
May 2023

Understanding Motivational Differences through the Lens of Gamification User Types

Heather J. S. Birch
Tyndale University, hbirch@tyndale.ca

Follow this and additional works at: <https://digitalcommons.georgefox.edu/icctej>



Part of the [Educational Methods Commons](#), [Educational Technology Commons](#), [Elementary Education Commons](#), [Scholarship of Teaching and Learning Commons](#), and the [Teacher Education and Professional Development Commons](#)

Recommended Citation

Birch, H. J. (2023). Understanding Motivational Differences through the Lens of Gamification User Types. *International Christian Community of Teacher Educators Journal*, 18(1). DOI: <https://doi.org/10.55221/1932-7846.1303>

This Article is brought to you for free and open access by Digital Commons @ George Fox University. It has been accepted for inclusion in International Christian Community of Teacher Educators Journal by an authorized editor of Digital Commons @ George Fox University. For more information, please contact arolfe@georgefox.edu.

Understanding Motivational Differences through the Lens of Gamification User Types

Abstract

In the context of an educational technology course, teacher candidates completed Marczewski's User Types Hexad Test, a questionnaire based on a typology for classifying both intrinsic and extrinsic motivational tendencies. The test results showed teacher candidates' motivational tendencies, through indicating their resonance with six different User Types, including *Socializers*, *Free Spirits*, *Achievers*, *Philanthropists*, *Players*, and *Disruptors*. Knowing their User Type allowed teacher candidates to reflect on their own personal motivations to use various types of digital tools, as well as to consider how their peers and their students with different user profiles may be motivated differently than themselves. The main research questions in this study were related to discovering the motivational differences present in a group of teacher candidates, and whether knowing about these differences would empower them to acknowledge differences in motivation among their learners. The findings include teacher candidates' understandings of the importance of differentiating for motivational tendencies through insight, relationships, and effective teaching, as well the different language teacher candidates use to describe their own developing teacher identity, according to their resonant User Types. These data provide examples of how User Type awareness can help teacher candidates take practical steps toward differentiating instructional design based not only on consideration of learners' abilities and interests, but also on learners' motivational profiles. Suggestions for language that would resonate with various User Types is presented, and may help teacher educators as they coach pre-service teachers through their identity development.

Keywords

motivation, gamification, self-determination theory, differentiation

Understanding Motivational Differences Through the Lens of Gamification User Types

Heather J.S. Birch, Tyndale University

Introduction

The context of this research study was an educational technology course for pre-service teacher candidates designed to provoke deep thinking about digital technology and its potential impacts on learners. One of the course learning outcomes was an understanding of motivational differences, and how these differences impact learners' willingness and ability to use and learn from various digital tools. To facilitate this learning outcome, a course assignment was designed whereby teacher candidates were invited to make plans to add game mechanics, or game-like features to a learning environment. As the foundation of this assignment, teacher candidates learned about the tenets of self-determination theory as a way of understanding motivation for learning and completed Marczewski's (2015) User Type Test, the results of which provided them insight into their own motivational tendencies. The following two research questions were asked.

1. What are the motivational differences present in a group of pre-service teachers, and do these differences resonate with their own perceived identities?
2. How do teacher candidates use knowledge of their own motivational User Type and different User Type profiles to acknowledge differences in motivation among learners?

Throughout this study, the theoretical framework of self-determination theory (SDT) was framed in two ways. SDT can help us understand the ideal conditions for motivating learners to engage in and succeed at learning. Additionally, SDT provides insight into God's best intention for

human learning, and how we can empower learners to live fully in this reality, and to flourish. The name of the theory may seem problematic since there seems to be a focus on self and on a person determining their own destiny. However, it is true that "In their hearts humans plan their course, but the Lord establishes their steps" (Proverbs 16:9). The theory's name is not as important as its capacity for highlighting that God created humans with the innate capacity to learn and to flourish within God's creational order.

SDT can help us understand the ideal conditions for motivating learners to engage in and succeed at learning. Additionally, SDT provides insight into God's best intention for human learning, and how we can empower learners to live fully in this reality, and to flourish.

Literature Review

Motivation through Games

Games are meant to be fun, but not everyone enjoys playing every game. Some people are motivated to play games designed around competition and strategy, while others prefer

Heather J.S. Birch is Associate Professor of Education & Director of the Bachelor of Education Program at Tyndale University.

games that feature elements such as social interaction and creativity. These preferences emerge in the context of traditional board games such as Monopoly and Trivial Pursuit, in simple mobile games like Candy Crush and Wordle, and among a variety of immersive online role-playing games such as World of Warcraft, and open-world exploration games like Minecraft. For the last few decades, a small percentage of students in any classroom will have been hard-core video gamers, but increasingly, the majority of our students are at least “casual gamers,” and approach life with that lens (Juul, 2010). Casual gamers do not necessarily identify themselves as video game players; rather, they play online games because it has become normal to do so. Casual games are those that can be played without rearranging your schedule, without dedicating hours to learning to play, and are now typical ways that people spend time (Juul, 2010). During the COVID-19 pandemic, beginning in 2020, online game play increased, and became even more socially acceptable and common (Entertainment Software Association, 2021).

The shift away from online gaming as a pastime or hobby that some pursue, and toward an actual way of thinking in the 21st century (McGonigal, 2011), implies a shift in who our learners are.

