Exploring Teachers' Experiences of Using ClassDojo:

A Postphenomenological Study

by

Connie L. Yuen

A thesis submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
in
PSYCHOLOGICAL STUDIES IN EDUCATION

Department of Educational Psychology

University of Alberta

Abstract

ClassDojo is a popularized behavioural management software application used in schools around the globe. This classroom application allows teachers, parents and students to readily track progress using a gamified point system, and share feedback in real-time. Teachers often use ClassDojo to encourage student engagement and positive behaviours. However, ClassDojo has raised ethical questions about data use, surveillance culture, and behavioural-based pedagogy. Using postphenomenology approaches to analyze collected observational and interview materials, this study examines K-12 teachers' experiences and variations of integrating ClassDojo technology in the classroom, as well as the challenges and ethical questions they encountered. Results of the study revealed themes centered on points-based motivation and student identity, data-tracking and permanence, classroom surveillance culture, collaboration and immediate feedback, and how the ClassDojo-Teacher reframes meaningful teaching and learning ecology as a whole.

Preface

This thesis is an original work by Connie Yuen. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “Exploring Teachers’ Experiences of Using ClassDojo”, No. 00087321, February 14, 2019.

Acknowledgements

I wish to express my heartfelt gratitude to everyone who helped me along my PhD journey, especially to my parents, 阮淙, 譚靜雯, who taught me so much and created a caring, nurturing environment to support my continuous learning and growth.

To 信興, 加茵, 采茵. Candy, thank you for your enthusiasm and unrelenting support of my well-being and academic endeavours. I am grateful to you all for always going above and beyond.

To Warren, for his unwavering love, confidence and support of me during this project, and in life's fulsome adventures. Everything is a lot better with you.

Special thanks to:

Dr. Cathy Adams, my academic supervisor and mentor. Thank you for the countless hours of work you invested in me, and for graciously extending your profound insights, expertise, and support throughout these years. My graduate journey is rich and meaningful because of you. You inspire me.

My supervisory committee members, Dr. Denise Larson and Dr. George Buck, for your valuable feedback on my work and ongoing encouragement during my research process. I am honoured and delighted to be researching under your counsel.

My examining committee members, Dr. Sharla King and Dr. Jennifer Lock, who were so generous with their time and provided thoughtful feedback towards the completion of this research. Many thanks to Dr. Veronica Smith for your continuous interest, support and advice throughout my program, as well as for chairing my exam.

Dr. Maria Cutumisu, for all your guidance, support, and positivity throughout my graduate journey. What would I do without you?

My friends, colleagues, GSA fellows, and TALS Lab mates – Thank you for your wonderful friendship and support. Marti, thank you for your ongoing encouragement and support of my professional work alongside my research pursuits.

The Faculty of Education and the Department of Educational Psychology at the University of Alberta, for making all this possible.

Table of Contents

List of Figures

Glossary of Terms

Affordances. According to psychologist J.J. Gibson (1979), affordances are what the environment offers an individual or creature, and ”what it provides or furnishes, either for good or ill” (p. 127). In postphenomenology, affordances can also describe the perceived or actual properties of a technology that closely relates to how it functions or can be used (Norman, 1988, p. 9). For example, a slot on the side of a laptop suggests something may be inserted such as a USB, cable or memory card.

Between-group design. experimental study involving participants separated into two or more groups, each being tested by a specific factor or under a different condition. For example, there may be a treatment group (intervention) and a control group, each composed of different individuals. Participants are often randomly assigned to a group in order to control for individual differences that may occur due to the composition of different participants in each group.

Dasein. Derived from the German word meaning “presence”, Martin Heidegger used Dasein to refer to human existence and the idea of “Being-in-the world” (i.e., the condition of already being involved or engaged with other individuals and things).

Eidetic reduction. Phenomenological technique examining the essence or basic elements of a phenomenon or experience. This technique is a form of *imaginative variation* which involves distilling the essence of a mental object, consciousness, and essential components from what was originally perceived. Key steps involve choosing a specific example, varying the example imaginatively, and determining which elements cannot be eliminated in retaining its identity.

Game. a structured form of play usually involving interactive elements, rules and goals. Games are often used for entertainment and/or educational purposes. Common examples include (digital) video games, board games and physical recreation games.

Growth mindset. Popularized by Carol Dweck, growth mindset is the belief that the brain (or intelligence and ability) is malleable, not innate or fixed. This philosophy maintains that one's efforts or hard work are more important than perceived abilities.

Humanism. philosophy and ethical approach that values human nature, life experience, rationalism and empiricism.

Imaginative variation. Husserl's approach to understanding a phenomenon from varying perspectives by imagining different features of a phenomenon or experience. It is a form of mental experimentation intended to reveal the essential and invariant (i.e., unchanging) elements of a phenomenon.

Inductive reasoning. Using specific examples or observations to make broad generalizations or inferences.

Intrinsic motivation: action(s) or behaviour(s) driven by internal rewards such as the feeling of satisfaction, accomplishment or confidence. This is the opposite of extrinsic motivation, which are actions driven by external rewards or outcomes such as money.

Knot or knot-making. Based on Ingold's (2012) work, knot-making is when human-technology energies are momentarily brought together.

Lifeworld. First conceptualized by Edmund Husserl, the lifeworld is a grand theatre of objects arranged in space and time as perceived by individual subjects, and can

be considered the horizon or background for shared human experience and meaning. The lifeworld is considered to be a dynamic "universe" which is lived through and lived with.

Ontology. Philosophical study of the nature of being, existence, reality and relations to other things (Irwin, 2016, p. 14)

Premack principle. A predictive theory that people will engage in a less desirable activity if it leads to a more desirable activity or reward (Premack, 1965). For example, a child is told to eat all the vegetables in order to eat dessert.

Response cost. In psychology, response cost is a form of negative punishment, and is a technique of removing reinforcement for an undesirable behaviour to decrease future occurrences.

Reward contingency. rewards given for working on a task (task-contingent) or attaining a specific level of performance (performance-contingent) (Cameron and Pierce, 1994).

Reward expectancy. whether rewards are offered to the subject prior to task or event (expected rewards) or no rewards are promised beforehand (unexpected reward).

Soma puzzle. a commercial 3D puzzle produced by Parker Brothers involving the re-configuration of seven Tetris block-like pieces to form unique shapes.

Translation. In Actor Network Theory, translation refers to the examination of actor interactions and gatherings, their associations or dynamics (e.g., control) with one another, and the process by which entities are transformed (e.g., linked, decoupled) (Adams and Thompson, 2016, p. 76).

Valence. In the field of social sciences and psychology, "valence" is used to describe a force of attraction or repulsion to an object or situation (Lewis, 1951; Solomon and Stone, 2002). For example, feelings of happiness is considered a positive valence.

Within-in group (or repeated measures) design. Experimental study involving participants being exposed to each treatment or condition. This type of study design controls for individual differences by testing and comparing how each participant is affected under multiple conditions/treatments. For example, participants may be instructed to take a type of medicine (treatment) one day, and then a placebo (control) the next day, usually in randomized order to make the overall results comparable (e.g., minimize carryover effects).

Chapter 1: Introduction

Situating the Study

According to co-founders Sam Chaudhary and Liam Don, 1% of elementary school students worldwide currently use their Classdojo app, equivalent to approximately 10 million children (Chaykowski, 2017). This freemium software app now boasts a 90% uptake in U.S. schools and over 70% in Canadian elementary schools (Juhl, 2019). What is ClassDojo? It is a gamification-type, classroom management app that allows teachers to keep track of student progress or activities, while providing students— and optionally their parents— with real-time feedback on their behaviours. It is especially popular with K-6 teachers who have been adopting ClassDojo as a way of encouraging students' learning engagement and positive behaviours in the classroom. ClassDojo has also been instrumental in providing teaching, communication, and data analysis tools to help teachers facilitate, track and report student progress in real-time.

Meanwhile, ClassDojo has raised numerous ethical concerns among parents and teaching professionals including privacy worries over its collection and storage of sensitive student data. There are also philosophical concerns regarding ClassDojo's long-term impact on teacher-student interactions and its pedagogy because the software encourages behaviorist, gamified, and token economy-based approaches to teaching and learning. Postphenomenology suggests that the uptake of technology such as ClassDojo is not only decided by its affordances, but is also multi-variant across users and contexts. To date, research about gamification for learning in elementary education accounts for less than 8% of the literature, compared to 46% of the literature pertaining to higher education (Borges et al., 2014). Thus, more research about gamified learning in elementary education is

needed to better understand students' early development and learning experiences. Guided by classroom observations, teacher interviews, and qualitative postphenomenology analyses, this study examined K-6 school teachers' experiences of using ClassDojo in their teaching, and in doing so, uncovered insights surrounding the multi-variant impacts of this technology on pedagogical practices.

