aimlessly, and in reaction to how lessons have gone the day before. As games and
gaming principles rely strongly on having established goals for players to pursue, challenge themselves, and build skills to overcome said challenge, it is apparent that the use of a game or inclusion of gamified learning environments are tools to address a challenge in learning, rather than the goal of the learning themselves. Because the UbD template emphasizes planning with the end in mind, tools are selected based on how well they help students reach the intended learning outcome. As a result, UbD is not only valuable in establishing a reason to use GBL or GLE’s, but also in appealing to the same game design principles that underpin good games.

While engaging with the UbD template, I reason that an educator is put into a situation where the ‘end-goal’ of the learning needs to be broken down into components that are organized around skill attainment which appear to run parallel to Gee’s principles of “Well-Ordered Problems” and “Challenge and Consolidation” (Gee, 2005, p. 36). Information and learning would need to take place in sequential, “Just-In-Time” (p. 36) delivery so as to scaffold the attainment of needed skills and the understandings required to be successful prior to the engagement with an intended learning objective that has been determined from the beginning of the UbD template.

As UbD intends for skills to be scaffolded and each activity is meant to contribute towards an intended learning objective, there is significant overlap between work done in a UbD mindset and Gee’s observations on how good games and good learning are connected. Lessons built around the premise of helping students reach the intended learning objective take on “Situated Meanings,” provide recognizable patterns for development that are tied to “Systems Thinking,” and the lesson plan prioritizes the practice of “Performance before Competence” by way of scaffolded assessments, feedback, and early-focus on what skills will be needed to be successful at the end of the learning period (p. 36-37). For those seeking to include games or gamified elements in their instructional design, I feel strongly that the UbD template allows an educator to chart learning progression in a way that correlates to what has been identified as the core underpinnings for good game design, and using the UbD model
will lead to a more appropriate use of games and gamified learning environments as tools for instruction.

**Strengths of the Universal Design for Learning Guidelines**

While I could extol the benefits that the UbD template can provide as a framework for scaffolding and designing lessons alone, I felt there is little in the way of detail or guidance intended for how one should construct learning events, instruction, or classroom plans to meet those goals on its own. UbD serves as a pathway for thinking, established around an end-goal idea as an anchor and is decidedly open for how an educator should construct learning activities to reach that goal. This is not a criticism, but instead an observation, and I believe that improvements can be made to assist educators in justifying how new technology or potentially ambiguous learning activities, such as games and gamified learning, fit into a learning environment.

The UDL Guidelines (CAST, 2018, Universal Design for Learning Guidelines) provide an ideological opportunity for educators to contend with their curricular plans, which can yield improvements to the UbD template. UDL Guidelines provide a flexible set of “suggestions” that can be applied to “reduce barriers and maximize learning opportunities for all learners” while not establishing themselves as clinical or prescriptive in nature: they can instead be “mixed and matched according to specific learning goals” (CAST, 2018, Universal Design for Learning Guidelines). In this regard, I have interpreted UDL as a means for troubleshooting challenges in educator planning phases, as they provide a simplified graphic organizer for solving common challenges that arise when we seek to communicate new ideas.

UDL fundamentally emphasizes the need to cast a wide net in terms of strategies, expressions, and information that an educator provides so that learners have the greatest amount of opportunities to find personalized buy-in, to connect content to their pre-established understandings and knowledge, and to express their learning in a variety of ways. CAST (2018) emphasizes that UDL Guidelines are not
empirical, and are intended as a form of “concrete suggestions that can be applied to any discipline or domain to ensure that all learners can access and participate in meaningful, challenging learning opportunities” (CAST, 2018, The UDL Guidelines). I consider this fundamentally in-line with Ryan & Deci’s (2020) expansive theory on SDT as well as generalized game design principles for learning, as in each conceptual field of study, it is reasonable to perceive learners/participants/players as individuals that are a part of a diverse whole, and that there is not one unified or singular approach to guarantee all individuals will maintain motivation, interest, or success when strategies are applied unilaterally. When we recognize that an individual seeks a feeling of success, as they do in video games and in relation to Horn & Staker’s (2015) “Jobs-to-be-done” theory, it logically follows that our planning needs to accommodate enough breadth to maximize the appeal of curriculum for a class composed of individuals, rather than seeking uniformity in content (pp. 139-154).

In isolation, UDL Guidelines can be perceived as extremely challenging and onerous for educators that are in pursuit of creating a unified, evidence-based plan. However, when UDL is included as a facet of planning— in conjunction with the UbD template, which advocates for planning to be conducted in chronological reverse— UDL can be meaningfully employed as a way of branching out, or expressing, the different paths that educators and students can take towards the ‘end-goal’ learning objective. Providing multiple means of engagement, representation, and expression then become elements for designing learning activities that are derived from the established learning goal rather than ambiguous targets to meet. While nuanced, the former approach mirrors advancement in video games and game-based learning at a conceptual level. End bosses, narrative climaxes, and fundamental progression is discernably organized when perceived in reverse: players engage with a video game to feel successful while engaging in progress-based activities towards the ‘end’ of a game, regardless of the game’s narrative. In order to create a positive feedback loop (i.e. meeting the needs for a player to feel
successful), there must be a ‘goal’ to which the player is working towards, feels competent in and challenged by, and interested in enough to overcome their perceived challenge.

To relate these game principles back to UDL, we know that Gee (2005) establishes good games and good learning as having opportunities for both “Customization” and “Agency” in how to solve problems, as well as possessing “Situated Meanings”— where the former adheres to UDL emphasis on multiple means of expression and representation, and the latter emphasizes a need for multiple means of engagement, or relevance (p. 35-36). Furthermore, Koster (2005) emphasizes that successful games provide a “range of challenges” and a “range of abilities required to solve the encounter” — to which, Koster overtly states that a range of challenges “is basically content” and the ability to solve encounters would be “dull” if “all you have is a hammer and you can only do one thing with it” (p. 120).

A powerful IDT— one that I would want to consistently employ— would find a means to use these critical elements of engagement, flow, and challenge. When I consider these game-focused observations in relation to UDL guidelines, it is apparent that the greatest means to maximize learning opportunities and student motivation would come from offering a diverse set of options that enable students to have some form of agency to interact with content that is specifically chosen, tailored, or crafted to build towards an ‘end-goal’ and pre-established learning outcome, as is the case with UbD and Backwards Design.

I have then opted to include UDL Guidelines as a section during the planning phase of the NG+ template to assist in addressing some of the human elements that are otherwise left ambiguous in the design process. Namely, UDL Guidelines serve to pro-actively account for the inclusion of strategies for students that may struggle under a single instructional format or assessment practice that an educator would not be aware they are favouring, or accidentally disadvantaging a student with.
**Strengths of the SAMR Model for New Technology Inclusions**

One of the challenges I anticipated would accompany my advocacy of video games, GBL, and GLE changes to traditional instruction was the argument that technology is a *tool*, and not something to be included for “tech’s sake” (Walsh, 2015). Though anecdotal in nature, this line of well-placed concern has been commonplace in professional development and pedagogy-focused conversations I have been present for throughout my career. Though I believe games present powerful learning opportunities on their own, I also tend to agree with the notion that technology should serve a *purpose* for inclusion rather than something conducted for arbitrary reasons. Sometimes these beliefs present conflicts, and we need a schema to address the situation when this happens.

My bias has been shaped by an early-service enthusiasm for technology, and an exceptionally fortunate professional development experience I had where I was introduced to the concept of Ruben Puentedura’s “SAMR” model (2014a). The SAMR model posits that technology’s inclusion in educational settings mirrors a hierarchy, where the simplest/lowest form of inclusions is Substitution, followed by Augmentation, Modification, and Redefinition respectively (See Appendix G). While I think it is reasonable to presume that educators understand that technology and the skillsets required to interact with technology are important inclusions in K-12 education, there is disharmony in how technology is included which can threaten the effectiveness of its use when the purpose of including it is not known by the educator, as is the case for any educational tool that is used arbitrarily. A critical component of the NG+ template is then designed to assist in bridging the gap between the employment of technology-centric tools, such as games, and deliberate educational planning.

The SAMR model supplies the NG+ template with a simplified system for assessing the *intentions* deriving from the educator’s interest in including non-traditional technology applications within their practice. While taxonomical in structure, the SAMR model does not rank choices in a hierarchy of effectiveness: it instead emphasizes that educators that assess their tools with the SAMR
model understand what the purpose of using the tool in its chosen application. While the perceived ‘lowest level’ of technology integration is Substitution within this model, it “may be the most appropriate choice given the targeted motivational and learning outcomes, the design of the learning environment, and/or the students in the classroom” (Hamilton, et al., 2016).

To this end, the SAMR model is beneficial to incorporate, as it helps identify the intended purposes behind a technology’s inclusion without the immediate need to address the value that the technological tool puts forth. That said, Hamilton et al., (2016) raise concern with the model for lacking context-sensitivity and for not attending to processes, nor “the purposeful, recursive, and systematic process of instructional design”— and I am apt to agree. However, when accounting for ID specifically, the SAMR model raises important design considerations that can augment an existing context-sensitive approach to learning, such as in the case of UbD and the contextual value of deriving learning activities ‘backwards’ to improve the quality and focus of lessons created.

As the NG+ template is centered around the appropriate and impactful inclusion of game design approaches, as well as providing a space for GBL and GLE considerations within otherwise traditional classrooms, the SAMR model provides a necessary space for educators to consider the intended purpose and outcomes of their technological inclusions. This incorporation of the SAMR model provides context to avoid falling victim to the inclusion of technology for technology’s own sake, and helps maintain focus on what matters: namely, the generation of powerful learning opportunities and practices that are supportive of student learning.

**Incorporated Research Factors**

While the NG+ template has been constructed and modeled around the approaches and strengths of the UbD, UDL, and SAMR model templates for lesson design, further areas of improvement for a more cohesive and comprehensive template have been integrated for improved use and expanded application. In isolation, the UbD, UDL, and SAMR models each provide simplicity and refinement
towards their intended goals: they serve specialized purposes and offer repeatable planning patterns for educators to follow. However, with Chapter 2’s earlier explored research into game design principles, specifically the findings pertaining to the overlap between games and learning derived from SDT, feedback literacy, and good game design, the initial draft of the NG+ template was not comprehensive enough to account for student-centered focuses and needs that have been raised in Chapter 2. I felt that these elements necessitated inclusion in clear and concise detail in order to improve the quality of planning that the NG+ template could offer, as meaningful game design is, at its heart, focused on positive player experience and feedback cycles.