It is appropriate for teachers to consider how the context of a learning space might be impacted by these cultural and social shifts. The shift away from online gaming as a pastime or a hobby that some pursue, and toward an actual way of thinking in the 21st century (McGonigal, 2011), implies a shift in who our learners are. The strong dialogic relationship between games and other design industries and user experience industries (de Winter & Moeller, 2014) means a shift in contextual experiences and mental models that learners now bring into the classroom (Strubberg et al., 2022). In response to these cultural changes, this study incorporates gamification, the process whereby game mechanics can be added to a non-

game environment (Deterding et al., 2011) in order to enhance motivation by honouring learners’ cultural contexts and motivational differences.

Marczewski’s User Types

To acknowledge the impact that digital gaming has now had on all learners (including adults and children), Marczewski’s (2015) User Type tendencies, which shed light on how people respond differently to various game-like experiences, were embedded into this study. The User Types model was appropriate for three reasons. First, Marczewski’s User Types Test is applicable to student learning in that it reveals information about how people tend to be motivated in a non-game environment such as a classroom, where game-like features may be present. Second, the test has been validated and shown to be reliable (Tondello et al., 2019). Third, the User Types Test is based on a strong theoretical foundation, self-determination theory (Ryan & Deci, 2000), which helps to explain why humans are motivated to learn.

Self-Determination Theory

Imagine that a teacher spends hours designing a learning space and planning detailed lessons. This does not necessarily guarantee that learners will want to learn, and will be ready to fully engage in learning. Using SDT, Ryan and Deci (2000) explained that certain psychological needs must be met in order for learners to feel the maximum motivation to engage effectively in learning. In acknowledging that there are universal motivations across all humans (Deci et al., 1994; Deci & Ryan, 2008a, 2008b), self-determination theory reminds us that, as humans, we have commonalities: there are ways we are the same. We are all motivated, in any learning environment, by chances to experience autonomy, mastery, and relatedness. According to Ryan and Deci (2000), for a human to be all they can, within a given learning context, they are fully dependent upon having these three psychological needs met and somewhat dependent upon their “abiding inner resources” (p. 58). These inner resources refer to resiliency and understandings that have built up through various experiences and prior learning, and also, to character and disposition.

Depending on the strength of these inner resources, environmental factors can have varying levels of power to support or to sabotage a person's ability to experience autonomy, mastery, and relatedness, and therefore, greatly impact their capacity to successfully grow and develop (Deci & Ryan, 2002). When the need to express autonomy, to achieve mastery, and to experience relatedness are all met, the result is motivation and wellness that can facilitate learning and growing (Ryan et al., 2019).

Self-determination theory describes how learners can be invited into a state of flourishing. The overarching belief of SDT is that, as humans, we are born with natural tendencies to grow, to take on challenges, and to willingly and purposefully integrate new experiences (Guay, 2021). The assumption of this paper is that God has created us in this way and that fully flourishing, at our maximum capacity for growth and development, is God's best intention for humanity. This assumption is impactful with regard to this study since it has two implications for the purpose and intent. First, a sense of God's presence and love can be part of the abiding resources that motivate a person to learn and grow. Second, knowing about the basic psychological needs that God has created their learners with can inspire teacher candidates to take steps to understand and make plans to meet those needs. A good enough reason to plan to meet learners' needs in order to maximize motivation is that increased motivation results in increased capacity for learning (Tomlinson & McTigue, 2006). An additional and deeper purpose for doing so, for the Christian educator, is to understand and plan for learners' differing motivations to provide students with the maximum potential to be who they were meant to be, and acknowledges who they are, as God's beloved creations.

Description of Types

Marczewski's (2015) User Type Test is a questionnaire representing a typology for analyzing intrinsic and extrinsic motivational tendencies and organizes people into User Types, including Socializers, Free Spirits, Achievers, Philanthropists, Players, and Disruptors. The point of this typology is not to rigidly categorize people into a single User Type and automatically assume

they will only be motivated in certain ways; rather, the User Type tendencies are indicators that point toward possible ways that people are differently motivated when they experience a gamified environment.

Each of Marczewski's (2015) User Types is based on a primary psychological need, as defined by Ryan and Deci (Deci & Ryan, 2008a, 2008b). All learners have each of these needs; the User Type designations are useful for describing how certain learners may prefer satisfying one need more than others, based on their own individual experiences and personalities (Ryan & Deci, 2000). Philanthropists and Socializers alike are motivated by the psychological need for relatedness (Marczewski, 2015). Philanthropists are motivated by knowing that their learning has purpose beyond just learning for its own sake (Tondello et al., 2016), and that ultimately, their learning is related to helping others. Socializers are motivated to interact with others as they learn; they may end up helping others, but primarily for the purpose of enjoying others' company (Tondello et al., 2019). Achievers are primarily motivated by the basic psychological need for mastery, or, in other words, by the need for developing competence. Thus, Achievers are motivated by tackling challenges and finishing tasks, as a means of acquiring skill and knowledge (Marczewski, 2015). Free Spirits are most impacted by the basic psychological need for autonomy. They prefer to explore and move around the environment according to their own choice and decisions. Two other User Types designated by Marczewski (2015) include Players, who are most highly motivated by rewards, and Disruptors, who are motivated by either positive or negative change (Birch, 2022; Tondello et al., 2019).