Key questions guiding this research revolved around pedagogical and ethical considerations when integrating classroom management and gamified ClassDojo technology, including:

1. How do K-6 teachers use ClassDojo to facilitate their teaching and students' learning?
2. How do teachers perceive the influence of ClassDojo on their teaching practices, interactions with students or parents, and students' learning?
3. Based on their experiences, what insights can current users of ClassDojo share with other K-6 educators?
4. From a postphenomenological perspective, what are the ethical considerations of ClassDojo?

As a whole, these study questions invoked a closer examination of: (a) K-6 teachers' current experiences, practices and use of ClassDojo, (b) the pedagogical or ethical underpinnings that affect teachers' uptake, habits and decisions regarding ClassDojo's implementation, and (c) the co-constitutive human-technology relations that both enhance and constrain various aspects of the teaching and learning experience.

This paper begins with a review of the literature (Chapter 2) involving the ethics and uptake of technology in education, with a strong emphasis on rewards and gamified approaches for classroom management. I describe *gamified learning* as it relates to classroom management via electronic behavioural management programs (eBMP) such as ClassDojo. In Chapter 3, I discuss prevalent research methods used in the field of educational technology by explaining postphenomenology and its evolution as a conceptual framework and methodological approach in the philosophy of technology. Chapter 4 outlines the research design used to conduct this study of ClassDojo technology. Then, Chapter 5 outlines the data findings, followed by a discussion of the ethical implications of ClassDojo. The final section, Chapter 6, describes insights culminating from this ClassDojo research study.

Chapter 2: Literature Review

Introduction

To understand the use of classroom management applications such as ClassDojo, I first turn to its primary function of assisting teachers in tracking student behaviours. Teachers have long employed various methods of engaging and handling classroom dynamics including the use of reward systems. However, the growth and ubiquity of technology such as electronic behaviour management programs (eBMP) with integrated reward systems have created a more comprehensive, systematic way of mediating teacher-student interactions that is backed by enduring data. Many of these applications are user-friendly, robust, low-cost, and are built with customizable elements that can be readily integrated into each unique classroom. These technological affordances have appealed to many educators seeking innovative ways to engage and motivate their students. Postphenomenology, however, suggests that with each technology comes the introduction of both amplifying and reducing features (Ihde, 1990; Verbeek, 2011). For example, while ClassDojo affords the teacher the capacity to oversee and track student behavior trends in the classroom, its capacity to store large quantities of student data indefinitely raises concerns of privacy (e.g., permanence of data) and how the data could be applied or interpreted in the future (e.g., misuse or extrapolation of data, teacher biases on restricting student growth). As such, this chapter begins with examining the educational landscape in relation to the ethics of technology, followed by a description of the evolution of reward systems and electronic behaviour management programs as means of motivating and engaging learners.

Ethics of Technology in Education

As technology becomes more pervasive in education, questions of what constitutes appropriate use and integration of these tools have emerged. Early research in the ethics of technology stems from the work of Hans Jonas in the 1950's. Inspired by Martin Heidegger's work in phenomenology, Jonas wrote about prevailing social and ethical issues instigated by technology at the time. Jonas believed that the fundamental moral principle is to "act so that the effects of your action are compatible with the permanence of genuine human life" (1984, p. 11). Around the same time, philosopher Mario Bunge explored a similar avenue of research using the term *technoethics*. Bunge's work focused on the social-embeddedness of technology and ethics— specifically, the use and misuse of technology in society— as well as the beliefs and government policies that influence technology use (Luppicini, 2010).

Since then, ethics of technology has become interdisciplinary and manifests in many forms including copyright, cyber-ethics, data privacy and security, cyber-crime, accessibility and design, online identity, accountability, and policy-making (e.g., Acquisiti, Brandimarte and Loewenstein, 2015; Barbour, 1993; Dill and Anderson, 2003; Johnson and Nissenbaum, 1998; Moor, 2017; Tavani, 2011; Van den Hoven, Vermaas and Van de Poel, 2015; Verbeek, 2008). Most branches within the ethics of technology field involve the pursuit and development of a new technology (e.g., genetic modification), or questions about how technology changes power dynamics between individuals or groups (e.g., accessibility, authority). While researchers have approached the ethics of technology from various angles, there is general agreement that technology itself is non-neutral, and is

colored by political, social, and cultural aspects (Ihde, 1990; Latour, 2005; Winner, 1985). According to Langdon Winner, for example, technology embodies specific interests or values depending on the political or social context, and thus perpetually enacts scripts for how it should be used; in this sense, technology can be viewed as a socially-constructed actor (Latour, 2005; Winner, 1980) with ethical implications. For example, an ATM bank machine embodies certain assumptions: a user will always stand in front of it, be able to view the screen, and input data in a timely manner, even though this may not be the case for someone with a disability. As a result, there will be certain ethical considerations that arise in terms of its design and uptake, such as user accessibility or security.

From a phenomenological perspective, examining ethics is a way of revealing the hidden, taken-for-granted attitudes towards technology use. It implores a careful investigation of how technology can "frame" or reveal human perceptions and actions, and questions assumptions about technology innovation representing progress (Adams, 2012; Boger, 2018; Introna, 2017). Postphenomenology extends this ethical discussion by highlighting the technologically-mediated relations with human beings and the lifeworld. Verbeek, for instance, suggests that technologies are "morally charged" and play an important role in moral agency, such as the use of an obstetric ultrasound to make decisions about an unborn child (Verbeek, 2009). He also suggests that a technology designer's intentions can acquire different meanings depending on the user and context, such as the appropriation of the telephone— originally designed to help those who are hard of hearing— for general use (Verbeek, 2009). Overall, postphenomenology acknowledges the perceptual and actional mediating role of technology on humans and their lifeworld,

and stresses that every technology possesses unique *amplification-reduction* (perception) and *invitation-inhibition* (action) structures. These postphenomenological terms will be detailed later in Chapter 3.

Using Reward Systems for Learner Motivation and Engagement

For decades, the concept of reinforcement theory and use of reward systems have been of significant interest to educators and researchers (Cameron and Pierce, 1994). Reward systems are often used to reinforce positive behaviours and address behavioural disruptions that consume teacher's instructional time (National Centre for Education Statistics, 2015). Since then hundreds of between-group and within-group experimental studies involving reward systems in education have been carried out. One of the earliest studies include Deci's (1971) laboratory investigations of post-secondary students solving the Soma puzzle[1] with or without the incentive of financial rewards. The observer would leave the student in the room to solve the puzzle, then observe through a one-way glass, noting the time spent engaged with the task. The results of Deci's groundbreaking study noted that external rewards such as money decreased a person's intrinsic motivation to perform a task.

Over time, numerous similar studies examining reward systems and its correlation with motivation, particularly intrinsic motivation, have followed (Cameron and Pierce, 1994). Different factors were considered including types of rewards, reward expectancy[2],

[1] Soma puzzle: a commercial 3D puzzle produced by Parker Brothers involving the re-configuration of seven Tetris block-like pieces to form unique shapes.

[2] Reward expectancy: whether rewards are offered to the subject prior to task or event (expected rewards) or no rewards are promised beforehand (unexpected reward).

reward contingency[3], etc. Of these studies, the overall conclusions suggest that rewards do not decrease intrinsic motivation[4], whereas verbal praise can increase intrinsic motivation (Cameron & Pierce, 1994). The findings of these studies also imply that tangible rewards can have a slight negative impact on motivating learners to complete a task when the reward was no longer present, but only if those tangible rewards were originally expected (Cameron and Pierce, 1994). These tendencies can also be observed in research in elementary school studies.

Studies about reward systems in K-6 education. Since the 1960's, reward systems and token economies have emerged as interventions commonly practiced in clinical and rehabilitation settings, and eventually gained momentum in education (Kazdin, 1982). Token economies are contingency-management systems based on psychological principles of operant conditioning and behaviourism. These types of reward systems have developed as an approach to classroom management and behaviorist-based learning, particularly at the K-6 level (Winett and Winkler, 1972). Whether incentives are integrated in the form of sticker charts, gold star awards, or token currency, educators have applied numerous variations of a token economy in the classroom in order to systematically reinforce specific behaviours. In this token economy system, tokens or symbolic reinforcers are usually given to students as incentives for demonstrating positive behaviours. These tokens can then be exchanged for material goods, privileges or services

[3] Reward contingency: rewards given for working on a task (task-contingent) or attaining a specific level of performance (performance-contingent) (Cameron & Pierce, 1994).