**Self-Determination Theory.** As explored in Chapter 2, SDT posits that intrinsic motivation and individual application are correlated with a person’s perception of how much autonomy they possess, how competent they feel, and the sense of connection or relationships they share in relation to the context they find themselves within. This is a much-needed avenue to account for the student experience which is seldom detailed in existing instructional design templates and usually presumed to be accounted for when educators craft their lessons. While this is often the case, and accounting for student performance and perceptions is often done in the context of the educator’s experience and classroom culture, it is rarely overtly explored and rarely conducted in awareness of current research.

While the NG+ template designed is by no means a fully comprehensive roadmap for implementing SDT into lesson planning, the focus on design and the advocacy for students to find autonomous opportunities, competency-building perceptions, and a sense of connection to content or priority to relationship-building are all critical facets for life-long learning. Like SAMR, this is context-sensitive in nature and will vary depending on several undeterminable factors. I felt that the least intrusive, most intuitive, and most relevant way to include this important body of research was to include it as a part of the early planning phases, prior to the development of lesson materials proper, as
it shares a similar conceptual space as the SAMR model in requiring educators to understand what their intended outcomes will be in created in reflection of SDT and student-success.

When using the NG+ template, the goal is to broadly interpret what the intended learning goals are in Phase 1, identify the intended use of new technologies through the SAMR model adaptation in Phase 2, and immediately factor in/consider the effects that the current line of thinking will have on the students’ potential perceptions of their autonomy, competency, and relationships.

This provides the UbD and UDL components and planning phases that follow to be organized around the principles of student-centered education, as educators using the NG+ template are encouraged to start from the large-scope of their intentions and desired effects, which will help them craft their lessons and units according to Backwards Design, and will help to create a liminal space for the greatest opportunities to provide SDT-supporting design choices.

Feedback Spirals and Feedback Literacy. A challenging component of UbD in my own practice was factoring in assessment and evaluation criteria within the framework itself. Not all lessons warranted summative evaluations, and I felt that there was a means to improve the communicative quality of the UbD template that would support feedback-oriented approaches more so than performance tasks proper. Under the UbD template, assessment is largely communicated and organized as a means of one-way communication: lessons would warrant in performance tasks, and I gather that the assumption made when using the template was that students would receive feedback organized around work that has been graded and posted for student access at a later date. As explored in Chapter 2, this has a penchant for conflicting with self-motivating behaviours and a correlation with lower satisfaction and learning achievements over time.

As a result, I have sought to incorporate Carless & Boud’s (2018) findings on both the necessity for building feedback as a form of communication, as well as feedback spirals, where feedback is communicated to students quickly and opportunities are provided to act upon educator feedback. This
is an exceptionally nuanced problem to address, and one deserving of far more attention and ideation than I could provide in the span of this paper. I suspect that over time, I will find a better means of adjusting and altering the approach of the NG+ template in determining a way to create regular and fluid feedback cycles, but I did not want to leave this unattended in the first iteration of the IDT.

To create a space for this exploration, Stage 5’s “Learning Plans” section has been redesigned to present the UbD “Performance Tasks” and “Other Evidence” sections instead as formative inquiries, and rethought of as a way to perceive lesson-specific “Assessment and Evaluation Opportunities.”

Within the context of the NG+ template, I have included a section to draw attention to how an educator will determine when the best times for using a formative, summative, or explicitly communicated form of feedback will take place. These considerations have been connected to individual plans under the “Key Learning Events and Instruction” for educators to include as appropriate. Just prior to this call for context-dependent assessments, I have organized the UDL principles which primes assessment considerations to include multiple means of engagement, representation, and action/expression. The purpose here is to continue the theme of approaching the completion of the NG+ template in sequential order, with organizing philosophical considerations just prior to the creation of lesson materials and core activity planners. The hope is that an educator will list some UDL Guideline considerations they have in mind prior to the formation of lesson plans and the “Assessment and Evaluation Opportunities” section, and will draw on their ideas listed under the UDL section to inform what assessments they want to use for each lesson they create.

This continues the “Backwards Design” approach promoted under the UbD template by keeping the ‘grand scheme’ in mind prior to the minutia and nuances involved in crafting lessons proper, and I think will create a cyclical inclusion of feedback spirals as an active component of lesson planning itself.

Finally, regarding the ‘rebranding’ of the UbD approach to collecting assessment information, the NG+ template is designed to promote evaluation and assessment as a continuous, fluid, and non-prescriptive
activity to engage within. To accomplish this, the NG+ template has been worded in a way that elicits the identification of a variety of ways students can demonstrate their learning and takes emphasis away from language that promotes trackable, data-only approaches to learning and assessment. Instead, assessment is organized around production and feedback-focused communication, which builds on all facets of SDT’s primary theory for developing intrinsic motivation, as well as taking focus from the amotivating behaviours that can stem from traditional grading practices alone.

**Final Assessment and Evaluation Section.** As a continuation of UDL Guidelines for multiple means of action and expression, I have created a section for final assessments, should the intended learning outcomes derived from the NG+ template warrant a need for a culminating assessment and evaluation. This section was design to emphasize a variety of expressions and the opportunity for feedback and continued practice/application of learning that takes place over the NG+ template’s scope and sequence. My goal was to keep this simple and deliberate: a final assessment, in line with meaningful feedback practices does not result in an ‘end-point’ to the learning conducted, but more so in the transfer and continued development of skills and understandings that were practiced.

As a result, this “Final Phase” section has been created to be both connected to learning that has taken place over the unit/NG+-derived plan, as well as providing an emphasis for further growth and learning opportunities. While assessment and its appropriate and timely inclusion are subjective and context-sensitive, I have found it prudent to adhere to the common practice of dividing the assessment process into its three derived forms: namely, to draw a distinction between the intentions motivating the chosen purpose of the assessment itself.

To this end, this final section requests that educators determine their connection to the Phase 1 and Phase 3 UbD-informed intended learning outcomes, and then provide context for how this final assessment meets learning needs. These learning needs are split into the ‘tangible’ assessment piece (assessment of learning), the feedback that the educator will provide students with for further growth
and development (assessment for learning), and how the assessment and feedback themselves can be used to contribute to the students’ future learning (assessment as learning).

This provides a natural transition point in an educator’s planning, as there is no definitive ‘stopping’ point to a unit or its intended learning outcomes. Instead, educators finish their planning phases with awareness of what skills they wish for students to continue focusing on and can choose to transition these focal points into their next NG+ planning phase. I believe this will create an optional space for learning to perform as summative and closed, or to continue through dialogic processes where skills are repeatedly drawn on and feedback informs the lesson planning phases of education.

Using the NG+ Template: Minecraft Education and a Castaway Journaling Exemplar

In my initial vision for this project, I wanted to create a means to demonstrate how GBL can be crafted to be a viable means of communicating content and learning. This is obviously challenging and perceptively fickle: games that are designed for entertainment, such as ones classified as Commercial-Off-The-Shelf (COTS) are high-interest with non-specific skill-building feedback loops, whereas games that are tailor-made for an educational goal, such as Simulations or Serious games, can often come across as tone-deaf and struggle to capture the same aspects of game design that drive consumer interest.

Furthermore, corporations that tout their games as having mass appeal to education (such as Microsoft’s Minecraft Education Edition and Valve’s “Steam for Schools” licenses) have financial motivations, and outside of very specific, very obvious applications, promote themselves quite broadly for educational purposes. This, in turn, leads to the rough implementation of specific COTS games for the sake of games themselves, rather than for the sake of student learning. A means of leveraging the empowering and educational elements of these gaming formats in a responsible way, aligned with current research and understandings in best practices, has been at the heart of this project’s attempt. It
felt only fitting that this project would provide an immediate example of a game used in a less
cventional way to drive learning forward.

Advantages to Minecraft Education Edition and Early Ideation

For my most comprehensive example, I have chosen to address a context-sensitive issue in ELA
through Microsoft’s Minecraft Education Edition (MEE). MEE is a powerful blend of the traditional COTS
Minecraft created by Mojang Studios, and a suite of teacher-friendly tools that support classroom
management processes for educators looking to engage in GBL. From my observations, MEE’s greatest
appeal and commitment to education is in the realm of the sciences, as Microsoft has added a host of
new in-game assets and resources (such as chemistry units, elements, and interactive equipment) that
are exclusive to MEE that allow for a simulated ‘science-lab’ experience. In my exposure to MEE, I did
not feel there was a wealth of ELA-focused activities or opportunities present comparative to other
content areas, especially at a high school level, but did feel that there was an experiential quality from
the game itself which held educational virtue if used appropriately. Furthermore, a topic I have
experienced and repeatedly heard that needs address for students I have worked with has been the
nebulous topic of “writing output”— which consists in this context as a variety of skills, such as stamina,
fluency, expression, code-switching, and my personal observations of a need for increased exposure to
digital and computer-based writing formats.

There is nothing wrong with standard approaches to addressing topics of “writing output” and
helping students improve, though at its core, complaints from students regarding writing output often
appear to stem from low perceptions of personal competence which therein reinforce lower interest,
low connections and interest in writing, and the erosion of feelings of autonomy (as they perceptively
are ‘forced’ to write, rather than enjoying or engaging in the experience). An opportunity to enhance
student feelings of autonomy and relationship while supporting the skill-development and perception of
competence seems like an effective means of circumventing these common complaints and amotivated
behaviours, which otherwise, lead to resistance in further growth and development throughout an individual’s life. It is no secret that students are drawn to subject matters they feel they are skilled in, and it’s difficult to address weaknesses without further damaging interest in a subject area. However, using a separate, entertaining, and engaging format — such as a video game — may yield positive perceptions on the experience and provide transfer of feelings to the subject matter later on.