Differentiation

A foundational premise of this study is the importance of teacher candidates' understanding of differentiating for student differences. Differentiated instruction represents "skilled and flexible instruction," (Tomlinson & McTigue, 2006, p. vi), which is an approach for teaching learners of different abilities in the same classroom (Metropolitan Center for Urban Education, 2008; Taylor, 2015). Several research studies describe

initiatives for helping teacher candidates learn to differentiate instruction. For example, the importance of presenting differentiated instruction (DI) as a conceptual framework and not as a set of instructional tools is discussed by Dack (2019). The importance of modeling DI for teacher candidates is advocated for by Santangelo and Tomlinson (2012), because of the unique power of modeling within teacher education, i.e., that teacher educators are in the position to teach about teaching. The value of providing very clear examples of DI, along with chances to practice it in the classroom and receive feedback on plans and implementation was highlighted by Yenmez and Özpınar (2017). These researchers described the importance of acknowledging differences among students, and therefore, of providing instruction at different levels and types, to invite students to engage in learning that interests them personally, and to demonstrate what they know in a variety of ways. This research study introduced teacher candidates to a typology that highlights motivational differences, as a way of further strengthening and broadening their understanding of differentiation.

A number of research studies mention motivation as an aspect to consider when differentiating. For example, The Metropolitan Center for Urban Education (2008) acknowledged motivation as potentially different among learners, including it in their list of factors to differentiate for, along with learning style, learning pace, type of intelligence, personality, health, and family circumstances. Motivation is characterized by Spencer-Waterman (2004) as influenced by the topic or activity at hand, and whether the learner finds it interesting. Tomlinson and McTigue (2006) recommended paying attention to what students are interested in, contending that if students are interested and curious, they will be highly motivated to learn.

If teacher candidates view their students as loved by God, and created to learn and grow, this gives them the opportunity to break down barriers to learning and allow learning to happen. Instead of thinking of

their task as trying to change who someone is, from an unmotivated person to a motivated person, they can think of their learners as destined to learn and grow, if only given the chance.

According to these examples, to address differing motivation among learners is to let students explore topics or activities they are already interested in. If teacher candidates are only provided with this strategy for increasing motivation, they may believe that their only hope for motivating students is to find out what those students are presently interested in and to only teach about that. It is more freeing for teacher candidates to understand that if their students have a low level of motivation to engage with a certain topic at first, structuring opportunities for them to experience autonomy, mastery, and relatedness, regardless of the topic, can potentially increase their motivation to learn about a new topic. Hume (2008) confirmed the significance of autonomy for learners by emphasizing the importance of providing choices, which helps build confidence levels and independence. As acknowledged by Tomlinson and McTigue (2006), a sense of relatedness between student and teacher can be highly motivating, and therefore, they recommend fostering strong relationships, which are a bridge to motivating students to learn. They explain that feeling valued can give students the confidence to jump into learning challenges that otherwise might feel too risky. Relatedness is not only about the teacher-student relationship, but also includes the power of a learner's imagined or real relationship with peers, or anyone the student respects and considers to be related to them in the sense that they want to be like them, and want to do what they do, and learn what they learn (Deci & Ryan, 2008a). Teacher candidates may benefit from having a framework for thinking about how to motivate their learners to want to learn something when they do not happen to be interested in the topic already. We do not have to lead teacher candidates to believe that if their students do not already have an intrinsic interest

in a topic, that the motivation to learn about that content area will automatically remain low.

In this study, teacher candidates were invited to reflect on their own motivational tendencies in order to help them understand their psychological needs and how the desire to meet those needs influences their motivation to learn. After this opportunity, it was hoped that teacher candidates might have a personal understanding of motivational profiles and tendencies, and how these can impact their learners differently, ultimately, empowering them to prioritize student learning. Learners benefit if teacher candidates have knowledge that can increase student learning. If teacher candidates view their students as loved by God, and created to learn and grow, this gives them the opportunity to break down barriers to learning and allow learning to happen. Instead of thinking of their task as trying to change who someone is, from an unmotivated person to a motivated person, they can think of their learners as destined to learn and grow, if only given the chance.

Methods

Research Design Overview

The research study design is a parallel phase, mixed methods inquiry that combines quantitative data collected from an established survey instrument, along with qualitative data collected from teacher candidates' written plans and reflections. These two data types were intentionally incorporated as components of the research, to answer the research questions with an integrated understanding of both objective and subjective data, in an "articulated and harmonic manner" (Ponce & Pagán-Maldonado, 2015). The study design is convergent, in that the researcher took on the role of integrating the quantitative and qualitative data in order to arrive at meaningful answers to the research questions (Creswell, 2008).

Researcher Perspective

The researcher is a teacher educator with experience teaching five iterations of an educational technology course for pre-service

teachers, during which a number of these students expressed hasty generalizations about the power and potential of digital technology. For example, common comments included, "Young people love technology," and "Digital technology is highly motivating." These generalizations are too broad to be meaningful; they group digital technologies into a homogenous set of tools that are simply "motivating," and do not account for the fact that certain digital tools are in fact, poorly designed, and should not be used for learning. These comments also do not allow for the chance that, with the existence of innumerable digital tools, there will be certain tools that learners enjoy and are motivated to use, and others they certainly do not enjoy using or learning from. Just because a tool is digital does not automatically imbue it with the power to motivate everyone. In addition, statements about how everyone of a certain age group is motivated uniformly are naive and do not acknowledge that learners, who enter classrooms with a multitude of experiences, abilities, and perspectives, may well have motivational differences. Just as we would not want pre-service teachers to assume that learners in the same grade have the same interests and skills, we would not want them to assume that everyone in their class can be motivated similarly. Therefore, in the context of this educational technology course, a study was launched to investigate the possibility of helping teacher candidates understand motivational differences.