[4] Intrinsic motivation: action(s) or behaviour(s) driven by internal rewards such as the feeling of satisfaction, accomplishment or confidence. This is the opposite of extrinsic motivation, which are actions driven by external rewards or outcomes such as money.

at a later time. For example, a student who accumulates twenty gold stars may redeem it for a toy prize or lunch with the teacher. Most token economies also encompass a social reinforcement component where students are encouraged to conform to class norms and regulate others' behaviours. In order for a token economy to work effectively, however, the rules or criteria of the system must be clear, attainable and fair. Token economies work best when they are consistent with expected cause-and-effect scenarios (i.e., Premack principle[5]), and explicit incentives are given immediately or in the short-term to reinforce the target behaviors. Additionally, the inclusion of any punishment or "response cost[6]" in a token economy should be carefully considered as it may cause harmful repercussions, such as passive-aggressiveness or fear of questioning authority (Winett and Winkler, 1972). Along this vein, Winett and Winkler (1972) questioned educators' long-held beliefs that a quiet and docile class equated to a positive, conducive learning environment. They argued that learning, in the presence of bustling activity, could actually be a sign of productive learning (Winett and Winkler, 1972). In this sense, teachers should critically reflect about their pedagogical practices and beliefs about what constitutes "good classroom management."

There are a few notable papers examining teacher perspectives about implementing a token economy in the classroom; Tillery et al.'s (2010) study involved interviewing fifty kindergarten and first-grade teachers about their perspectives and

[5] Premack principle: A predictive theory that people will engage in a less desirable activity if it leads to a more desirable activity or reward (Premack, 1965). For example, a child is told to eat all the vegetables in order to eat dessert.

[6] Response cost: In psychology, *response cost* is a form of negative punishment, and is a technique of removing reinforcement for an undesirable behaviour to decrease future occurrences.

approaches to behavior management. At the time of the study, U.S. educational policies emphasized the integration of response-to-intervention (RTI) and positive behavior interventions and supports (PBIS). They concluded that teachers tended to focus on individual behaviours rather than group behaviours, and preferred using positive strategies such as praise and rewards.

Token economies are commonly implemented into classrooms, but are they actually effective compared to other approaches in classroom management? In a 2010 study by Self-Brown and Mathews, the researchers assessed student achievement goal orientation among three math classes over a period of six weeks. Each class was structured using either a token economy, contingency contract, or as a control group. In the token economy condition, students could earn a set number of "school dollars" for completing or obtaining A or B grades on their math assignments. At the end of each week, students could exchange the school dollars for computer time, stationary or candy. Students would then be tasked to write a new set of goals for the next week. Under the contingency contract condition, students would meet with the researchers to discuss weekly goals, and receive a gold star plus verbal praise for attaining any goals. Note that while awarding gold stars is still considered a form of reward, no official token economy was implemented in this condition to allow students to trade in their stars for any materials or privileges. The control group condition consisted of the researchers meeting with students while they wrote out weekly goals, but no direct feedback or rewards were given. At the end of the study, researchers aggregated all the students' written goals, and categorized them as either learning-oriented goals or performance-oriented goals. Results of the study indicated that

students in the token-economy condition set significantly more performance goals than learning goals, whereas students in the contingency-contract group had the opposite effect by setting significantly more learning goals. Students in the control group had a relatively equal number of performance and learning goals. These findings imply that if teachers wish to impart learning-oriented values, then using a contingency contract with verbal feedback works best— whereas encouraging performance-oriented values can be brought out by integrating a token economy in the classroom. Overall, however, a token economy classroom appears to be successful in modifying student behaviours, especially for students with special needs (McLaughlin, 1981).

Gamification of Learning in K-6 Education

Originating from the digital media industry, the concept of gamification was highly contested because it was coined using various terms across different disciplines (Dominguez et al., 2013); it was not until the 1980s that researchers began examining the benefits of game-based approaches for education, and by 2010, gamification had gained widespread acceptance in education (Deterding et al., 2011). Gamification is the integration of game[7] elements such as progress mechanics (e.g., points system, collectable badges, multiple levels), immediate feedback, rules of play, role-playing, competition, opportunities for collaboration or mastery of skills, etc., to facilitate participation, learning, or engagement in a non-game context. Applications of gamification transcend multiple disciplines, and can be observed in many social networking sites and mobile apps across

[7]Game: a structured form of play usually involving interactive elements, rules and goals. Games are often used for entertainment and/or educational purposes. Common examples include (digital) video games, board games and physical recreation games.

diverse settings including health (e.g., fitness tracking apps with integrated leadership boards or social networks), business (e.g., Foursquare's check-in feature and award system), counselling (e.g., earning badges or custom avatar items for attending intervention sessions in virtual environments), and industry training (e.g., progressing through multiple levels of a flying simulator for pilot training).

Gamification is also related to, but distinguished apart from *video (digital) games, serious games, edutainment games* and *playful design*. Video or digital games, for instance, are the interactive systems in which players are engaged in attaining goals or resolving challenges within a predetermined set of parameters or rules. Usually these systems involve a digital screen and/or a peripheral device or controller to allow player interactions and feedback. Popular video game titles include Fortnite, Angry Birds, Minecraft, Pokemon, The Legend of Zelda, Overwatch, League of Legends, Fallout, Mario, and Final Fantasy. Both serious games and edutainment games are a subset of video games. Serious games are designed for educating players about deep, real-life ideas and evoking an emotional response (e.g., contemplating pivotal historical or political events, ethical or moral decision-making). Popular examples of serious games include Darfur is Dying, Papers Please, Amnesty the Game, Immortall, Loved, Every Day the Same Dream, and Superbetter. Some virtual simulations and training programs (e.g., Microsoft Flight Simulator) may also be classified as serious games. On the other hand, edutainment games are intended to entertain players first, and intertwine learning material in more subtle ways. Examples of edutainment games include Duolingo, Big Brain Academy, Lightbot, Carmen Sandiego, Mathblaster, Oregon Trail, Reader Rabbit, The Magic School Bus, etc. Apart

from these video games, playful design is the use of game aesthetics or usability in a non-game context for amusement or to capture a user's attention (Baker, Bujak and DeMillo, 2012). An example is Twitter's use of an animated "Fail Whale" webpage when users attempt to access an error 404 page.

While the concept of gamification of learning is not new, it has evolved over time with the rising popularity and positive attitudes towards video games and mobile games in general (Gee, 2003), as well as the desire to find innovative ways of motivating learners or conducting training in an educational context. Proponents of gamification and educational games include Jane McGonigal (2011), who cites the advantages of games as instilling purpose, identity, confidence and collaboration amongst learners. Researcher James Paul Gee promotes games as a way of developing digital literacy skills and challenging learners in a fun way (Gee, 2003; Gee, 2005, p. 5-16; Gee, 2012). Gee also conceptualized his own video game learning theory and identified twelve learning principles; key ideas include the benefits of games in allowing players to have active control over events, developing meta-thinking and problem-solving skills, capitalizing on game replayability and repeated practice, taking on new roles or co-design experiences, being exposed to just-in-time learning opportunities, as well as developing knowledge or skills from an achievement and mastery-oriented design (2005, p. 5-16).

While gamification transcends age groups because it appeals to other instinctual aspects of human motivation and drive (e.g., socialization, achievement, competition), the types of apps and rewards that are utilized are highly dependent on what is meaningful to the individual's values, culture, etc. Currently, most gamification of learning research has

been conducted in the area of higher-education (46%), while gamification in elementary education accounts for less than 8% of the literature (Borges et al., 2014). This is a pertinent gap in the literature since gamified approaches are often employed and deemed most effective in changing behaviours and holding the attention of children (Miller and Robertson, 2011) in this digital era. The bulk of gamification papers are written in the form of evaluation research papers, which contain empirical studies related to assessing educational approaches. Predominant topics in these evaluation research papers include gamification for engaging learners, improving learning, mastering skills and affecting behavior change (Borges et al., 2014). As such, gamification is often used to affect behavioral changes and motivate learners to perform in the classroom, as evidenced by the development of digital classroom management applications.