One known approach to building literacy and promoting feedback styles in an ELA classroom is in-class daily journaling. While difficult to employ consistently (a single class could warrant written feedback of 30 students each night), I considered that Minecraft, and MEE by extension, are well-suited to the written experience because they are inherently experiential to engage within that game-world. Minecraft is classified as a “sandbox” style of game, wherein there is no active plot or narrative that is required, and the appeal to the game is that it functions as a simulation where players are left to creatively engage with the unique physics and environment. Aspects in life, of course, do not mirror real life: Minecraft employs game mechanics that build personal agency, such as ‘punching’ down trees to attain wood, creating rudimentary electrical circuits/logic-based gates for mechanisms, and different blocks react differently to in-game gravity or possess different physical properties than can be creatively used. The player functionally ‘exists’ as their avatar, with minimal degrees of separation between them and the world: there is no character that ‘must’ be played, but the option is left to the player’s imagination and personal choice for expression.

Because the in-game world of Minecraft is similar to real-life (wood burns when lit on fire, players need to ‘breathe’ air and will incur damage if they are underwater too long, water freezes in specific biomes or elevations, etc.) there is a mild, but entertaining ‘uncanny valley’ effect to playing within the world. Consequences are limited to in-game interactions with failure ‘existing’ as an option, as Koster (2005, p. 122) outlined, and there are many aspects of the game’s world to learn and experience that are decidedly divergent and empowering compared to real-life. Somewhat surprising for
a game directed for a younger audience, the experience of starting a Minecraft game is quite unfriendly to the player. In most created games, a player suddenly appears in the middle of anywhere in a procedurally generated world without context as to why they are there, where they are, or what they can even do. In some game modes, players find they are in immediate danger to build a shelter/protect themselves from many in-game ‘threats,’ such as wild animals, environmental hazards, hunger, or monsters that emerge in the dark. The experience of playing Minecraft is very similar to finding oneself to be a “castaway” on a deserted continent, island, or ocean, and knowing that the only chance at survival is to learn to survive quickly. In this, I felt there was a palpable overlap between a romanticized ‘survival’ genre and the act of journaling one’s day or experiences within a time frame.

**Creating a Minecraft Unit with the NG+ Template**

**Figure 3**

“Learning Plans” Page of the Minecraft Unit Exemplar

<table>
<thead>
<tr>
<th>STAGE 5: LEARNING PLANS (GENERAL OVERVIEW OF LESSONS/EVENTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will this Tool promote Multiple Means of Engagement? (What ways are shown to build student buy-in and understanding of meaningful learning in their lives?)</td>
</tr>
<tr>
<td>How will this Tool promote Multiple Means of Representation? (What different contexts can be used to build understanding? How can this context be diversified/magnified?)</td>
</tr>
<tr>
<td>How will this Tool promote Multiple Means of Action and Expression? (What different ways would show examples of learning and understanding of what has been taught?)</td>
</tr>
<tr>
<td>• Incorporates existing popular media (video games) as part of the lesson itself.</td>
</tr>
<tr>
<td>• Different form of writing (personal, without drawing on potentially ‘too personal’ details as is the case for writing about memories/lived events).</td>
</tr>
</tbody>
</table>

| Summary of Key Learning Events and Instruction |
| (Summarize paragraph/group pain points in the bullets below. Connect them to your assessment and evaluation opportunities) |
| Assessment and Evaluation Opportunities (When will your Assessment and Evaluation Opportunities be Formative/Summative? Reporting Communicated to Students?) |
| • Introduction Lesson: Textual Analysis |
| | • Focus on “Journal Writing” strategies — word map on the board to list pre-established thoughts around the topic of journaling (10-15 min estimate) |
| | • Provide samples of different journal-based formats from online sources. Examples could include personal diary, ‘zombie apocalypse’ style of journal writing, unbiased ‘journalism,’ scientific observations, etc. |
| | • Samples presented in a station-rotation model, allowing students to read each one with a small group of their peers and discuss the differences. A graphic organizer with the titles will be provided and submitted for a formative assessment. |
| | • Final 10-15 min for sharing observations/species apparent in each form of writing. | • Early formative assessment in determining their thoughts/tunneling/knowledge around the topic of journaling (Is it something they’re willing or unwilling with?) |
| | | • General feedback at end of class or their thoughts/preferences for journal style helps them pick a style they like/suffer less on... while also building willingness by giving them a “hierarchy” to choose from. |
| | | • Graphic organizers provide context for what meaning they were able to pull out of the writing itself. |

**Note.** Figure 3 provided as a context example. For the completed mini-unit template click [here](http://example.com).
Rationale for 3rd Party Toolkits and Constructing a Personalized Map. The process of creating this Minecraft project was no small feat, though I recognize that I had a specific vision in mind and took measures that were far more complicated than I would under other circumstances. This lesson likely could have been conducted quite simply through a world ‘seed’ to generate a deserted island outright (See Definitions). This would have been completely functional and completely within the realm of what I wanted to accomplish for this example lesson while taking a relatively short amount of time to create, enable, set up classroom boundaries, etc.

To be blunt, while I will absolutely choose to employ seeds and tools of this nature in the future, I was not satisfied with the prospect that I could simply input a string of numbers and have my exemplar functionally completed. I wanted instead to have a high degree of control over the environment, to customize a world that would be outlandish and foreign to all players (ones with and without extensive experience in Minecraft), and I wanted to test a personal boundary that I had identified in previous experiences with Minecraft Education Edition specifically: namely, that all maps that are created appear to require active play in order to create structures, scenarios, and other assets. As this is not the case for other Minecraft editions, I sought to use this project to test my own personal limitations of world building for instructional purposes as well.

In the Java Edition of Minecraft (See Definitions for overview of version differences), 3rd party tools have been generated by the extended community that— while not promoted or supported at a technical level by Microsoft or Mojang Studios— dramatically impact the speed through which creators can shift, delete, change, and create assets within their in-game worlds. One of the challenges that I feel goes unaddressed with the Education Edition of Minecraft (referred to as MEE from here on) is that building beyond the natural generation of the game is a very time-consuming process. As my initial vision for the project was large-scale and difficult to control, organize, and adjust when exclusively using in-game features, as MEE would largely require, I felt that a worthy side-investment to this project was to
explore the ability to employ existing community-driven tools to modify an in-game map to my standards in the Java Edition, and then transfer it to MEE for student use. My hopes was that this would prove as a method to transfer computer-assisted designed maps from the Java Edition, as it would dramatically improve the means of lesson creation within the MEE environment, and allow for larger-scale lessons to be crafted while cutting down on already dramatic time investments. This endeavour was done as an ‘extra’ and not the focus of the project itself. To that end, the map’s creation was just a matter of pushing my own technical experience further with hopes of greater payoff when using MEE as a platform for GBL activities in the future.

Pedagogical Considerations. As mentioned, a lesson of this nature could be accomplished through the standard MEE map generation and the input of a seed which would simulate a deserted island. However, in my own experience of playing Minecraft, and having a wealth of talented students who have demonstrated their prowess in creatively experimenting within the realm of video games, I wanted to insure that this Minecraft sandbox would not feel ‘standard’ to these expert players and would provide something novel and experientially new to newcomers and veterans alike.

The pedagogical requirements of the map’s design needed to restrict freedom of movement while also contending with an authentic experience and a sense of conflict in nature. The more dramatic the foreignness, I presumed, the more likely the experience would require students to actively think about what they are experiencing and an increasing demand on details would manifest in the journaling process itself. Furthermore, I knew that I wanted to avoid circumstance which would outright impede a sense of autonomy and risk overruling a sense of immersion within the game through in-game commands and classroom-specific features MEE offers educators the ability to draw restrictive boundaries, where players cannot cross the boundary at all, but my experience was that this was exceptionally defeating (as it is obscenely restrictive, and therefore outright impedes any sense of autonomy the player has within the game), and defeats the purpose of the sandbox-style of games
(where exploration is critical to the gameplay). While I fully recognize the value of this boundary application in regards to some lessons, this was a tool that I could not justify applying within the scope of this project which has ultimately been organized around exploration and experience in a deserted and wild ‘island’.

My solution was to generate a floating island with a handful of small biomes to explore. For students new to the game, this is a novel and potentially frightening experience and not obvious until exploration takes place. My own experience playing through Irrational Games’ “Bioshock Infinite” heavily inspired this choice, as the experience of finding oneself looking down upon the clouds draws upon a genuinely primal feeling known as “Call of the Void”, or “High Place Phenomenon” that we psychologically experience when situated at a high altitude and looking below. A floating island therein offers a visceral and charged experience to write about, and presents a unique challenge to experienced players, as an extra layer of danger and consideration is added to standardized gameplay.

To emphasize this, I created large chasms of ‘void’ and empty space that isolated the island. Wherein standard Minecraft, a player can craft a boat and sail until they find land, I wanted no such easily accessible adventuring. A large island with multiple biomes was then a meaningful construct to create (offering plenty of exploration opportunity for players of all skill levels) and a disincentive without an outright restriction was employed to interfere with the perceived scenario that a veteran player would simply see the MEE scenario as “standard Minecraft,” lose a sense of immersion, and attempt to venture far away from other players/lose sight of the survival narrative. I have deliberately chosen, however, to allow players to leave the island if they wish, so long as they are able to problem solve that solution— it is simply difficult to do. However, imposing the outright restriction to leave the island felt too counterproductive to my understanding of Ryan & Deci’s SDT and the ramifications it could have on player/student perception of autonomy when I considered creating uncrossable boundaries. I felt that the value of the game would be lost if I ‘cheated’ the player of choices, and felt it was imperative to
maintain the possibility for students to leave if they wanted. Ultimately, my goal is to create a situation that promotes improvements of writing competency and meeting the learning outcomes, and exploration beyond my scenario can still accomplish such an end (See Appendix H for the computer-assisted map design process screenshots).

**Using the NG+ Template to Inform Creation.** The process of using the developed NG+ template was marginally challenging and exposed some early difficulties with a comprehensive line of questioning that is, perhaps, too connected to pedagogical processes. What struck me the most was the amount of time it took to complete the exemplar template— I understood when I was developing it that this would take longer to fill out overall because it was both my primary exemplar (calling for a level of detail that can be shared, whereas regular lesson planning would be a lot swifter as the educator themselves is likely the only one to read it) and because certain context phrasings were not as clear as I would have preferred— a problem I had experienced in early attempts to learn the UbD template prior to my regular practice in using it. That said, my surprise of time-consumption are in conflict to the knowledge that the NG+ template served its specific purpose well: I did feel like I had an established, research-supported understanding of why I was using MEE as a tool for education, how I was to make learning come across as diverse in expression and demonstration, and what I need to provide, assess, and ultimately evaluate to help students achieve my intended learning outcome. In reflection, I feel as well that this NG+ template might be simpler to use had I picked a less ambiguous intention. Creating lessons to simply ‘improve the quality’ of the writing for my students is a meaningful endeavour on its own, but the details of what that could look like are decidedly ambiguous and difficult to communicate in any template.