Research Questions

This inquiry sought to answer the following research questions:

1. What are the motivational differences present in a group of pre-service teachers, and do these differences resonate with their own perceived identities?
2. How do teacher candidates use knowledge of their own motivational User Type and different User Type profiles to acknowledge differences in motivation among learners?

Research Context and Participants

The context of this research study was an educational technology course for pre-service teachers that focused on several themes (digital citizenship, digital footprints, social justice through digital technology, technology in Universal Design for Learning, and frameworks for technology integration), and provided opportunities for building skill at using various technology tools. Values, beliefs, and worldviews were explored in the course as lenses that can shape views of digital technology, including assistive technologies. Enrolled in this section of the required course were 55 teacher candidates pursuing initial teacher certification. These teacher candidates had already earned a bachelor's degree, and subsequently enrolled in a post-baccalaureate program of teacher education. At the time of data collection for this study, participants were just completing semester three out of four. Ethical clearance was sought through the University's Research Ethics Board, and 39 teacher candidates agreed to sign the consent form and have their information from the course used for data collection and analysis in this study. These teacher candidates completed Marczewski's (2015) User Types Hexad Test, and then were asked to consider their own and others' motivations for engaging in learning, through an assignment requiring reflection and planning.

Data Sources

This study was designed to determine the potential for Marczewski's (2015) User Types to assist teacher candidates in understanding the differences in motivation that students, (including themselves), bring to learning. There were three primary data sources. First, the quantitative results of the User Type survey results from each teacher candidate were collected. Second, qualitative data in the form of teacher candidates' responses to questions about their perceptions of their own and others' motivational tendencies were gathered. Third, qualitative data were drawn from the products that teacher candidates created when asked to list three game mechanics they would consider implementing in their upcoming practicum placement or their own classroom, and to explain the reasons for their choices.

Survey Data

Teacher candidates filled out Marczewski's (2015) User Type survey as part of an assignment required for course completion. The survey was administered online, where it is currently posted and available for anyone to fill out and see their own results (Marczewski, 2016). Survey items feature a 7-point Likert scale ranging from Strongly Agree to Strongly Disagree, and contain prompts about behavioural preferences. For example, the first two questions are: "I like helping others to orient themselves in new situations," and "It is important to me to always carry out my tasks completely." These examples show that the survey does not expect respondents to identify as gamers, and that the User Type tendencies apply, not specifically to in-game behaviour, but rather, to broader gamified contexts. The survey result depicts a person's User Type Tendencies, revealing a continuum from their most highly resonant User Type, through to their least resonant User Type.

Reflections

Once teacher candidates received the results of their User Type test, they were asked to, in light of this knowledge, respond to questions about their perceptions of their own and others' motivational tendencies.

Planning

To complete the assignment, teacher candidates were asked to consider how various game-like features might be added to a learning environment to motivate learners. They were provided with a list of game mechanics, as depicted in Figure 1. They were not directed to choose features they felt would be motivating to people different from themselves, but rather, were asked to discuss what features they would implement and why. The purpose of the activity was to examine teacher candidates' perceptions of the value of considering motivational differences. The teacher candidates were asked to choose three game-like features they would add, in order to potentially increase learner motivation, and to describe the rationale for each choice. This served two purposes. First, it allowed teacher candidates to apply knowledge of motivational theory and motivational tendencies to the practicalities of a classroom. Second, their choices and rationale

would indicate whether they were willing to add game-like features to their classroom which are not necessarily resonant with their own highest motivation type. It was hoped that they might consider using a game element in their plans that

corresponds with a different motivational tendency than their own. For example, if they were a highly resonant Philanthropist who is not typically motivated by competition, they might plan a competitive adventure anyway.

replayability	soundtrack	narrative	collaboration	strong sense of purpose
control (choice)	scaffolded challenge	points (XP)	badges/ achievements	leaderboard
random rewards	gifting/sharing	care-taking	collect & trade	sharing knowledge
voting/voice	development tools	anonymity	live chat	tutorial videos
virtual economy	physical rewards/prizes	competition	social discovery	teams
social status	social pressure	social network	loss aversion	easter eggs
creativity tools	branching choices	levels	learning new skills	certificates
simulation	quests	boss battles	lottery	graphics

Figure 1: Chart depicting game mechanics. This chart was provided to teacher candidates for their use in reflecting on elements of game design that could be added to learning spaces as possible motivators for students.

Data Analysis

The quantitative and qualitative data collected were complementary, with the quantitative data establishing a baseline measurement, and the related qualitative data providing further insight into the research questions (Ponce, 2015). The quantitative data establish what the motivational tendencies of the participants are, and the qualitative data show participants' related perceptions of their own behaviour and mindset as related to their motivational tendencies, and their understanding of how this might impact the students in their classrooms.