Classroom Management Applications in K-6 Education

Today there are a breadth of online or digital classroom management applications and tools available to K-6 educators. Popular tools include NetSupport School, Socrative, Google Classroom, LiveSchool, Score It, and ClassDojo. There are different forms and levels of classroom management features designed for various purposes and educational contexts. Some applications are more comprehensive and targeted at specific education levels, whereas other tools are intended for single-purpose integration. NetSupport School is a software that allows instructors to monitor and interact with students' devices in real-time, and deliver content or assessments to their screens. It also integrates many collaborative and screen-share features. Socrative is a student response system that allows teachers to push out questions (e.g., polls, quizzes, written responses) to student devices,

and solicit real-time feedback or share content. Google Classroom is a learning management system often used as an online community to share content, make announcements, and submit assignments; It is also seamlessly linked with other popular school-wide Google apps such as GMail, Google Calendar, and Google Docs. Both LiveSchool and Score It are integrated classroom management apps that allow students to receive points or scores for positive behaviors in real-time. Finally, ClassDojo is a comprehensive classroom management system that combines gamified learning activities as well as progress-tracking features.

In addition to being a classroom management system, ClassDojo is considered an electronic behavior management program (eBMP) because of its embedded gamification system that helps teachers to track observable student performance and provides a means of student self-regulation. Electronic behavior management programs, or eBMPs, are technology-based programs usually hosted online in the form of a mobile app or website, and are used to help teachers manage or track classroom behaviors (Riden, Markelz and Randolph, 2018). Much like token economies, eBMPs are designed with behaviourist theories and applied behavior analysis (ABA) strategies in mind, and support the use of specific, contingent praise and performance feedback (Heward, 2003; Maggin, Pustejovsky and Johnson, 2017; Riden, 2017). These eBMPs are known to be effective for students with challenging behaviors as it provides immediate feedback and structure (Cooper, Heron and Heward, 2007).

ClassDojo, then, as an eBMP, has a customizable points system and other gamification features which will be detailed later in the chapter. While there are numerous

other digital forms of classroom management tools as mentioned previously, the teacher ultimately infuses their own pedagogy— in combination with prior teaching experiences and available resources— throughout their classroom setup, daily practices, and strategies to "manage" or create a conducive learning environment for students.

Examining ClassDojo

ClassDojo is an online classroom management application widely known for its integration in elementary education classrooms worldwide (e.g., 95% of K-8 schools in the U.S.; 25% in primary schools across 10 countries including Australia and the U.K., ClassDojo, 2019), and has been reported to have a surge in classroom uptake since the COVID-19 pandemic created a pressing need for teachers to find a quick solution to transitioning to a virtual classroom environment (Onyema et al., 2020). Originally conceptualized by Silicon Valley entrepreneurs Sam Chaudhary and Liam Don, the ClassDojo application launched in 2011 as a gamified approach to classroom management and as a way of promoting "growth mindset" in education. In 2013, ClassDojo gained popularity in tandem with educational policies aligned with the positive psychology movement, and the increased interest in measuring socio-emotional learning. By 2016, nearly 3 million teachers and 35 million students across 180 countries were reported to have used ClassDojo, and the uptake has increased from 93% to 95% worldwide since 2019 (ClassDojo, 2019). The continued expansion of ClassDojo is also evident by the developers' ability to raise more than thirty-five million dollars to expand its application to enable parents/families to manage home-based activities and "character-building tasks" in an extended version called "ClassDojo Beyond School."

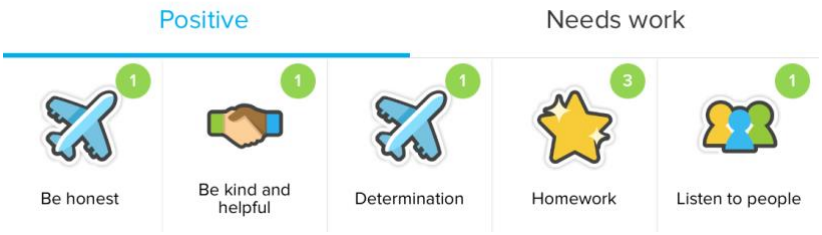

Figure 1: ClassDojo behavior tracking system

Some of ClassDojo's ongoing success can be attributed to the usability and accessibility of the application, as well as how it is designed to simulate a gamified reward system using positive or negative reinforcement. Teachers can easily award students with points, track individual student work and behaviours throughout the day, and choose to share this information with students, parents or administrators (See *Figure 1*). As mentioned previously, the integration of a gamified system in education is reminiscent of traditional token economy system like a sticker award chart. ClassDojo, however, has the added benefits of being a fully-accessible online system that can be utilized by multiple users across various devices in real-time. Additionally, the integrated points system, embedded class activities, customizable avatars (See *Figure 2*), class ePortfolio system, and the free cost makes ClassDojo a comprehensive, pre-packaged platform that appeals to teachers. ClassDojo also serves as a classroom social platform "community" and a communication system because teachers can efficiently share student activities or generate summary reports for parents and guardians.

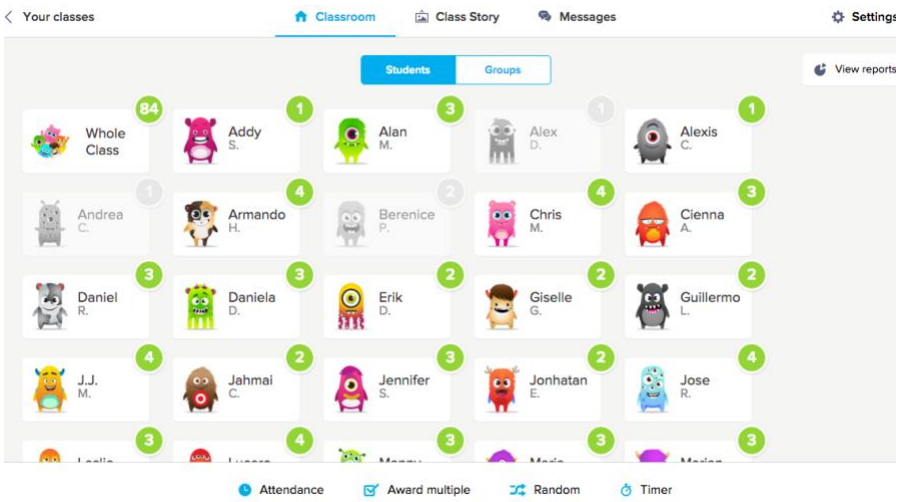

Figure 2: ClassDojo class setup with avatars

Features and affordances of ClassDojo. ClassDojo is used as a tool for managing, tracking and storing student data, which in turn can be used to generate analytical progress reports over time. For example, ClassDojo can quickly generate pie charts displaying individual or group statistics. ClassDojo is a free application, with an intuitive user interface that can be appealing to teachers who are not necessarily tech-savvy (Mims, 2013), or who wish to integrate technologies in their classroom in a low-risk manner. For instance, teachers can choose specific features to suit classroom activities or customize points to align with a teacher's concept of positive or negative behaviours. Other ClassDojo features facilitate common teaching practices in elementary schools such as tracking attendance, setting timers, randomize selection of students, creating stories, as well as sending messages to students and parents. Moreover, teachers cite the gamification elements of ClassDojo as a means for motivating or engaging students; Teachers can provide immediate feedback or points to encourage prosocial behaviours and completion of tasks, set up a leadership board to invite friendly competition, showcase appealing

graphic designs and customizable avatars, and access subject-based interactive learning resources. Teachers can also creatively integrate the virtual application as a token economy system so that students may redeem real-life rewards like candy or toys. ClassDojo's setup utilizes social currency and peer collaboration by encouraging students to self-regulate their own behaviours or track their progress by logging into the ClassDojo app using any WiFi-connected mobile device. Teachers use ClassDojo as a way to address disruptive or off-task behaviour, for example, deducting points as a form of punishment. Previous research has shown that classroom management based on behaviourist principles are generally effective for younger children. For example, there was a strong correlation between kindergarten students' success/grades with their engagement in class activities, compliance with teacher's instructions, and peer cooperation (Shinn, Ramsey, Walker, Stieber, and Neill, 1987).