I believe I will need continued practice and repeated experience using the NG+ template, but also suspect it will be much more intuitive and streamlined with practice and when teaching specific content rather than a broad amount of skills. Nevertheless, the ability to justify my use of MEE and
outline *how it should proceed* was essential to this finished result and helped me generate creative ideas and step-by-step approaches when I had not yet considered the steps I’d need to take in practice. The NG+ template gave rise to a need to pre-teach the content (providing a tutorial block), and because I was called upon to justify how that would look, I realized that I needed two preceding lessons to provide context (relationship to the content and why we are using Minecraft to begin with) for the students to ‘buy in’ to and maintain focus on the writing. Overall, I am content with this initial draft, and believe with small revisions to context clues and potentially ‘splitting’ this template into two sections (one for standardized lesson planning, the other for new tool inclusion), the process can be better streamlined for regular use in my active practice.

**Technical Difficulties and Adaptations Made.** Somewhat expected, I found repeated difficulty in troubleshooting the conversion to MEE using the official help guides present. This is, of course, because I was attempting something that is technically unsupported albeit possible. Community forum posts, comments, and individually created online tutorials were critical in arriving at a usable MEE map for student engagement this fall. To spare some of the specifics, the Java edition of Minecraft is far more up to date than the MEE, and MEE is *not officially intended to use assets and features that have been originally created in the Java Edition itself.* There are workarounds, which I did experience degrees of success with, but I would not repeat this venture and do not feel that it is a valuable use of time to suggest educators follow in my suit. Again, my choice for using 3rd Party software to create a map was an experiment and using regular MEE exclusively would have been a valuable use of time as well. I was excited to push the boundaries, and now believe that I have found a boundary not worth pushing.

Using the 3rd Party software “**MCEdit 2.0**” was a genuinely pleasant experience, in which I was able to create a map to my specifications comfortably and efficiently. The results were thrilling. My challenges arose when I needed to convert the Java-created map into MEE, which is based around an entirely separate system. To gloss over some technical details, after a degree of file modifications,
adjustments, and some frustration-filled web searching, I was able to successfully transfer the Java-created map into MEE, but suffered unavoidable and unfixable technical challenges in the process, such as the loss of mountain ranges and the addition of unobtainable blocks that read “update” on their surface.

I do not consider this a failure however: if I am able to use the Java edition of Minecraft in my practice, I will have the full ‘survival’ island ready for student use at a moment’s notice and can provide the experience I had in mind. The MCEdit software enabled me to produce a floating continent relatively quickly. However, at present, I understand that MEE is the most available asset at my disposal, so I have made narrative accommodations to ‘lean into’ the problem I have created by meddling and incorporate it as a form of storytelling itself. As the map has notable corruptions, I have created a plotline whereby a scientist has ‘interfered’ with the stability of the world and that has caused the player to find themselves ‘trapped’ on this floating, unstable island.

The MEE version of the island functions as a regular MEE map, aside from some unnerving in-game block changes. I took advantage of the computer-based errors to softly address difficulties that new players may experience by adding a ‘student hotel’ that has been justified in the narrative as an interdimensional building which, I hope, will provide some degree of safety and less urgency for the players that will prefer to take their time in learning the in-game mechanics. While I understand this potentially undermines the ‘survivor’ feeling, I have made the hotel rooms as devoid and uninteresting as possible, and believe the game will inspire students to explore and expand beyond their pre-established abode (See second half of Appendix H for MEE adaptations made).
Website Creation and Layout

Figure 4

“Landing Page” for the New Game+ Template Host Website

Note. Website can be accessed from http://newgameplusmodel.weebly.com/ and houses the links educators will require to use the designed template, review the project’s creation, and download the Minecraft files for implementation or exploration of their own choosing.

Website Design Process. As the overall project is primarily focused on resources created through external programs (such as Google Drive and Minecraft respectively), I have created a simple Weebly-based website layout to house and communicate the accomplishments of this project. The overall intention of this website was to minimize the ‘extras’ as to not distract from the project itself. As a result, I felt that it was prudent to include three primary focuses for educators: the rationale, explaining the designed intentions of the New Game+ Instructional Design Template overall, followed by the Template itself which has been broken up into simple components for quick viewing, and finally my Minecraft Exemplar to demonstrate the New Game+ Template in use. As difficulties arose concerning
the restart of school considering the current Covid-19 pandemic, I felt it was prudent to keep this aspect of the project as simple as possible. Educators are increasingly busy people, and accessing information quickly is becoming increasingly valued.

Figure 5
“NG+ Template Page”

A final decision to import the resources I had explored in-depth during my OLTD experience rounds out the website itself. My reasoning behind the import of these resources was to provide a simple ‘stepping stone’ for educators that are interested in exploring the NG+ Template but are unfamiliar with the process of Gamification or creating GBL environments, and not yet having the experience or comfort in venturing into such a pursuit. The resources that I had curated from my time in OLTD were primarily focused on Blended Learning options, which, in my anecdotal experience, are still relatively new inclusions for the majority of educators and could serve as useful tools for improving instruction.
### Project Timeline

<table>
<thead>
<tr>
<th>Timeline Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 16, 2020</td>
<td>• Chapter 2 Literature Review submitted for completion of OLTD 510</td>
</tr>
<tr>
<td>June 27, 2020</td>
<td>• Minecraft: Education Edition sandbox generated, and world build</td>
</tr>
<tr>
<td></td>
<td>started from “Starter Town” template.</td>
</tr>
<tr>
<td></td>
<td>- Focus is on refamiliarizing with the game and creation of a</td>
</tr>
<tr>
<td></td>
<td>sandbox for potential lesson plans.</td>
</tr>
<tr>
<td>July 3, 2020</td>
<td>• MEdL 680 begins</td>
</tr>
<tr>
<td></td>
<td>• Chapter 1 begins development</td>
</tr>
<tr>
<td>July 15, 2020</td>
<td>• Chapter 1 (Draft 1) complete</td>
</tr>
<tr>
<td>July 24, 2020</td>
<td>• NG+ Template Draft 1 complete</td>
</tr>
<tr>
<td></td>
<td>• Chapter 3 begins development</td>
</tr>
<tr>
<td>August 6, 2020</td>
<td>• Primary Exemplar Minecraft Map Resource complete</td>
</tr>
<tr>
<td>Date</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>August 15, 2020</td>
<td>• NG+ Template Used to Complete Minecraft “Castaway” Journal as an Exemplar</td>
</tr>
<tr>
<td>October 5, 2020</td>
<td>• Website Completed (delays due to COVID-19 Instruction and School Restart)</td>
</tr>
<tr>
<td></td>
<td>• Chapter 3 Draft Complete</td>
</tr>
<tr>
<td>October 24, 2020</td>
<td>• Call for Feedback Sent: Responses and Suggestions to be Collated after November 1st.</td>
</tr>
<tr>
<td>November 7, 2020</td>
<td>• Feedback Request Closed</td>
</tr>
<tr>
<td></td>
<td>• Feedback Applied and Website / IDT Modified around Feedback Received</td>
</tr>
<tr>
<td></td>
<td>• Chapter 4 Draft Completed</td>
</tr>
<tr>
<td>November 8, 2020</td>
<td>• Chapter 5 Draft Completed</td>
</tr>
<tr>
<td></td>
<td>• Table of Contents Completed</td>
</tr>
<tr>
<td>November 20, 2020</td>
<td>• Final APA revisions applied</td>
</tr>
<tr>
<td></td>
<td>• Paper sent for Dean’s sign-off and hard copy printing</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
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<tr>
<td>-------------------</td>
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</tr>
<tr>
<td>December 15, 2020</td>
<td>MEdL 690 Ends</td>
</tr>
<tr>
<td>January, 2021</td>
<td>Convocation</td>
</tr>
</tbody>
</table>
Chapter 4 – Field Testing and Major Project Revisions

Major Project Implementation and Feedback Processes

Field Testing/Feedback Call

The construction of the Major Project took place during August 2020 and the Major Project’s host website was designed throughout September. A call for feedback was requested using an anonymous Google Form from colleagues within my school district, educators in the Vancouver Island University Post-Baccalaureate program, and educators from other BC school districts. The review process occurred over the course of fourteen days, after which feedback was collated and constructively applied to version 2 of the website and instructional design build.

Feedback Questions

The anonymous Google Form provided reviewers with the following focus sections: Participant Profile, Site Accessibility, Site Navigation, Visual Design, and Content of the Instructional Design Template. The question set is provided below and a screen capture of the actual Google Form survey is included in Appendix I.

Preamble: Website Overview.

Dear Colleague!

Thank-you for taking the time out to provide valuable feedback on this portion of my MEdL Major Project. By completing this survey, you are helping my research efforts to explore how Game Design Theories and Gaming Environments can be implemented in Instructional Design to support learning at the Secondary level.

The Major Project is an Instructional Design template made available for educators. Website Link: http://newgameplusmodel.weebly.com/

This website is designed to provide educators with resources to enhance the use of non-
traditional technologies alongside best practices in instructional design. Examples of non-traditional technologies including video games or Game-Based Learning (GBL) environments to motivate and engage learners. Additional resources have also been included to provide further options for experimentation and learning.

So thank you again for your contribution to my research! The feedback here will be collected and used to make improvements to the overall project and website.

With thanks,

Christopher Bridge, B.A., B.Ed.
MEdL Candidate
Vancouver Island University

Section 1 of 5: Participant Profile.

Before we begin, I would like to know what your experiences in education have been like.

[Question 1.1] – What is your current involvement within the field of education? (Please select all that apply to you, and “Other” if the following choices do not apply or require expansion)

- Educator-in-Training (Postbaccalaureate or B.Ed Program)
- Teacher (K-8)
- Teacher (9-12)
- Professor
- School/University Administrator
- Other:

[Question 1.2] – Have you had experience in a blended-learning environment, either as an educator or as a student? Have you had experience in integrating non-traditional resources, such as video games or new technologies, into your experiences within a classroom? (A text field was provided for this response.)
[Question 3] – Prior to visiting of the website, were you familiar with Instructional Design models, such as "Backwards Design," "Universal Design for Learning," or other common instructional design models?