The quantitative data, gathered through administering the User Types Hexad Test, were used to determine if there is a typical breakdown of the User Types among a group of teacher candidates, compared with previous datasets of User Type Survey data collected in the broader population. In addition, the User Type data were used to determine whether teacher candidates' own User Type tendency corresponded or contrasted with the game mechanics they decided to include in their classroom plans.

The analysis of the qualitative data included both deductive and inductive analysis (Bingham & Witkowsky, 2022), and took place as follows. To

determine themes from the teacher candidates' written responses to reflection questions about their developing teacher identity, deductive reasoning, with pre-determined codes based on the User Types framework, was applied, to help organize and sort the data, and determine if there were indeed patterns that emerged based on User Type. With the data collected from teacher candidates' planning documentation, Rubin and Rubin's (2005) steps of inductive data analysis, were applied by first recognizing the emerging themes, then examining, sorting, coding, and synthesizing those themes.

Findings

The findings related to each research question are described here, and overall, demonstrate that Marczewski's (2015) User Type designations can be used as a meaningful framework for facilitating pre-service teachers' understanding of motivation as a nuanced construct that can manifest differently among learners.

Research Question #1

The first research question was: What are the motivational differences present in a group of pre-

service teachers, and do these differences resonate with their own perceived identities?

Motivational Differences

For the overall data collected from Marczewski’s Hexad Test, 55 data points are presented, as that is the total number of teacher candidates who filled out the survey as part of the course requirement. Going forward, data from only 39 of the teacher candidates are presented, as that is the number of participants who provided informed

consent to be participants in this study. Figure 2 depicts a comparison between the general population, (anyone at all who clicks on the User Type Hexad online survey and fills it out), with the teacher candidate sample that was surveyed in this research study. Notably, the percentage of Achievers, Players, and Disruptors among the teacher candidate participants was very similar to the breakdown that is found in the general population

	General Population		Teacher Candidate sample	
Total Instance	Count	%	Count	%
Achiever	13275	17%	10	18%
Socializer	11882	16%	6	11%
Player	11797	15%	7	13%
Disruptor	2078	3%	1	2%
Philanthropist	20520	27%	24	44%
Free Spirit	16607	22%	7	13%
	76159		55	

Figure 2: Comparison between the general population and the teacher candidate sample

Interestingly, but perhaps not surprisingly, the teacher candidate group contained a higher (17% higher) percentage of those with Philanthropist tendencies as their highest-rated User Type, than that of the general population. It is likely that the abundance of Philanthropists among the teacher

candidates resulted in less of them being identified as Free Spirits than in the general population (9% less).

See Figure 3 for a visual breakdown of the teacher candidates’ highest rated User Types.

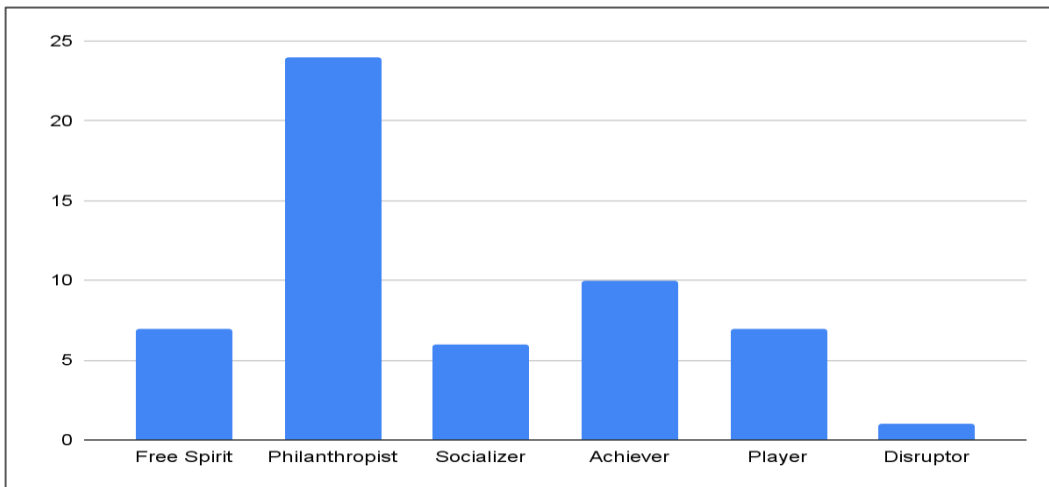


Figure 3: Highest rated User Type classification results among 39 teacher candidates

Identity-User Type Connections

Asking teacher candidates whether their User Type profile resonated with who they are was an opportunity to confirm a type of “good fit” perception, i.e., to determine whether this survey was perceived as a random or meaningless result, or rather, represented data that were useful for reflecting on. While seven teacher candidates felt that their User Type represented them somewhat, the majority of teacher candidates felt that they were well-represented by the User Type descriptions, affirming that “yes” or “definitely” the descriptions resonated with their own self-perception.

When asked to reflect on their motivational User Type in light of their own developing teacher identity, participants’ responses reflected various themes, which were drawn from the responses of participants, and matched with their top two User Type tendencies. When deductive analysis was applied, based on each participant’s top two motivational tendencies, some patterns emerged with regard to how teacher candidates spoke about their personal development in relation to their User Type tendency. Figure 4 depicts the patterns that were derived, in terms of the themes that corresponded with each User Type.