Debating ClassDojo usage: concerns and future implications. On the other end of the spectrum, some researchers are skeptical about the rapid adoption of ClassDojo in the classroom. For instance, researcher Ben Williamson (2017a; 2017b) cites multiple concerns about classroom surveillance, privacy, persistence of behavioural records, and negative impacts of teachers attending to an app (rather than the students) during class. Williamson believes that widespread adoption of ClassDojo is risky as teachers may be making uninformed decisions without carefully considering the long term effects of integrating this application in their teaching practices. Williamson (2017) also criticizes the strong behaviourist undertones that promote the use of positive/negative reinforcement and punishment (or response cost) as ineffective approaches to classroom management.

According to Ripp (2014), innovative elementary educators focused on conversation and dialogue about behaviours with students, rather than using rules and rewards like sticker charts or token economy systems like ClassDojo. Others question the long-term impact of behaviour-tracking tools on students' morale or intentions (e.g., Pilieci, 2014). There are also legal issues regarding teacher-school communication, and the discomfort associated with how teachers might use individualized behaviour plans generated by ClassDojo in inappropriate or unethical ways (e.g., Pilieci, 2014; Soroko, 2016; Williamson, 2017a). The storage of such personal data over a long period of time is cause for concern for many educators, who fear that the company behind ClassDojo might eventually seek ways to capitalize or generate income to support its free services. According to ClassDojo's website, the software will remain free for teachers indefinitely, and all existing features will also remain free for all users. While ClassDojo is currently testing a monthly subscription family-learning add-on app called "ClassDojo Beyond School," the developers insist the main ClassDojo platform will remain free based on grant funding, and that they never profit or sell any user data to anyone (ClassDojo, 2019).

Ongoing developments in ClassDojo. As its user base grows, partially expedited by educators' transition to virtual classrooms due to the COVID-19 pandemic, ClassDojo has continually developed new features. Its latest features promise engaging ways of remote learning by "bring[ing] your class together wherever you are" (ClassDojo, 2020). Some additions to ClassDojo include the capability to upload and fill digital worksheets online, assign activities or emotional "check-ins" to specific students/groups, create video recordings via Class Story, add instructions to videos, and new feedback icons.

Current research on ClassDojo. Using the University of Alberta library access of over 100 databases and Google Scholar, a literature review with keyword searches for "ClassDojo" and "education" returned a short list of peer-reviewed articles and academic papers. To date, several studies have examined the topic of ClassDojo in education informally, or from a philosophical standpoint (e.g., Garcia and Hoang, 2015; Robacker, Rivera, and Warren, 2016; Williamson, 2017a), and a few studies have used an empirical approach (or real-world application) to investigate its practical impact on teaching and learning (e.g., Krach, McCreery, and Rimel, 2017; Maclean-Blevins and Muilenburg). No philosophy of technology or postphenomenological studies have been conducted on this topic thus far.

Critical analyses of ClassDojo. A prominent voice on ClassDojo in education is Ben Williamson, a social sciences researcher. Williamson has written a few articles about ClassDojo (e.g., Williamson, 2017a; Williamson, 2017b; Williamson, 2017c; Williamson and Rutherford, 2017), outlining its uptake alongside trending governmental education policies, along with concerns about classroom surveillance, data and privacy. In his 2016 paper, "Decoding ClassDojo: psycho-policy, social-emotional learning and persuasive educational technologies", Williamson traces the root and development of ClassDojo from a small Silicon Valley project headed by two entrepreneurs, to its recognition and growth as a ubiquitous classroom application used by teachers across the globe. Williamson contends that this proliferated adoption of ClassDojo was a direct result of U.S. educational policy agendas at the time which prompted an interest in measuring non-cognitive, social-emotional learning to affect behavioural changes in students. He also

warned that this type of "fast-policy" and uptake of technologies has generated an "enactment of new policy priorities that have their roots in behavioural science and psychological forms of expertise" (Williamson, 2016, p. 441). In particular, ClassDojo enables a pedagogical turn towards tracking or surveillance of psychological characteristics (e.g., grit, perseverance, growth mindset[8]) and using interventions to change student beliefs or target observable behaviours. Additionally, Williamson notes that the gamification of ClassDojo has enabled teachers to engage students in a variety of activities, while also providing innovative ways to surveil and manage student behaviours or dynamics using rewards plus visual data representations. This form of operant conditioning is reminiscent of the early 1920's when "teaching machines" were used to dispense candy for students who had correct responses and demonstrated other positive learning behaviours (Watters, 2015). Woven throughout Williamson's arguments are hints of suspicions about giant, for-profit organizations (i.e., Silicon Valley, Stanford University) and their intentions for capitalizing on the education market. His other articles-- "Learning in the 'platform society': Disassembling an educational data assemblage" (Williamson, 2017b), "ClassDojo poses data protection concerns for parents" (Williamson and Rutherford, 2017), and "Moulding student emotions through computational psychology: affective learning technologies and algorithmic governance" (Williamson, 2017c)-- echo similar sentiments about ClassDojo in relation to privacy concerns, student surveillance, and government policies on education.

[8] Growth mindset: Popularized by Carol Dweck, growth mindset is the belief that the brain (or intelligence and ability) is malleable, not innate or fixed. This philosophy maintains that one's efforts or hard work are more important than perceived abilities.

Another ClassDojo analysis comes from Canadian educational researcher Agata Soroko (2016), who points to the controversy and tension stemming from the ethical use and disclosure by ClassDojo. In particular, Soroko contends that while ClassDojo does not explicitly violate any Canadian privacy laws, there are still questions pertaining to the collection of personal information-- particularly surrounding consent, use, and third party access-- as this data is all stored on U.S. servers (Pilieci, 2014; Soroko, 2016). While ClassDojo has since denied allegations of any misuse (Chaudhary and Don, n.d.), its creators have shifted the discussion to how ClassDojo has reportedly increased the frequency of positive student feedback (Soroko, 2016). However, Soroko cautions that classroom compliance in the form of discipline and intimidation is not necessarily indicative of a positive, conducive learning environment. She argues that ClassDojo attempts to normalize surveillance culture (e.g., intense scrutiny) by authority figures in the classroom, under the pretense of "classroom management," and pushes for corporate-led educational reforms that ultimately profits large businesses. In her paper, she further dissects the meaning behind ClassDojo's name: "Dojo", which is the Japanese term for a place where people train or engage in disciplined practice (Soroko, 2016). Following this notion, Soroko contends that ClassDojo caters towards outdated pedagogical practices that value discipline and order. She notes that the gamified, token economy system in ClassDojo is disturbing in the way it conditions student behaviors through the use of specific sounds to reinforce positive or negative outcomes; for example, a gleeful "ding" tone is played when the teacher adds a point, and a low, dropping sound is played for any points deducted. In this sense, the teacher and students are conditioned to perform in

specific ways by the technology's reinforcement features-- similar to a feedback loop where the technology guides the user about its functionality, and the user (i.e., teacher) also customizes the technology to fit the educational context or learning objectives. Soroko (2016) also states that ClassDojo's emphasis on growth mindset theory is misguided, and cites Kohn's (2015) research indicating that commending a student's effort as opposed to ability is equally problematic. Kohn (2015) adds that growth mindset theory suggests that it is ultimately the student that needs to be fixed, rather than examining other factors such as pedagogy, curricular objectives or authentic assessment. Both Soroko and Kohn reiterate that verbal praise is the most incentivizing approach for motivating students to learn.

Recent research shifts attention towards the datafication of ClassDojo, or the transformation of collected data in ClassDojo into new forms for interpretative value. Manoley, Sullivan and Slee (2019) warns about how ClassDojo promotes students' performative and disciplinary behaviours on an individual level, while also normalizing a culture of surveillance in the classroom. They suggest that schools' "uncritical adoption" (Manoley, Sullivan and Slee, 2019) of ClassDojo has encouraged real-time tracking of students, thus creating an imbalance of power, agency, and decision-making for students and parents. Pointing to Ball's (2015) work, they reiterate that a student is "made visible and calculable, but power is rendered invisible, and the learner sees only the task…and their 'result'…. They are made…manageable in these terms" (p. 299). The scrutiny of students' daily behaviours also intensifies behaviourist disciplinary actions, and the reliance on using re-constructed numerical data in the form of ClassDojo points to

"facilitate data-driven techniques of governance that function through classification, ranking, and comparison of students (Manoley, Sullivan and Slee, 2019, p. 37). The researchers contend that ClassDojo data is a de-contextualized representation of students' progress, which can morph students' conception of their own identity and abilities.