- Yes
- No
- Other:

[Question 1.3] – Prior to the visiting of the website, were you familiar with terminology or practices in Gamification or the construction of Game-Based Learning Environments (GLE)?

- Yes
- No
- Other:

[Question 1.4] – Is there any additional information that I should know about you that may be relevant to my research? (A text field was provided for this response.)

Section 2 of 5: Site Accessibility.

[Question 2.1] – What device did you use to access the "New Game+" website?

- Smart phone
- Tablet
- Laptop
- Desktop
- Other:

[Question 2.2] – What browser did you use to access website?

- Firefox
- Google Chrome
- Safari
[Question 2.3] – Did you have any trouble accessing the website? Please share any comments under "Other" for the overall accessibility of the site.

- Yes
- No
- Other:

Section 3 of 5: Site Navigation.

[Question 3.1] – In the website’s current layout, how intuitive do you find information has been presented? (A scale of 1 to 5 was provided, with 1 indicating that “Improvements to the layout are needed” and 5 indicating that “Information is presented well.”)

[Question 3.2] – Were all of the hyperlinks functional? (For any particular comments/concerns, please use "Other")

- Yes
- No
- Other:

[Question 3.3] – Did you find there to be any challenges in accessing the material, or understanding the layout? As a follow-up, if there is an area for improvement that comes to mind, what would you suggest needs to be added, implemented, or adjusted for users? (A text field was provided for this response.)

[Question 3.4] – Please share any additional comments on the ease or difficulty experienced in navigating the website. (A text field was provided for this response.)

Section 4 of 5: Visual Design.
[Question 4.1] – Is the site visually-appealing? (A scale of 1 to 5 was provided, with 1 indicating that the Visual Design of the website was “Visually difficult/unappealing” and 5 indicating the Visual Design was “Visually clear/appealing.”)

[Question 4.2] – Was the look and layout of the site cohesive between webpages?

- Yes
- No
- Other:

[Question 4.3] – Was the text legible throughout?

- Yes
- No
- Other:

[Question 4.4] – Please provide any additional comments on the visual design of the website. (A text field was provided for this response.)

Section 5 of 5: Content — Instructional Design Template.

For this section, please refer to the Instructional Design Template itself, linked here:

https://docs.google.com/document/d/1O6eRGYELVxA8fCC5i7CrkR29sjy6FQqe31t2hRAWLgk/edit?usp=sharing

As an additional reference, here is an exemplar of the Instructional Design Template that has been used for the construction of a unit:

https://docs.google.com/document/d/1shdMimZizjxKIwmJuPvjd40yLen7lqN_SvT0MMCxk4/edit?usp=sharing

[Question 5.1] – How intuitive or self-explanatory did you find the "New Game+" template? (A scale of 1 to 5 was provided, with 1 indicating that the “New Game+” template “Lacks clarity of
instruction” and 5 indicating that the “New Game+” template was “Easy to follow and complete.”)

[Question 5.2] – In terms of the overall document, how valid, or useful, do you feel the completion — or partial usage — of this template would be in planning for instruction? (A scale of 1 to 5 was provided, with 1 indicating that the template “Has no clear value to instructional planning” and 5 indicating that the template “Has clear value to instructional planning.”)

[Question 5.3] – When considering the template’s instructions, how clear or intuitive do you find the process of lesson planning using this format? (A scale of 1 to 5 was provided, with 1 indicating that the instructions were “Unclear / Confusing” and 5 indicating that the instructions were “Clear / Not challenging to follow.”)

[Question 5.4] – Do you think that this template would assist you in implementing non-traditional applications or technologies in your own practice? (A text field was provided for this response.)

[Question 5.5] – What changes to the template do you think would be helpful to make? (A text field was provided for this response.)

[Question 5.6] – Please provide any additional comments or feedback on the “New Game+” template. (A text field was provided for this response.)
Additional Comments

Do you have any additional comments, questions, or suggestions that you would like to share with me to improve the overall quality of this web resource? (A text field was provided for this response.)

Thank You for Participating!

I want to sincerely thank you for your feedback and participation in this project. It means a great deal to me, and your comments and valuations will be considered and applied to version 2 of the website build.

Sincerely, and with gratitude,

Christopher Bridge,
MEdL Graduate Candidate,
Vancouver Island University, 2020

Results of the Project Re-Design in Relation to the Field Testing Findings

Forty respondents provided valuable feedback and critique of the Major Project website and Instructional Design Template. Constructive feedback was reviewed and applied, as deemed useful, to both the website build and the Instructional Design template as version 2.
Chapter 5 – Conclusions and Recommendations

Critical Challenge Question and Intentions of the Major Project

To address my Critical Challenge Question, ‘How can Game Design Theories and Gamification Constructs be Applied to Improve Instructional Design for Courses at the Secondary Level?’, I have created an Instructional Design Template, an example unit, and a website titled, the “New Game+ Model.” This model has been designed to form a foundation whereby an educator can apply Game Theories, Gamification, and GBL formats to improve instruction within a secondary educational institution. As the scope and opportunities afforded by this topic is naturally quite grandiose and difficult to cement in a short period of time, the IDT was created with the intention of continuing this Critical Challenge Question beyond the scope of this paper. Likewise, this project has held it important to provide interested educators with a concrete example and a structure to follow in the event that an educator is interested in applying video games and video game principles to their pedagogy.

Feedback on the website and IDT were collected through an anonymous Google Form survey. This survey provided this project build with enthusiasm and support for the theoretical basis and application of GBL and Gamification, as well as constructive feedback on how to improve the quality of this large-scale undertaking. Upgrades to Version 2 of the website were implemented based on the anecdotal experiences and comments taken from the Google Form survey, where respondents indicated areas of need and want for refinement in this endeavour.

Results of Project Design in Relation to the Literature Review

Key Findings for Game-Based Design Considerations

- There is a greater disposition in educators to identify the application and educational value of video games and video game-like systems for education than I had originally thought. A stigma may still exist publicly, but feedback showed that educators were both receptive and excited by the prospects of alternative means for content and skill
development that GBL and Gamified constructs present. Results derived from public perception are quite optimistic and, frankly, very inspiring.

- Overlap exists among a large quantity of commercially consumed video games and research-supported approaches to education. Among the wealth of details, a priority exists whereby learning is optimized when learners have a degree of control, continuous feedback, and personal application opportunities. Both reward and loss structures are still important implementations needed to support growth and are present in both game constructs and K-12 education.

- In the case of gaming, SDT determines that motivation is tied to an individual’s ability to be intrinsically connected and autonomous in their learning adventure. ‘Good’ video games typically appeal to these research findings and further emphasize that players that have the ability to choose modes of expression and skill-development as often as possible experience positive feedback loops within the confines of an otherwise semi-restrictive system. Though a similar structure can and does exist within traditional education, dependent on the means through which a teacher constructs their lessons and units overall, there exists an opportunity to emphasize autonomy, competence, and relationships within the educational paradigm that can further enhance learning and learning patterns.

*Key Findings for Self-Determined Theory in Instructional Design Framework*

- Self-Determination Theory is centered around psychological needs that each individual learner possesses a desire for: a sense of autonomy, competence, and connection. These psychological motivators are highly variable, and change based on the individual’s perception of their environment, their task, and their understanding of their personal locus for control or skill level.
• Likewise, as each individual has a unique perception of their environment, competency, and connection to it, it stands to reason that the greatest intrinsic motivation patterns are recognized when we provide a means for learners to choose their actions and to feel that they are supported in their experimentation through regular feedback and scenarios which can offer a degree of choice within a learning system.

• Motivated learners are learners that can identify that they have a degree of autonomy, competence, and/or a sense of relationship to the environment, content, or individuals within a task. Restrictive learning environments can still present opportunities for autonomy, so long as the learner perceives of an autonomous goal connected to the experiences held within a non-autonomous learning environment (such as pursuing a life-goal that requires specific course credits to pursue: in this example, a learner may feel they have autonomy because they have chosen a path, not because they are present in a restrictive environment). Educators can appeal to this trend but cannot force intrinsic motivation to manifest independent of the student. Educators can create scenarios and learning opportunities where autonomy is encouraged, however.

• For educators to best appeal to intrinsic values, learners need to perceive and feel that there is a degree of choice and control that they hold influence over. Learners have a greater opportunity to find success when principles of SDT are enabled and available within a learning environment.

• Continuous feedback offers opportunities for SDT integration: having regular check-ins, measurements of success, variations and open-mindedness to lateral and creative thinking, and areas to improve and focus upon are thought to help build competence, help build a sense of connection/relationship to a situation/task, and in turn help
support learner autonomy, as a learner will be given choice in adjusting their performance based on feedback received.

**Limitations of the Project**

**User Experience and Interpretation**

The project did have challenges connected to the experiences of the user, in this case, educators. Because the overarching goal of this CCQ was to address motivation and learner success within secondary schools, and the research explored psychological principles of motivation and pedagogical connections to video games, there exists a potentially ambiguous understanding of ‘what makes a video game appealing’ to secondary instruction based on the user experiences within the media format itself.

In some feedback instances, participants expressed they had minimal to no knowledge or experience related to video games. This could make it quite challenging to use the NG+ template and/or see the value integrating non-traditional media within instruction, as the merits are unknown to the educator in question. In other cases where participants have had exposure to games, their understanding of video games will naturally vary from other individuals that play games in the same way that being an avid reader imparts a unique and deeply personal connection to the titles that they have read. Other readers may have had no experience with certain genres, books, and formats, or may simply interpret the media differently, and this would lead to potentially conflicting interpretations and use overall.

To that end, this project really could not address the specifics on how to gamify or implement GBL with meaningful reliability. Nor was this the goal. This project’s basis was reliant on asking educators to find an unconventional form of media, experiential practice, and/or non-conventional resource, which required the educators using this project’s creations to find their own creative way to
use a resource they have located on their own. There is no easy way to make the unconventional into the conventional, otherwise it would simply be an available resource.

The project instead focused on giving educators the tools they may find beneficial to launch an ‘unconventional’ endeavour of their own. This leaves potential users with a great deal of variability in how a resource is used and what the outcomes could look like, as well as a potential perception that the information provided in the NG+ template and website is overwhelming, given the perceptible ‘niche’ quality of bringing gaming principles into education. Simply put, an educator would need to be predisposed to a technology or media format—one that they understand, have experienced, and most likely enjoy—prior to the use of the IDT and resources presented by this project.