Most prominent User Type	Themes used in their descriptions of personal teacher identity development			
Achiever	Journeying	Rising	Growing	
Free Spirit	Courage	Creativity	Empowerment	
Socializer	Inspiration	Accountability	Mentorship	
Philanthropist	Collaboration	Helping	Service	Building brave spaces

Figure 4: Common conceptualizations of learning based on User Type

Research Question #2

The second research question was: How do teacher candidates use knowledge of their own motivational User Type and different User Type profiles to acknowledge differences in motivation among learners?

Most teacher candidates expressed an understanding of motivational differences and did so in three ways. These three themes, derived from the analysis, included: insight, relationships, and effective teaching. Teacher candidates referred to motivational differences as insights they could use in order to more deeply know their students, which is an important task for an educator who differentiates instruction (Tomlinson & McTigue, 2006). Teacher candidates cited motivational differences as important for informing relationship-building strategies with their students, which is another crucial component for differentiating instruction (Tomlinson & McTigue, 2006). Teacher candidates also described an awareness of motivational

difference as a mechanism for empowering their own effective teaching, acknowledging that, to create a classroom climate where everyone is motivated to learn, an effective teacher will consider ways to motivate each learner according to their individual User Type tendency.

Participants mentioned that they would want to incorporate game-like aspects in their classroom, and explicitly share with their students the purpose and reasoning for doing so, anticipating that this would enhance learning. For example, one participant wrote,

I would love to try incorporating [a soundtrack] in my classroom to help my students concentrate and as a way of letting students know that whenever a certain type of music is played, a certain behaviour is expected of them. I think this would be a great way for students to be focused and motivated to complete tasks if they are aware of the purpose of the music.

The list of game mechanics (game-like features) that were given to teacher candidates to choose from was not organized according to which User Type was typically most highly motivating to each. This was intentional so that teacher candidates could peruse the list of game mechanics and consider their potential motivational value for anyone. Teacher candidates demonstrated the importance of planning for a variety of motivational tendencies in that 87% created plans that included at least one game mechanic that was outside of their own personal highest-rated motivational tendency. Additionally, 40% of those teacher candidates included a game mechanic that was representative of their lowest personal-rated

tendency. This suggests that teacher candidates were willing to consider implementing an element in their plans which may not necessarily be motivating to themselves, but perhaps would be to others.

Figure 5 illustrates the list of game-like features that teacher candidates chose to incorporate into their plans. Here, the list is organized according to the typical level of motivation for each User Type, although this is not a depiction that the teacher candidates were shown.

User Type	Game Mechanics
Achievers	replayability, quests, virtual economy, badges/achievements, creativity tools, simulation, strategy, points (XP), levels, competition, scaffolded challenge, leaderboard, collect & trade, tutorial videos
Free Spirits	anonymity, lottery, development tools, physical rewards/prizes, social pressure, branching choices, random rewards control (choice), easter eggs, voting/voice
Socializers	teams, caretaking, live chat, social discovery, social network, collaboration, boss battles, social status
Philanthropists	strong sense of purpose, sharing knowledge, gifting/sharing, narrative, soundtrack

Figure 5: Game mechanics organized by User Type motivation level

In making plans to incorporate game-like elements, 53% of TCs chose to include at least one game-like element which would be typically appealing to Achievers. Next, 23% of teacher candidates made plans to integrate a game-like element, which would typically appeal, most of all, to Free Spirits. Making plans to include game-like aspects into their classroom which appeal to Socializers were 11% of the teacher candidates. Even though a large number of teacher candidates were highly resonant with the Philanthropist tendency, in only 12% of cases did their plans include game-like features that would greatly motivate Philanthropists.

It should be noted that a game mechanic such as narrative, for example, while categorized here as most highly motivating to Philanthropists, tends to be extremely motivating to other User Type profiles as well. One study participant described how she would use narrative to motivate all her students, saying,

I would love to try something like this in social studies and math and integrate it into a learning adventure that progressively opens up each week with a new episode of adventure. We, as humans, love and retain what we learn when it is meaningfully embedded in a story. We also become invested in characters and cannot wait to see what happens in the next episode.

Discussion

The purpose of this study was to explore how using Marczewski's (2015) User Types framework in the context of an educational technology course for pre-service teachers might be useful for prompting an awareness of motivational differences. In this case, it was found to be a useful framework since it gave teacher candidates a manageable tool for reflecting on motivational differences. Indeed, the level of complexity around student difference, and the sheer number of ways

a student may be different from their peers can be overwhelming for teacher candidates. Using the pillars of self-determination theory, as expressed through Marczewski's User Types, as a framework for envisioning how their learners might be similarly and differently motivated appeared to allow teacher candidates to reflect on motivational differences, and to consider this while planning. Most did not fall back on referring to topics of interest as the only way to motivate learners, but rather, engaged with the ideas of the User Types in ways that signified they understood the potential for motivational differences, and the impact of learners' needs for autonomy, purpose, and relatedness.