Recommendation reports. Another study focused on the teacher's setup of ClassDojo for classroom management. Robacker, Rivera and Warren (2016) wrote a recommendation report based on aggregated teachers' accounts of using ClassDojo as a token economy to reinforce positive behaviours for students with behavioural or emotional disabilities. They suggest a few steps for effective integration of ClassDojo: (a) setting up a ClassDojo account with identity protection and privacy in mind, such as using student nicknames, (b) creating customized target behaviors and pre-defined rewards to suit the class, (c) focus on rewarding students for positive behaviours rather than using punishments, (d) integrate a point-exchange system for students to exchange virtual points for tangible, real-life rewards, and (e) utilize in-app graphing features to track and communicate student progress. While these recommendations are noteworthy, the study was based on the researchers' reassembled fictional account of a teacher's ClassDojo experience, and no mention of the sample population, data collection procedures, data analysis process, or other specific study parameters were evident.

Garcia and Hoang (2015) also wrote a short, informal paper reflecting on their own ClassDojo use with their classes, reporting that the app is particularly useful for elementary-level students because they gravitate towards positive reinforcement reward systems and are eager to please (p. 4-6). However, this excerpt was overly simplistic and

did not contain specific supporting evidence or detailed anecdotes about their ClassDojo experiences.

Empirical Studies. Other researchers have carried out small-scale studies about ClassDojo integration in the classroom. Maclean-Blevins and Muilenburg's (2013) study used ClassDojo to monitor twenty-three Grade 3 and 4 students' self-regulatory skills and positive behaviours during independent work time (i.e., not during teaching). Here, positive behaviours were measured by instances of asking questions, double-checking work, staying on-task, reading instructions, using resources and working quietly. Two observers recorded the frequency of these positive behaviours during the students' thirty-minute independent work session before the introduction of ClassDojo, and again three weeks after ClassDojo use. At the end, open-ended surveys were administered to assess students' affective responses to ClassDojo. Results of the study indicated an increased use of classroom resources (+91%) and double-checking work (+71%). There was also a decrease in negative behaviors such as disruptions (-100%) and talking to other students (-74%). Student survey results indicated favourable aspects of ClassDojo included the ability to see their scores, fun, use of avatars, and the opportunity to improve scores. Less desirable elements of ClassDojo, according to students, include the expectation to write and attain goals.

Some limitations of Maclean-Blevins and Muilenburg's (2013) study include only examining student behaviours during independent work time, rather than observing how educators practically integrate ClassDojo for teaching and learning purposes. As noted by the researchers, many students were acutely aware and conditioned by the teacher's

procedure of picking up the iPad and moving around the room, and responded in a performative manner by immediately sitting up straighter or being quieter. Furthermore, there was a fairly small sample size of 23 students for a quantitative study, which may have limited validity or reliability. Only third-person researcher observations of the classroom and a student survey was conducted at the end (i.e., no interviews or face-to-face discussions). There were also some ambiguities within the instrument being used (i.e., checklist of behaviours); for example, "raising a hand to ask questions" was classified as a positive behavior, but "approaching a teacher with a question" was deemed a negative behavior, even though they may be overlapping instances. Teacher perspectives were not gathered, which is an important element in understanding the pedagogy behind ClassDojo integration.

A more recent paper written by Krach, McCreery and Rimel (2017) involved an empirical study comparing ClassDojo with paper-pencil charting methods of behavioral management. The study included a quantitative analysis of approximately 150 elementary (K-5) students' behavioural records across ten classrooms. Krach, McCreery and Rimel (2017) suggests that a common teacher complaint is having to deal with classroom infractions instead of teaching academic skills, and suggests the necessity of implementing an effective behaviour management chart (BMC) system. As part of the study design, the researchers had a group of teachers use one of three behaviour management chart systems: (a) ClassDojo, (b) teacher-made paper-pencil systems, or (c) no behavioural tracking system. The collected aggregated data was coded into categories of positive, negative or neutral behaviours. Statistical analyses revealed a significant positive correlation of

ClassDojo or paper-pencil BMC use with positive behaviours and number of logged entries (as compared with no BMC use). Results also indicated that teachers tracked more positive behaviours (+200%) while using ClassDojo, whereas teachers using the paper-pencil system recorded substantially more negative behaviours in addition to positive behaviours. This trend of teachers recording more positive behaviors using ClassDojo is consistent with other studies (e.g., Chaudhary and Don, n.d.; Maclean-Blevins and Muilenburg, 2013; Mims, 2013). Mims (2013) speculates this airbrushing of student behavior is caused by the teacher's (conditioned) hesitancy to punish or deduct points from students in a rewards-based system (akin to taking away gold stars from a chart), unless the behavior was an ongoing major problem. While the researchers imply that using ClassDojo is more reliable at tracking student behaviours, they also acknowledged socio-economic conditions (e.g., ability to afford devices) and inequity in Internet access as potential barriers for ClassDojo's uptake. Furthermore, they cited parental concerns about shaming children with respect to the points system being displayed publicly on ClassDojo. Evidently, this intervention study was focused on examining frequencies of student behavioural changes across different behaviour management chart systems, but lacks qualitative, comprehensive insights uncovering teacher perspectives, rationales and the pedagogy behind ClassDojo's integration.

In 2015, Michael Burger conducted a study on the perceived effectiveness of ClassDojo as a classroom management tool in three middle school classrooms. After observing, surveying and interviewing 3 teachers and 12 students, he concluded that all participants found ClassDojo to increase student engagement and achievement. Teachers

also perceived their use of ClassDojo as favourable by school administrators since it was accessible and economical as a technology tool. Key themes emerging from the study include ClassDojo's effectiveness in increasing student motivation through a points system, appeal of audio-visual elements, ease of integrating the technology with little prior experience, as well as increased teacher motivation.

Following this study, Dadakhokjaeva (2017) carried out a similar intervention study comparing the effects and maintenance of student behavior using ClassDojo in three Grade 6 classrooms. These classrooms were classified as having lower levels of academic achievement and high levels of disruptive behavior. The researchers observed each classroom for about 20 minutes to record on-task and off-task behaviours. Using the Behavior Intervention Rating Scale (BIRS) developed by Elliot and Treuting in 1991, as well as the Children's Intervention Rating Profile (CIRP) developed by Witt and Elliott in 1985, the researchers found that in all three classrooms, academic achievement increased while passive, off-task behaviors decreased.

Summary. Put together, these studies point to a few common trends with ClassDojo use in education: (1) the token economy and gamified points system increases students' frequency of demonstrating positive behaviours, which teachers readily reported; (2) both teachers and students generally reported higher levels of engagement and motivation to set goals and stay on task; and (3) there are known ethical and privacy concerns voiced by educators and parents regarding ClassDojo's future developments and impact on pedagogical decisions in the classroom. However, current literature glosses over gamified approaches to K-6 education, or researchers simply speculate on educational

implications from a philosophical standpoint. No case study to date directly explores a teacher's application of ClassDojo for teaching and students' learning. This postphenomenology study of ClassDojo will address the gaps in the literature by examining teachers' current applications of ClassDojo in K-6 education, as well as explore the co-constitutive relation that develops between the human (teacher) and the technology (ClassDojo), plus the accompanying socio-political or ethical implications for education as a whole.

Chapter 3: Methodology and Theoretical Framework

Introduction

This chapter begins with an overview of research methods used in education. In particular, I discuss the qualitative methods used in educational research. Then, I outline the theoretical framework for this study, postphenomenology, and its defining features and concepts. I trace postphenomenology's origins and evolution as a philosophy of technology to its current applications in educational research. Then I provide a detailed description of postphenomenology as a methodology for data collection and analysis.

Research Methods in Education

To begin conducting research within the field of education, one must first distinguish the primary methodological approaches: qualitative, quantitative, and mixed methods research.

Qualitative research tends to examine the human attributions of meaning, or "study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them" (Denzin and Lincoln, 2011, p. 3). Because of its philosophical alignment with constructivist, advocacy or participatory knowledge claims (Creswell, 2009, p. 17), qualitative research typically involves uncovering the interpretations or "meaning attributed to events by research participants themselves" (Willig, 2013, p. 8), and interprets texts describing human actions, practices or cultural productions. Some qualitative research data collection strategies includes interviews, narrative anecdotes, and text or media data. Common examples of qualitative research inquiries can be classified as phenomenology, grounded theory, ethnography, case study

and narrative (Creswell, 2009, p. 17). In this sense, qualitative research usually begins with open-ended questions that may evolve over the various stages of the research process.