Given more time to develop the Major Project, I would have liked to provide more introductory resources that may have provided a stronger foundation for educators to explore SDT, feedback cycles, and the different ways that video gaming currently appeals to skill development as a pastime hobby. Additional introductory resources could have also provided greater depth for examples on how one can approach a tool that is originally intended for recreation and how they can implement it within an educational framework with greater finesse and understanding. As a part of the feedback I received, I did create an additional webpage that attempts to provide nine more potential options for video game inclusion to ‘jumpstart’ some creative thinking, but I recognize this is a soft gesture that truly does deserve greater attention and depth of detail to meet the variety of experiences of educators that are interested in this topic.

With additional time on this subject matter, I believe that resources connected to ludology—the study of games, would yield even greater benefits. As a field of its own, ludology explores the cultural expressions of games across the globe and has a firm connection to anthropology, which I believe would speak to the value of games in general as an educational and socially inclusive tool. Furthermore, greater details and explorations into ludology, I believe, would help all educators feel that
they are approaching the NG+ template ‘on the same page’ rather than a wide-range of understandings of what is meant when we speak about including video games as a tool for learning. It is a highly nuanced and a highly technical, creative approach that is far greater, and more deserving of time and thought than the small offerings I was able to complete during the duration of this study. I would consider it an excellent goal and an intellectual thrill to pursue this to the depths I feel it deserves at another point in time.

In addition, with greater time, I would have liked to provide more genuine exemplars and a wider breadth of educational opportunities afforded by implementing SDT, gaming principles, and feedback cycles that are connected to unconventional technologies. I think that there is genuine merit in pursuing opportunities to blend what is socially considered ‘leisurely’ activities, such as video games and internet-based entertainment, within the realm of education. Challenges certainly do existed and are far too many to note here, but in areas of overlap between skill-oriented growth and leisurely pursuits, I believe it is extremely prudent to continue pushing our educational boundaries and experimenting in our instruction. Doing so could help us adjust to the ‘moving targets’ that are created in response to the rapidly changing landscape that is our technologically-rich world, which ever-increasingly inundated with technology, social medias, and opportunities to come.

**Design Experience**

Every attempt was made to design an organized, minimalistic, and easy-to-follow construct for both the IDT and the website itself. That said, my experience in suitable website design is minimal at best and is an area of growth and experimentation that I am still discovering areas of my own skill to improve with every website build attempt. I did experience a number of challenges around navigating the Weebly website design software, despite my relative ‘expertise’ with Weebly comparative to other user-friendly website building sites, but still found a lack of satisfaction in developing a website that was consistently well-designed across a variety of browsers and devices.
In Version 2 of the website, my attempts to improve aspects of contrast, header sizes, picture clarity, and visual design have created some new complications and design issues when viewed across different platforms and screen resolutions. This is something that I recognize can use further attention and improvements with time. That said, and with respect to issues related to time and workload, I was able to make a significant number of improvements to the following areas:

Major Project Website Build:

- Improved text features.
- Improvements to shading and contrast features.
- Improvements to form and display across platforms.
- Images linked to independent PDF attachments to allow for higher resolution features.
- Images re-uploaded with higher resolution variants to avoid ‘blurring’ issues.
- Additional Page added: “Potential Opportunities.”
  - “Potential Opportunities” seeks to provide educators with some creative tool inclusions I have been considering, but unable to implement for this project due to constraints (See Chapter 5).
- Additional “Game-Based Learning” Resources for further exploration provided under the “Resources” page.
- New Splash Images added, and contrast deepened for visual clarity.

Instructional Design template build:

- New Variants created and added to Website build.
  - PDF Variant included and linked for visual fidelity.
  - “Speedrun” Variant created: Designed to be a fast version of the original Design Template, with questions omitted and priorities sharpened (recommended for individuals familiar with the original template and pedagogical approaches).
Microsoft Word, PDF, and Google Form options created and provided at the very beginning of the “New Game+” Page for user preferences.

I recognize and lament that I would need more time to conduct further surveys, reviews, and significantly greater time investment to get it to a more sustainable, consistent design. That said, Version 2 of the website build is a major improvement compared to Version 1, and the feedback received has been helpful in improving the overall quality of the hosting website.

**Time Constraints and COVID-19 Pandemic Considerations**

A major consideration that, unfortunately, did influence the project’s overall construction was the dual issue of work-life time constraints as well as the COVID-19 pandemic. For the former, I must acknowledge that my original project idea would have taken a much greater duration than what we were able to afford for the completion of the six month MEdL program, though I am quite satisfied with what I was able to create in a rapidly-consumed period of time. With a year or more to work on a project with this degree of scope and challenge, it would not be unreasonable to assume that a number of my earlier identified goals could have potentially been completed and further refined.

Furthermore, challenges related to teaching new courses and the COVID-19 pandemic did steals time away from the project and focus originally intended for this project. This cannot be helped, but certainly deserves mention. As stated before, the overall project is something that I feel is quite representative of the research conducted and a greater steppingstone towards a larger goal. I am excited to see what others can do to further push the boundaries on the research and work conducted here, and to continue pursuing the adventure of bringing gaming principles, SDT, and feedback cycles into future instruction and professional development as an educator.

**Future Recommendations and Direction**

Moving forward, I think it would be quite helpful to see more practical gamified and game-based learning resources made ready and available for educators to acquaint themselves with the concepts.
present within the NG+ template, as well as appeal to the pedagogical overlaps that many ‘good games’ offer players. The NG+ model seeks to unite a great deal of seemingly disconnected theories and resources together, and I still see merit in furthering research into each of these fields, refining the means through which the NG+ model helps educators appeal to SDT principles, gaming principles, unconventional technology, and other educational considerations. This will take time and a great deal of consideration, but I believe wholeheartedly that based on the research conducted within this project and CCQ, it is not a misplaced ambition.

The NG+ Instructional Design model does provide educators with a research-supported roadmap to pursue GBL, GLEs, and Gamification in their own instruction. Furthermore, the Minecraft Exemplar provides evidence of the NG+ template in action and can provide educators with an opportunity to identify early problem areas with their implementation or adjustments that they may wish to make with the model itself. My exemplar is certainly not perfect, but the ability to see how I used it may alert meaningful critique and improvements from someone with a fresher perspective. Additional resources connected to the ‘early stages’ of gamification and GBL have been added with the Version 2 build of the website, and I hope that educators are able to take what was conducted here and use it as a means for developing further strides for improving learners’ autonomy and interest in building content-connected skills.

Beyond the NG+ model and website resources, I think a meaningful step will be to actively apply and reflect on the application of games within a learning environment. An important next step is to see if the wealth of theories presented within this project build can survive regular and active practice within classrooms across a variety of districts, educators, and cultures. Experience serves as a helpful teacher, and if the merits identified within this project are true, then student experience and feedback are critical to collect, identify, and apply for further use and improvements. As it stands, much of what is created is theoretical, despite the support of the research provided. Once implemented within a
learning structure and actively used for instruction with students, I suspect the ‘next steps’ in using gamification and GBL constructs that this project proposes will be made much clearer. As with games, novels, and movies, we do not catch everything on a single playthrough or exposure—we need the opportunity to reflect, revise, and redesign in order to produce something that we can empirically support, understand, and implement with certainty.

**Final Conclusions**

A wide variety of media supports the learning and development of individuals that, at present, rarely engage with such forms of media beyond leisurely activities. Within the considerations of school and conventional K-12 education, we can recognize that many of our strategies remain effective and still yield positive learning results. However, there is room to grow and to adjust practices that can support current understandings while also offering learners with an opportunity to experience engaging, self-determined practices which draw upon intrinsic patterns of motivation. Doing so may help recontextualize a lot of the dismay that students can experience during in-class instruction. Improvements to practices such as assessment, content delivery, and conceptual understandings can be made without large-scale shifts to the current paradigm of school-based instruction. Many of these improvements have notable ideological overlaps with patterns held in video gaming, and there is reason to believe that adopting video games and video game design philosophies when planning for instruction can yield greater student interest and participation than relying on instructional status quos alone.

Self-Determination Theory provides a meaningful framework for educators to consider when planning instruction, as it speaks to processes that prioritize learners as active participants and decisive, self-governed learners. These patterns of appealing to a person’s feelings of autonomy, competence, and connection are critical considerations that are ubiquitous and systemic to experiences that players have when playing video games and games in general. With ample creativity, time, and a willingness to make learning a cooperative venture rather than a directive or authoritarian construct, an educator can
create lessons, units, and courses that are tailored to appeal to their learners’ desire to meet and push their own learning boundaries. These appeals to psychological drives and intrinsic motivation can create powerful patterns of expression and life-long learning habits.