Understanding Motivational Differences

Even though teacher candidates resonated with their own User Type profile, and affirmed their highest-rated motivational tendency, most were also willing to acknowledge other User Types, by incorporating game-like aspects into their plans which went beyond those that would be most motivational to themselves. What this suggests is that, while teacher candidates were not specifically asked to include game design in their plans which contained elements unlike those that would motivate them personally, they decided to do so anyway. This demonstrated their acknowledgment that certain game-like elements, while perhaps not motivating for themselves, might possibly motivate learners in their class. While, as previously mentioned, the majority of teacher candidates were able to do this, there were some teacher candidates who, when creating plans for their learners, only chose game-like features which matched their own very highest-rated tendency. For example, one Achiever planned to include points, badges, and a leaderboard—all highly motivating to Achievers, and often not at all motivating to other User Types. Therefore, more reflection is required about how to prompt all teacher candidates, and not just most, to think outside of their own motivational tendencies when imagining what a highly motivating learning space looks like.

Attempting to motivate learners by providing activities that they are already known to enjoy, or

by introducing topics that students are already interested in learning about are not the only options. According to self-determination theory, humans are thought to have an innate desire to learn, and if the conditions are right, i.e., if basic psychological needs are met, the motivation to learn will be strong (Deci et al., 1991). Trying out different activities until one resonates with learners is a possibility; intentionally planning learning activities that provide opportunities for experiencing autonomy, relatedness, and mastery, is likely to result in higher learner motivation levels. As teachers get to know their students, including knowing how their motivational tendencies impact their ability and willingness to learn, teachers can look for ways to make learning spaces playful and game-like, differentiating for ability and interest, as well as motivational tendencies.

If students can learn, the question might be about a potential reality. "Will my students learn?" They can, but will they? That question puts the response in the court of the student. If students are created to learn, the question can be asked of a lived reality. "Will my students live out their innate desire to take on challenges and make new experiences a part of who they are?"

If teacher candidates themselves are not interested in gaming, or if they have a negative view of video games, they can still acknowledge their learners' cultural context, as part of a gameful world where the proliferation of games has not been without impact. Honouring who our learners are in ways they are the same, and not the same as us, is important. We can do this by acknowledging the world they inhabit, as well as through recognizing that God loves and has created each of them with the innate potential to learn and grow.

Language of Identity

The study also showed that teacher candidates articulated their own developing teacher identity in distinct ways, based on their User Type tendency. Teacher candidates appear to use a vocabulary set that reflects their strongest motivational tendency. The themes pulled from the Achievers' reflections, as well as the Philanthropists, are strong action words. Achievers want to journey, rise, and grow, and Philanthropists want to collaborate, help, serve, and build. The Free Spirits and the Socializers used descriptive language that refers to character, environments, and relationships, such as courage, mentorship, and creativity. This finding has implications for teacher educators seeking to encourage teacher candidates along their journey of development, as well as for teacher candidates who are thinking about motivational language they can use to encourage and engage their own students. It might be more or less helpful for certain students to hear motivational language

characterized by accountability or creativity or by mentorship or courage. In addition, for teacher educators who seek to guide and provide leadership in the context of developing teachers, it is helpful to consider how the type of vocabulary used when coaching a teacher candidate may feel more or less motivating to them, depending on whether they envision themselves as looking for inspiration, or envision themselves as building something.

Figure 6 contains suggested comments that are specifically crafted to resonate with different teacher candidates, according to their User Type tendencies, as they journey through developing their teacher identity. Note that Free Spirits may want to create their own statement of encouragement to themselves, instead of having someone else speak it to them. But an example is still included that may resonate with a Free Spirit.

User Type	Motivational Statement
Achievers	Rise to the challenge of growing into the best teacher you can be, as you learn as much as you can along your journey.
Socializers	Watch your peers and instructors for inspiration, work together as a group to achieve your goals, and stay close to an educator you admire.
Philanthropists	Collaborate, help others, and seek to serve, as you become part of building a brave space for you and your cohort to learn together.
Free Spirits	Take risks, make bold choices, and create your own unique path toward becoming an excellent educator.

Figure 6: *Motivational comments relevant to each User Type*

Conclusion

Self-determination theory provides an accessible framework that teacher candidates can use to think about each learning opportunity that they plan for and present to their students. Framing self-determination theory in light of Marczewski's (2015) User Types is a reminder for teacher candidates that, even though all of us have similar basic, psychological needs which, if met, will motivate us to learn, motivation can present differently among learners, and can be enhanced extrinsically through game-like opportunities.

Providing content that students like is not the only way to motivate them; rather, any content, if offered along with opportunities to experience autonomy, mastery, and relatedness, can be motivating. Game-like features can be considered as possible tools within a classroom environment, to provide such opportunities.

An understanding of learners' basic needs to express autonomy, to achieve mastery, and to feel relatedness goes beyond the belief that all students can learn and expresses the reality that all students were created to learn. If all students were created to learn, it becomes a matter of revealing the motivated learner within each

student. It is not the educator's task to turn someone into a learner. If we can go beyond the understanding that students can learn, and believe that students were created to learn, our belief might shift the questions we ask ourselves. If students can learn, the question might be about a potential reality. "Will my students learn?" They can, but will they? That question puts the response in the court of the student. If students are created to learn, the question can be asked of a lived reality. "Will my students live out their innate desire to take on challenges and make new experiences a part of who they are?" This question prompts a response from the teacher as they seek to unleash motivation and allow the learners within their students to rise and emerge. All who are seeking to promote the flourishing of the students in their care can celebrate the unique ways each one embodies similar and differing motivational tendencies, and a God-given human capacity to learn.