Quantitative research, on the other hand, tends to utilize predetermined variables and numerical data to draw correlational and causal relationships. Due to its philosophical underpinnings of post-positivist knowledge claims (Creswell, 2009, p. 17), closed-ended research questions are typically used in quantitative methods to test or verify an existing hypothesis about the topic-at-hand. Some quantitative research data collection strategies include Likert-scale surveys and experimental design. Quantitative research is primarily concerned with identifying variables and their relations, as well as using measurable or statistical approaches to ensure validity and reliability standards are met.

Mixed methods is a systematic combination of qualitative and quantitative techniques that is intended to provide more pragmatic, well-rounded analyses of the topic or research question. Because of its sensitivity to integrating different elements of qualitative and quantitative methods and data, conducting mixed methods research is often a more complex and extensive process (e.g., researcher training, analyses). Oftentimes mixed method strategies involve sequential, concurrent or transformative inquiry (Creswell, 2009, p. 17)

While all three methods are considered rigorous, the approach that is needed is highly dependent on the research questions being posed, and the nature of the data being explored. In the field of educational research and social sciences, qualitative and quantitative research methods are frequently employed in literature and practice (Creswell, 2009).

Conducting Qualitative Research

According to Creswell (2009), the defining characteristics of qualitative research include: (a) collecting data in a natural setting or context where participants would experience the issue or topic-at-hand, (b) the researcher directly examining and gathering data, rather than rely on instruments developed by others, (c) using multiple sources of data such as interviews, observations and documents to identify common themes, (d) inductive reasoning and data analysis to make sense of abstract or emerging data by organizing them into themes or categories, and even collaborating with participants to shape ideas, (e) emergent design and questions, (f) interpretative inquiry of multiple perspectives using a specific theoretical lens involving social, political or historical contexts, and (g) holistic account of the complexity of the issue or topic.

Theoretical Framework

The overall goal of this research is to explore K-6 elementary teachers' experiences with and insights about using ClassDojo. The research questions guiding the study include:

(1) How do K-6 teachers use ClassDojo to facilitate their teaching and students' learning?

(2) How do teachers perceive the influence of ClassDojo on their teaching practices, interactions with students or parents, and students' learning?

(3) Based on their experiences, what insights can current users of ClassDojo share with other K-6 educators? and

(4) From a postphenomenological perspective, what are the ethical considerations of ClassDojo?

To explore these questions in-depth I employed postphenomenology, a philosophy of technology based in phenomenology and devoted to the study of human-technology relations. Postphenomenology is also a qualitative research approach that has been used across a variety of practical settings and contexts, and most recently to study a range of technology experiences in educational settings (e.g., Aagaard, 2015; Adams and Turville, 2018; Boger, 2018; Jubien, 2015; Turville, 2018). Postphenomenology enables researchers to uncover different experiences and uses of a given technology, broadening the focus beyond a simple examination of a technology's affordances, and across different users and contexts. For postphenomenologists, studying technology involves examining the intertwining relationships between the technology and its user, how technology affects and is affected by the user, as well as the contexts in which it is utilized. As this postphenomenological study is exploring diverse pedagogical and ethical insights of technology use in the classroom, it is useful to examine teachers' experiences using descriptive data. This research study employs postphenomenology as the theoretical lens for conducting a case study of teachers using ClassDojo in their K-6 classrooms.

Defining Postphenomenology

Postphenomenology is an interpretative, ontological approach that involves an in-depth qualitative study of technology, its relation to human experience, and its role in shaping practices, societal norms and culture (Irwin, 2016). The goal of this approach is to uncover how a specific technology "transforms our perceptions by means of amplifying or reducing functionalities or features, while also inviting or inhibiting other actions" (Aagaard, 2017, p. 519). The postphenomenological researcher is attentive to

multistability, or how a technology may be perceived and used in different ways across juxtaposing contexts or use cases. While postphenomenology is considered a relatively new approach to qualitative studies in education, there has been a steady growth of research and interest in this area because of its capacity to investigate individual technologies and how they mediate the human experience in learning environments, and the human lifeworld in general (Aagaard, 2017).

There are several key concepts in postphenomenology: intentionality, human-technology-world relations (embodiment, hermeneutic, alterity, and background relations) and technological intentionality. This terminology will be described below.

Intentionality

Inspired by phenomenology, the concept of intentionality has evolved over time to address skepticism about how previous philosophers study consciousness, and the mental representation of an object. Husserl first suggested intentionality as the basic directional structure of consciousness, wherein all consciousness is always directed towards something, whether it is a real or an imagined object (Aagaard et al., 2018, p. xiii; Adams and Thompson, 2016, p. 58). In this way, intentionality can be understood as a characteristic of mental representation directed towards an object. Later, philosophers Martin Heidegger and Maurice Merleau-Ponty expanded on the idea of intentionality by drawing on existential notions; they suggested including an examination of intertwining relations and connotative meanings that humans attach to the world. Put another way, "intentionality describes our meaning-drenched relational yoke to the world" (Adams and Thompson, 2016, p. 59).

Building upon Heidegger's *Dasein*[9] as humans "Being-in-the-world", Ihde represented the idea of intentionality by using a hyphen to express the intermingling, reciprocal connection of the "human-world." Here, the "world" refers to the "lifeworld", or the "grand theatre of objects arranged in space and time as perceived by individual subjects" (Husserl, 1970), and can be considered the horizon or background for shared human experience and meaning. The lifeworld is considered to be a dynamic universe which is lived-*through* and lived-*with*. This human-world relation can be broken down into a "human → world" pairing (i.e., the natural disposition of how humans relate to the world), and the "human ← world" pairing (i.e., how the world influences how humans perceive and conduct themselves). The human-world relation is understood to be reciprocative, and thus not a one-way, deterministic relation. Ihde added technology to the intentionality equation by addressing the question of how a given technology mediates a human being's perceptual or actionable relation to the world. Postphenomenology, which originated with the work of Ihde (1978), is characterized by its exclusive interest in: (a) describing and analyzing how different technologies condition the human lifeworld, and (b) understanding the complexity of "human-technology-world" relations.

Ihde's human-technology-world relations

Through his early phenomenological investigations of technology and intentionality, Ihde (1978, 1990) conceptualized three "focal" forms of human-technology-world relations, which he schematized using directional arrows, brackets and hyphenated

[9] Dasein: Derived from the German word meaning "presence", Martin Heidegger used Dasein to refer to human existence and the idea of "Being-in-the world" (i.e., the condition of already being involved or engaged with other individuals and things).

links along an overlapping continuum line. His three focal relational forms are: (1) embodiment, (2) hermeneutic, and (3) alterity relations (See *Figure 3*). Ihde expressed these human-technology relations as illustrated below (note: Ihde used "I" interchangeably with "human" to indicate an individual's perspective):

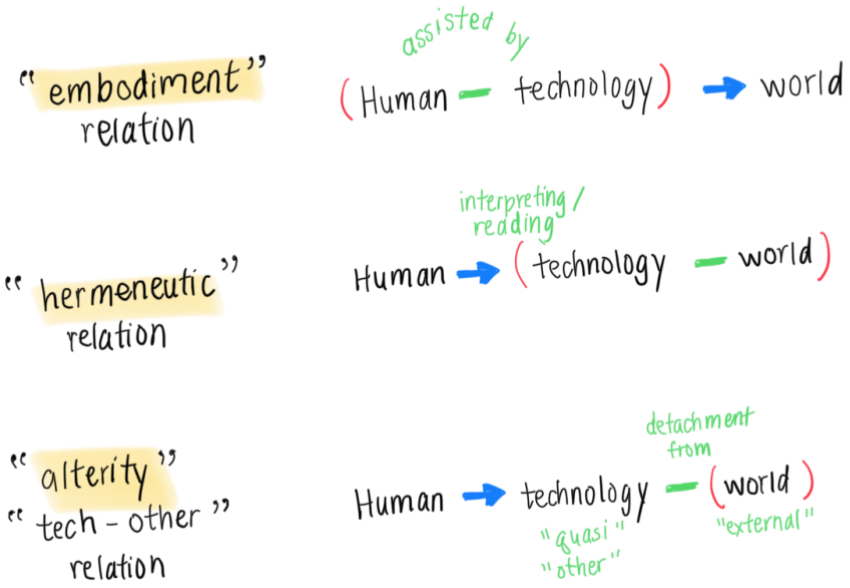

Figure 3: Three of Ihde's human-technology-world relations

These relations serve to draw links and trajectories between technology mediation, meta-knowledge, and practical actions.