With an open-mind and a willingness to involve games and game-like constructs to augment and support traditional instruction, learners in the B.C. public school system can be given an opportunity to take charge of their own learning and personal growth, to adjust to a rapidly transitioning, technology-rich society, and to see how learning and entertainment are intimately connected. Good games and good pedagogy are one and the same, and it is clear that the field of education can benefit by implementing currently unconventional approaches to augment our instruction and further appeal to the learning systems that our students are already investing their time and interest in, and are learning from.
References


https://doi.org/10.1080/02602938.2018.1463354


http://hdl.handle.net/10613/2630


https://doi.org/10.1080/03043797.2018.1483896


https://doi.org/10.4000/sdj.287


https://www.schoology.com/blog/samr-model-practical-guide-edtech-integration


Appendix A

Understanding by Design Template, Universal Design for Learning Guidelines, ADDIE model: Reference Visuals

Understanding by Design:


https://cft.vanderbilt.edu/understanding-by-design/ — See also Appendix E.
**Universal Design for Learning:**

<table>
<thead>
<tr>
<th>Access</th>
<th></th>
<th>Build</th>
<th>Internlize</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provide options for Recruiting Interest (7)</strong></td>
<td><strong>Provide options for Perception (5)</strong></td>
<td><strong>Provide options for Physical Action (4)</strong></td>
<td><strong>Provide options for Language &amp; Symbols (2)</strong></td>
<td><strong>Provide options for Executive Functions (6)</strong></td>
</tr>
<tr>
<td>- Optimize individual choice and autonomy (7.1)</td>
<td>- Offer ways of customizing the display of information (5.2)</td>
<td>- Vary the methods for response and navigation (4.2)</td>
<td>- Clarify vocabulary and symbols (2.1)</td>
<td>- Guide appropriate goal-setting (6.1)</td>
</tr>
<tr>
<td>- Optimize relevance, value, and authenticity (7.2)</td>
<td>- Offer alternatives for auditory information (5.3)</td>
<td>- Optimize access to tools and assistive technologies (4.3)</td>
<td>- Clarify syntax and structure (2.2)</td>
<td>- Support planning and strategy development (6.2)</td>
</tr>
<tr>
<td>- Minimize threats and distractions (7.3)</td>
<td>- Offer alternatives for visual information (5.4)</td>
<td></td>
<td>- Support decoding of text, mathematical notation, and symbols (2.3)</td>
<td>- Facilitate managing information and resources (6.3)</td>
</tr>
</tbody>
</table>

**Expert Learners who are...**

- Purposeful & Motivated
- Resourceful & Knowledgeable
- Strategic & Goal-Directed

ADDIE Instructional Design model:

Appendix B

Organismic Integration Theory

**Figure 1**
The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Processes

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Nonself-Determined</th>
<th>Self-Determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>Amotivation</td>
<td>Intrinsic Motivation</td>
</tr>
<tr>
<td>Regulatory Styles</td>
<td>Non-Regulation</td>
<td>Intrinsic Regulation</td>
</tr>
<tr>
<td>Perceived Locus</td>
<td>Impersonal, External, Somewhat Internal, Internal</td>
<td>Internal</td>
</tr>
<tr>
<td>Causality</td>
<td>Compliance, External Rewards and Punishments, Self-control, Ego-Involvement, Internal Rewards and Punishments, Personal Importance, Conscious Valuing, Congruence, Awareness, Synthesis With Self</td>
<td>Interest, Enjoymt, Inherent Satisfaction</td>
</tr>
</tbody>
</table>

Appendix C

Gee’s 16 Principles: Summarization of Principles

Gee’s Learning Principles:

1. **Identity** – “Learning a new domain, [...] requires the learner to take on a new identity: to make a commitment to see and value work and the world in the ways in which good physicists or good furniture makers do.” (p. 34)

2. **Interaction** – “In a good game, words and deeds are all placed in the context of an interactive relationship between the player and the world. So, too, in school, texts and textbooks need to be put in contexts of interaction where the world and other people talk back.” (p. 34)

3. **Production** – “Even at the simplest level, players co-design games by the actions that they take and the decisions that they make.” (p. 35)

4. **Risk Taking** – “Good video games lower the consequences of failure; players can start from the last-saved game when they fail. Players are thereby encouraged to take risks, explore, and try new things [...] failure is a good thing.” (p. 35)

5. **Customization** – “Games often have different difficulty levels, and many good games allow players to solve problems in different ways.” (p. 35)

6. **Agency** – “... players feel a real sense of agency and control and a real sense of ownership over what they are doing.” (p. 36)

7. **Well-Ordered Problems** – “In good video games, the problems players face are ordered so that the earlier ones are well built to lead players to form hypotheses that work well for later, harder problems.” (p. 36)

8. **Challenge and Consolidation** – “Good games offer players a set of challenging problems and then let them solve these problems until their solutions are virtually automatic. Then the game throws a new class of problems at the players, requiring them to rethink their now
taken-for-granted mastery, learn something new, and integrate this new learning with their old mastery.” (p. 36)

9. **“Just-in-Time” and “On Demand”** — “Games almost always give verbal information either ‘just in time,’ that is, right when players need and can use it; or ‘on demand,’ that is, when the player feels a need for it, wants it, is ready for it, and can make good use of it.” (p. 36)

10. **Situated Meanings** — “Games always situate the meanings of words in terms of the actions, images, and dialogues that they relate to, and show how they vary across different actions, images, and dialogues.” (p. 36)

11. **Pleasantly Frustrating** — “[... ] good games stay within, but at the outer edge, of the players’ regime of competence’ (diSessa 2000). That is, they feel ‘doable,’ but challenging.” (p. 36)

12. **System Thinking** — “Games encourage players to think about relationships, not isolated events, facts, and skills.” (p. 36)

13. **Explore, Think Laterally, Rethink Goals** — “[Games] encourage players to explore thoroughly before moving on; to think laterally, not just linearly; and to use such exploration and lateral thinking to reconceive one’s goals from time to time.” (p. 36)

14. **Smart Tools and Distributed Knowledge** — “In a massive multiplayer game, players work in teams where each member contributes his or her distinctive skills. The core knowledge needed to play the game is now distributed among a set of real people and their smart virtual characters.” (p. 37)

15. **Cross-Functional Teams** — “When players play a massive multiplayer game such as World of Warcraft, they often play in teams (parties) in which each player has a different set of skills. [...] in such teams, people are affiliated by their commitment to a common endeavor, not primarily by their race, class, ethnicity, or gender. These latter are available as resources for
the whole group if and when they are needed and if and when the player wishes to use them.” (p. 37)

16. **Performance before Competence** – “Players can perform before they are competent, supported by the design of the game, the ‘smart tools’ that the game offers, and often, too, the support of other, more advanced players” (p. 37)

Appendix D

Koster (2005) Summary for Successful Games: Excerpted Elements (Pages 120 and 122)

Successful games tend to incorporate the following elements:

- **Preparation.** Before taking on a given challenge, the player gets to make some choices that affect their odds of success. This might be healing up before a battle, handicapping the opponent, or practicing in advance. You might set up a strategic landscape, such as building a particular hand of cards in a card game. Prior moves in a game are automatically part of the preparation stage because all games consist of multiple challenges in sequence.

- **A sense of space.** The space might be the landscape of a war game, a chess board, the network of relationships between the players during the bridge game.

- **A solid core mechanic.** This is a puzzle to solve, an intrinsically interesting rule set into which content can be poured. An example might be “moving a piece in chess.”
  
- **The core mechanic is usually a fairly small rule; the intricacies of the game come from either having a lot of mechanics or having a few, very elegantly chosen ones.**

- **A range of challenges.** This is basically content. It does not change the rules, it operates within the rules and brings slightly different parameters to the table. Each enemy you might encounter in a game is one of these.

- **A range of abilities required to solve the encounter.** If all you have is a hammer and you can only do one thing with it, then the game is going to be dull. This is a test that tic-tac-toe fails but that checkers meets: in a game of checkers you start learning the importance of forcing the other player into a disadvantageous jump. Most games unfold abilities over time, until at a high levels you have many possible strategies to choose from.

- **Skill required in using the abilities.** Bad choices lead to failure in the encounter. This skill can be of any sort, really: resource management during the encounter, failures in timing, failures in physical dexterity, and failures to monitor all the variables that are in motion.

A game having all of these elements hits the right cognitive buttons to be fun. If a game involves no preparation, we say it relies on chance. If there’s no sense of space, we call it trivial. If there’s no core mechanic, there’s no game at all. If there’s no range of challenges, we exhaust it quickly. If there’s no multiple choices to make, it’s simplistic. And if skill isn’t required, it’s tedious.

There are also some features that should be present to make the experience a learning experience:

- **A variable feedback system.** The result of the encounter should not be completely predictable. Ideally, greater skill in completing the challenge should lead to better rewards. In a game like chess, the variable feedback is your opponent’s response to your move.

- **The Mastery Problem must be dealt with.** High-level players can’t get big benefits from easy encounters or they will bottom-feed. Inexpert players will be unable to get the most out of the game.

- **Failure must have a cost.** At the very least there is an opportunity cost, and there may be more. Next time you attempt the challenge, you are assumed to come into it from scratch—there are no—“do-overs.” Next time you try, you may be prepared differently.

Looking at these elementary particles that make up ludemes, it’s easy to see why most games in history have been competitive head-to-head activities. It’s the easiest way to constantly provide a new flow of challenges and content.

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### Appendix E

**McTighe and Wiggins’ “Understanding by Design” Template - Example**

<table>
<thead>
<tr>
<th>Stage 1 – Desired Results</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Established Goals</strong></td>
<td><strong>Transfer</strong></td>
</tr>
<tr>
<td>The enduring understandings and learning goals of the lesson, unit, or course.</td>
<td>Students will be able to independently use their learning to...</td>
</tr>
<tr>
<td><strong>Meaning</strong></td>
<td><strong>Essential Questions</strong></td>
</tr>
<tr>
<td>Understandings: Students will understand that...</td>
<td>Refers to the provocative questions that foster inquiry, understanding, and transfer of learning. These questions typically frame the lesson, unit, or course and are often revisited. If students attain the established goals, they should be able to answer the essential question(s).</td>
</tr>
<tr>
<td>Refers to the big ideas and specific understandings students will have when the complete the lesson, unit, or course.</td>
<td></td>
</tr>
<tr>
<td><strong>Acquisition</strong></td>
<td><strong>Evidence and Assessment</strong></td>
</tr>
<tr>
<td>Students will know...</td>
<td>Students will be skilled at...</td>
</tr>
<tr>
<td>Refers to the key knowledge students will acquire from the lesson, unit, or course.</td>
<td>Refers to the key skills students will acquire from the lesson, unit, or course.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2 – Evidence and Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluate Criteria</strong></td>
</tr>
<tr>
<td>Refers to the various types of criteria that students will be evaluated on.</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 3 – Learning Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Key Learning Events and Instruction</td>
</tr>
<tr>
<td>This stage encompasses the individual learning activities and instructional strategies that will be employed. This includes lectures, discussions, problem-solving sessions, etc.</td>
</tr>
</tbody>
</table>


[https://cft.vanderbilt.edu/understanding-by-design/](https://cft.vanderbilt.edu/understanding-by-design/)
Appendix F

Key Deliverable: IDT for Game-Based Learning and Gamified Learning Environment Planning

### Phase 1: "At A Glance" Goals

<table>
<thead>
<tr>
<th>My Desired Result for learners to...</th>
<th>The Evidence of Learning I want to acquire is the learner's capability to...</th>
<th>I will consider the learning successful when my students can...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Phase 2: Gamifying the Learning

#### Game "Tool" Choice:
- What Game(s) or Gamified Elements are you planning to include?
- What are the Strengths of this Game/Gamified Approach that you can identify?