References

- Bingham, A. J., & Witkowsky, P. (2022). Deductive and inductive approaches to qualitative data analysis. In C. Vanover, P. Mihás, & J. Saldaña (Eds.), *Analyzing and interpreting qualitative data: After the interview* (pp. 133–146). Sage Publications.
- Birch, H. J. S. (2022). Using a motivational typology to understand and respond to disruptive behaviour. *Journal of Online Learning Research*, 8(3), 369–391.
- Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson.
- Dack, H. (2019). Understanding teacher candidate misconceptions and concerns about differentiated instruction. *The Teacher Educator*, 54(1), 22–45. <https://doi.org/10.1080/08878730.2018.1485802>
- de Winter, J., & Moeller, R. M. (2014). *Playing the field: Technical communication for technical games*. In *Computer games and technical communication: Critical methods and application at the intersection*. Taylor & Francis.
- Deci, E. L., Eghrarl, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62(1), 119–142. <https://doi.org/10.1111/j.1467-6494.1994.tb00797.x>
- Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. University of Rochester Press.
- Deci, E. L., & Ryan, R. M. (2008a). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology*, 49(1), 14–23. <https://doi.org/10.1037/0708-5591.49.1.14>
- Deci, E. L., & Ryan, R. M. (2008b). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology*, 49(3), 182–185. <https://doi.org/10.1037/a0012801>
- Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination theory perspective. *Educational Psychologist*, 26(3–4), 325–346. <https://doi.org/10.1080/00461520.1991.9653137>
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). *From game design elements to gamefulness*. Proceedings of the 15th International Academic MindTrek Conference on Envisioning Future Media Environments - MindTrek '11, 9–15. <https://doi.org/10.1145/2181037.2181040>
- Entertainment Software Association. (2021). *2021 Essential facts about the video game industry*. <https://www.theesa.com/resource/2021-essential-facts-about-the-video-game-industry/>
- Guay, F. (2021). Applying self-determination theory to education: Regulations types, psychological needs, and autonomy

- supporting behaviors. *Canadian Journal of School Psychology*, 37(1), 75–92.
<https://doi.org/10.1177/08295735211055355>
- Hume, K. (2008). *Start where they are: Differentiating for success with the young adolescent*. Pearson Education Canada.
- Juul, J. (2010). *A casual revolution: Reinventing video games and their players*. The MIT Press.
<https://doi.org/10.5860/choice.47-6689>
- Marczewski, A. (2015). User types. In *Even ninjas monkeys like to play: Gamification, game thinking and motivational design* (pp. 65–80). CreateSpace Independent Publishing Platform.
- Marczewski, A. (2016). *Gamified UK User Type Test*.
<https://gamified.uk/UserTypeTest2016/user-type-test.php#.YZq1T2DMJPY>
- McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world*. Penguin Press.
- Metropolitan Center for Urban Education. (2008). *Culturally responsive differentiated instructional strategies*. NYU Steinhardt.
- Ponce, O. A., & Pagán-Maldonado, N. (2015). Mixed methods research in education: Capturing the complexity of the profession. *International Journal of Educational Excellence*, 1(1), 111–135.
<https://doi.org/10.18562/ijee.2015.0005>
- Rubin, H., & Rubin, I. (2005). *Qualitative interviewing: The art of hearing data*. Sage.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
<https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., Ryan, W. S., Domenico, S. I. Di, & Deci, E. L. (2019). The nature and the conditions of human autonomy and flourishing: Self-determination theory and basic psychological needs. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 89–110). Oxford University Press.
- Santangelo, T., & Tomlinson, C. A. (2012). Teacher educators' perceptions and use of differentiated instruction practices: An exploratory investigation. *Action in Teacher Education*, 34(4), 309–327.
<https://doi.org/10.1080/01626620.2012.717032>
- Strubberg, B. C., Elliott, T. J., Pumroy, E. P., & Shaffer, A. E. (2022). Measuring fun: A case study in adapting to the evolving metrics of player experience. *The Journal of the Canadian Game Studies Association*, 13(21), 1–19.
<https://doi.org/10.7202/1071448ar>
- Taylor, B. K. (2015). Content, process, and product: Modeling differentiated instruction. *Kappa Delta Pi Record*, 51(1), 13–17.
<https://doi.org/10.1080/00228958.2015.988559>
- Tomlinson, C. A., & McTigue, J. (2006). *Integrating differentiated instruction and understanding by design: Connecting content and kids*. Association for Supervision and Curriculum Development.
- Tondello, G. F., Mora, A., Marczewski, A., & Nacke, L. E. (2019). Empirical validation of the Gamification User Types Hexad scale in English and Spanish. *International Journal of Human Computer Studies*, 127, 95–111.
<https://doi.org/10.1016/j.ijhcs.2018.10.02>
- Tondello, G. F., Wehbe, R. R., Diamond, L., Busch, M., Marczewski, A., & Nacke, L. E. (2016). *The gamification user types Hexad scale*. Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play, 229–243.
<https://doi.org/10.1145/2967934.2968082>

Yenmez, A. A., & Özpınar, I. (2017). Pre-service education on differentiated instruction: Elementary teacher candidates' competences and opinions on the process. *Journal of Education and Practice*, 8(5), 87-93.