- I intend to use this Tool to...
- Substitute for an existing learning strategy
- Augment and enhance a learning strategy
- Modify how learning will happen
- Redefine how learning activities could happen

#### How could this Tool affect a student's sense of Autonomy?

- How could this tool affect a student's sense of Competence over time?
- How could this tool affect a student's sense of Relationship to themselves, the class, or greater community?

### Pre-Planning Questions

- What Skills do students need to have pre-taught to use this tool effectively?
- What feedback strategies does this game/plan work already use that could help build student success that is connected to your intended learning outcomes?

### Big Idea(s): What drives the learning?

<table>
<thead>
<tr>
<th>Students will be able to: (compete/teach)</th>
<th>Students will know: (content)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Stage 4: Assessment and Feedback

#### Key Criteria: (how will I know if students are achieving our stated goals?)

- Performance/Competitive Tasks: What do you consider evidence of understanding?
- Feedback Opportunities: What is evidence that they’re approaching the learning outcome?
<table>
<thead>
<tr>
<th>Feedback Stipends: How will students RECEIVE feedback and how will they have an opportunity to IMPROVE with that feedback?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Students will receive explicit feedback for...</td>
</tr>
<tr>
<td>• Students will have the following opportunities to use the feedback during...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE 1 - LEARNING PLANS (GENERAL OVERVIEW OF LESSONS/EVENTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How will this Tool promote Multiple Means of Engagement?</strong> (What ways are there to build student buy-in and understanding of concepts in their lives?)</td>
</tr>
<tr>
<td>*</td>
</tr>
<tr>
<td>*</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Summary of Key Learning Events and Instruction</th>
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</thead>
<tbody>
<tr>
<td>(Describe your daily/group/all class plans in the bullets below. Connect them to your Assessment and Evaluation Opportunities as you see fit.)</td>
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</table>

<table>
<thead>
<tr>
<th>Assessment and Evaluation Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>(When will you use Assessment and Evaluation Opportunities to inform/reassess/modify instruction/statement?)</td>
</tr>
<tr>
<td>*</td>
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</tbody>
</table>
### FINAL PHASE: FINAL ASSESSMENT/CULMINATING ACTIVITY (IF APPLICABLE)

<table>
<thead>
<tr>
<th>Demonstration of Learning Activity: (How will your final assessment/evaluation showcase the learning that has taken place?)</th>
<th></th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Intended Learning Outcomes: (What learning outcomes will this learning activity achieve?)</th>
<th></th>
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</table>

<table>
<thead>
<tr>
<th>Students will show their learning by... (Assessment of learning)</th>
<th>Students will receive feedback they can further improve upon in the form of... (Assessment for learning)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How will the feedback from this final assessment contribute to future learning? (Assessment of learning)</th>
<th></th>
</tr>
</thead>
</table>
Appendix G

Ruben Puente's “SAMR” Model - Example


https://www.edutopia.org/article/powerful-model-understanding-good-tech-integration
Appendix H

Screenshots of the Minecraft Island Design using 3rd Party Software (MCEdit 2.0) and Build Process (and subsequent failure to load in MEE)
SECONDARY GAME DESIGN FOR MOTIVATION & ASSESSMENT
When Things Went Wrong...

- Transferred from Java edition > Bedrock
  - Went great!
- Transferred from Bedrock > Education Edition
  - Did not go great.
- Error codes everywhere. Everywhere. Couldn’t fix the weird “update” block issue… so I’ve decided to use two versions.
  - “Unaltered Floating Castaway Island” — This is the “perfect” landmass version, no errors (which is surprising given how unstable the programs are!)
  - “Glitched Land” — Rolled with the problems. Fully employable in the school. Errors have been incorporated as part of the narrative.
    - Built structures for immediate use.
    - Added NPCs to create a “optional story” — namely, a Scientist who tried to create a portal to his home, but… “broke the world” around the player base.
- Pictures of the “Glitched Land” world follow.
SECONDARY GAME DESIGN FOR MOTIVATION & ASSESSMENT

IT WORKED!
IT FINALLY WORKED!
I just need to reverse the flow of the portal...

Hm? Who’s this? Go away. Can’t you tell I’m thinking very hard? Move along.

---

DIAGNOSTICS TERMINAL “BEEP BOOP”

---Scanning... [94% Complete]
---ENVIRONMENTAL DAMAGE DETECTED...
---STATUS: STABLE [97% PRE-SCAN FIDELITY]
---CONTINUE?

Alright then.
I broke the world.
I do not fully comprehend what I did, but it is not recorded.
This natural phenomenon will never come to reason with it,
as I am the only reasoning thing on this land.
To simplify, I activated my theory of Quantum Interference.
Tunneling. In an effort to return to a less 'natural' world from whence I came. Instead, the land shook and ross like tectonic plates shifting below us.
I lost consciousness and remember little of the activation, as is expected of Quantum Interference.

When I returned to my mind, the world had changed.
Strange, blocks have appeared, where others used to be. Each displays "UFO - DNT" on them. No matter what I do, I cannot remove their eyesores from sight.
Furthermore, the land has shifted vertically enough so that water has begun to freeze if not kept insulated. This puts a timer on my likelihood for survival.
Also the land is floating. At least that is explained through Quantum Tunneling. We must be suspended inbetween states.
of existence... not unlike my essence becoming cubic, as the rest of the world has displayed. Feculiar, but my frustration exceeds my interest in this phenomenon.

I miss Flury. I hope someone is feeding him while I am away. I will return to him. He is my good pup, and I'm his loyal master. I will return to him.
Note. For higher resolution screenshots, the complete PDF collection can be located here.
Appendix I

Screen Captures of Google Feedback Form

Preamble: Website Overview

Dear Colleague!

Thank you for taking the time out to provide valuable feedback on this portion of my MEdL Major Project. By completing this survey, you are helping my research efforts to explore how Game Design Theories and Gaming Environments can be implemented in Instructional Design to support learning at the Secondary level.

The major project is an Instructional Design template made available for educators. Website Link: http://newgameplusmodel.weebly.com/

This website is designed to provide educators with resources to enhance the use of non-traditional technologies alongside best practices in instructional design. Examples of non-traditional technologies including video games or Game-Based Learning (GBL) environments to motivate and engage learners. Additional resources have also been included to provide further options for experimentation and learning.

So thank you again for your contribution to my research! The feedback here will be collected and used to make improvements to the overall project and website.

With thanks,

Christopher Bridge, B.A., B.Ed.
MEdL Candidate
Vancouver Island University
Section 1 of 5: Participant Profile

Before we begin, I would like to know what your experiences in education have been like.

What is your current involvement within the field of education? (Please select all that apply to you, and "Other" if the following choices do not apply or require expansion)

- Educator-In-Training (Postbaccalaureate or B.Ed Program)
- Teacher (K-8)
- Teacher (9-12)
- Professor
- School/University Administrator
- Other: ____________________________

Please select your current level of education.

- High School Graduate
- Some College/University
- Bachelor's degree
- Post-Degree Graduate Studies
- Other: ____________________________
Have you had experience in a blended-learning environment, either as an educator or as a student? Have you had experience in integrating non-traditional resources, such as video games or new technologies, into your experiences within a classroom?

Your answer

Prior to visiting of the website, were you familiar with Instructional Design models, such as "Backwards Design," "Universal Design for Learning," or other common Instructional design models?

☐ Yes

☐ No

☐ Other:

Prior to the visiting of the website, were you familiar with terminology or practices in Gamification or the construction of Game-Based Learning Environments (GLE)?

☐ Yes

☐ No

☐ Other:

Is there any additional information that I should know about you that may be relevant to my research?

Your answer
What device did you use to access the "New Game +" website?

- [ ] Smartphone
- [ ] Tablet
- [ ] Laptop
- [ ] Desktop
- [ ] Other: ____________________

What browser did you use to access the website?

- [ ] Firefox
- [ ] Google Chrome
- [ ] Safari
- [ ] Internet Explorer / Edge
- [ ] Other: ____________________

Did you have any trouble accessing the website? Please share any comments under "Other" for the overall accessibility of the site.

- [ ] Yes
- [ ] No
- [ ] Other: ____________________
In the website's current layout, how intuitive do you find information has been presented?

1 2 3 4 5

- Improvements to the layout are needed.
- Information is presented well.

Were all of the hyperlinks functional? (For any particular comments/concerns, please use “Other”)

- Yes
- No
- Other: ___________________________

Did you find there to be any challenges in accessing the material, or understanding the layout? As a follow-up, if there is an area for improvement that comes to mind, what would you suggest needs to be added, implemented, or adjusted for users?

Your answer

Please share any additional comments on the ease or difficulty experienced in navigating the website.

Your answer
Section 4 of 5: Visual Design

Is the site visually-appealing?

1  2  3  4  5

Visually difficult/unappealing  ○  ○  ○  ○  Visually clear/appealing

Was the look and layout of the site cohesive between webpages?

○ Yes
○ No
○ Other:  

Was the text legible throughout?

○ Yes
○ No
○ Other:  

Please provide any additional comments on the visual design of the website.

Your answer
Section 5 of 5: Content — Instructional Design Template

For this section, please refer to the Instructional Design Template itself, linked here:
https://docs.google.com/document/d/1O6eR6YELVxASfC517C7kR29yv6FGpge31L2hRAwLqk/edit?usp=sharing

As an additional reference, here is an exemplar of the Instructional Design Template that has been used for the construction of a unit:
https://docs.google.com/document/d/1shdMlmZjApxKlwwmJLpXueA4WyYJen7QptSYV0MMowkd/edit?usp=sharing

How intuitive or self-explanatory did you find the "New Game++" template?

![Table and image of the New Game++ template]

Lacks clarity of instruction 〇 〇 〇 〇 〇 Easy to follow and complete
In terms of the overall document, how valid, or useful, do you feel the completion — or partial usage — of this template would be in planning for instruction?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has no clear value to instructional planning</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

When considering the template’s instructions, how clear or intuitive do you find the process of lesson planning using this format?

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<tr>
<th>1</th>
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<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Unclear / Confusing</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Do you think that this template would assist you in implementing non-traditional applications or technologies in your own practice?

Your answer

What changes to the template do you think would be helpful to make?

Your answer

Please provide any additional comments or feedback on the “New Game+” template.

Your answer