Embodiment relations. Embodiment relations are described as the human being's close unification or integration with technology in such a way that its use becomes a transparent or semi-transparent extension of the human's body, mind or capability. One example is the use of a hearing aid device. The hearing aid fits in the ear canal and helps amplify surrounding sounds for the user. After using the hearing aid for a while, the user comes to depend on the hearing aid to capture sounds, but the device also seamlessly

"blends in" with the ear such that it can be easily forgotten that it is a worn device. Once the batteries in the hearing aid run out of power, however, the user quickly experiences a sharp reduction in his/her capacity to perceive sounds.

Merleau-Ponty (1964) describes embodiment relations in terms of how a technology changes the way one perceives or experiences the world. This embodiment relation is established over time as the user repeatedly relies on the technology to co-enact or perform a task. For example, a new driver may be acutely aware of his/her movements, and take longer to determine all the components and steps associated with starting up a car. The experienced driver, on the other hand, has developed an embodied relation with the car such that the driver automatically puts his/her foot on the gas pedal and shifts gears without deliberately thinking about it. Here, the technology (i.e., car) serves to amplify or enhance one's physical capabilities, but necessarily sacrifices, reduces or detracts from some other sense or capability such as one's perceptual abilities (Adams and Thompson, 2016, p. 59). This is an important concept in postphenomenology. Returning to the example of driving a vehicle, the driver may have the enhanced ability to move faster and further distances without expending one's own physical energy. However, being contained inside the vehicle also reduces the user's perception of speed to a speedometer number, creates blind spots hidden by parts of the vehicle, and constrains the path (i.e., streets, roads) that can be taken to arrive at a particular destination. These perceptual reductions can be accentuated further when a driver is talking on their mobile phone where they are occupied in a conversation. In such a case, perception is diminished further, the happenings

both inside and outside the vehicle may become less salient, resulting in potential impaired driving.

Hermeneutic relations. Hermeneutic relations are expressed as the "human → (technology-world)" correlate where the human being interprets or reads the world through the lens (e.g., structure, language, etc.) given by a technology. The term "hermeneutic" refers to the textual interpretation within a technological context (Ihde, 1990). One example includes reading a thermometer (technology) to gage the temperature of the world, without needing to actually feel the sensation of the cold. Other examples include interacting with the user interface of a software or video game, or using a search engine to locate a book in a library database. In this way, the technology is the key mediator or "framework" enabling the interactions between the human and the lifeworld. Hermeneutic relations also tend to overlap with embodiment relations because the materiality of an object can become absorbed prereflectively by the user, and in turn, become seamlessly integrated in its uptake.

Alterity relations. Alterity relations describe the experience of technology as an externalized "other" (Adams and Thompson, 2016, p. 60). The perception of the "other" can be the result of the technology appearing to have a mind of its own or by its ability to function independently (e.g. a robot). Alterity relations can also be observed when technology acts contrary to expectations, such as a car that will not start (Adams and Thompson, 2016, p. 60). In some cases, the experience can be positive or re-affirming, as when humans acknowledge or embrace robots as companions (i.e., perception of other beings). Sometimes, however, the experience of the "other" can be a form of

disengagement and confusion, as exemplified when learning to use a technology for the first time. This kind of unexpected discord can make users suddenly aware of the technology's materiality and the practices surroundings its use. Ihde expressed this relation as "human → technology - (world)", in which there is a disruptive tension between the user's uptake of a technology in the world.

Background relations. There is also another relation that Ihde added: non-focal or background relations. Ihde uses this to describe the non-focal embodiment relation and the taken-for-granted elements of the lifeworld. In this sense, the technology simply fills the background as the context for human experiences, such as the noise from a fridge. Background relations can also be described as the transparent or unnoticed relations between technology and one's lifeworld (Adams and Thompson, 2016, p. 64). Here, the human-technology relation is perceived as interpassive, rather than interactive (Adams and Thompson, 2016, p. 64; Ihde, 1979, p. 14). Adams and Thompson (2016) describe this interpassivity as the outsourcing of work to a device or surrogate, such that the user of a technology no longer needs to take responsibility for the decisions or actions associated with its use (p. 64). An example of this interpassivity is observed in the replacement of the chalk board with an interactive white board, the latter of which can automatically display digital or shared content in a non-linear manner, instead of the teacher having to physically write out and then erase notes in a linear fashion. Overall, Ihde expresses this relation as "human → (technology/world)", wherein the world is presumed to be "technology-textured" (Ihde, 1990, p. 163). That is, human perceptions or actions in the world are

constantly influenced by technology functioning in the background, but are not brought forth to our immediate awareness or consciousness.

Ihde's Technological Intentionality

While phenomenologists understand intentionality as a human being's orientation to and relational intertwinement with their lifeworld, Ihde (1990) also forwards another kind of intentionality that he associates with the transformative capacity of individual technologies. He suggests that, "technologies, by providing a framework for action…form intentionalities and inclinations within which use-patterns take dominant shape" (Ihde, 1990, p. 141). In this sense, Ihde emphasizes that technologies are not neutral instruments, but play an active mediating role between humans and their world (Ihde, 1990; Verbeek, 2011). In his phenomenology of writing and editing with a fountain pen in contrast with an electronic word processor, Ihde proposed that every technology tends to project certain actionable possibilities to the user, and is situated by the socio-cultural and political context (Ihde, 1990). Ihde (1990) added that each technology consists of various magnifying (amplification) or constraining (reduction) structures. Returning to Ihde's example of using a fountain pen or a word processor: the fountain pen sets forth a trajectory or inclination to compose a message slowly and thoughtfully to avoid making mistakes, whereas the word processor enables the writer to compose a message quickly (e.g., capture an idea) and edit the text without revealing the intermediate revisions that were made during the composition process. Across different contexts and use cases, certain affordances or actional possibilities become more or less perceivable and meaningful to the user.

The Evolution of Postphenomenology as a Philosophy of Technology

Postphenomenology is a form of *phenomenology* with a particular focus on technology and its implications for the human lifeworld. Phenomenology began as the philosophic study of consciousness as it is subjectively experienced in first-person. Phenomenologist Edmund Husserl (1965; 1970) introduced the idea of *technological intentionality,* which claims that consciousness is always directed towards something, and underscores the importance of examining human consciousness in order to fully understand an event or phenomenon involving technology. In line with this approach to exploring phenomena, influential phenomenology philosophers including Martin Heidegger (1954; 1977; 1996; 2014) and Maurice Merleau-Ponty (1964; 1968; 2013) contributed to the study of understanding the human experience, perception and meaning in relation to the world. Overall, Don Ihde's major research contributions towards understanding technological intentionality is why he is often recognized as the founder of postphenomenological research today.

Ihde later went on to mentor Peter-Paul Verbeek (2005), who expanded on Ihde's work by explicitly linking postphenomenology to Bruno Latour's (2005) *Actor Network Theory (ANT)*. ANT is a socio-materialist approach focused on studying networks or interactions between "actants" – the human, and the material (i.e., technology artifact) – as well as the active, co-shaping roles they play (Latour, 2005; Verbeek, 2015, p. 101-3). That is, ANT is a framework that investigates the assemblages and disassemblages of human and non-human networks, as well as how sociality and morality are co-constructed within this network. ANT explores changing relationships and interactions between

situational factors (e.g., materials, objects, humans) within a specific context, and thus holds that all social phenomena can be described in relations between material things and semiotic concepts, but not necessarily explained. As a result of his philosophical tie-in with ANT, Verbeek made postphenomenology more accessible as a philosophy of technology to researchers beyond phenomenological circles. In his discussions, Verbeek cautioned that trending empirical approaches and "transcendental philosophies" at the time produced biased, restricted views of technology largely based on the presumed conditions of these technologies (Verbeek, 2015, p. 100). He felt that these research practices were insufficient in understanding the complexities and interactivity of technology. He also suggested that researchers more broadly had neglected essential hermeneutic questions surrounding (a) the role of technology on human existence, and (b) the relation of technology in co-shaping interactions between humans and reality (Verbeek, 2015, p. 100).

Following Ihde's work, Robert Rosenberger (2008a; 2008b; 2009; 2015; 2017a; 2017b) suggests that the most conducive approach to postphenomenology research is to perform an "analysis of concrete case studies" (2008, p. 64). He contends that case studies are useful because they emphasize a specific, up-close examination of technology and related cultural or political factors. Thus, Rosenberger advocated postphenomenology as a comprehensive approach towards technology research, development and practice. As evidenced by these research trends, postphenomenology studies have become increasingly focused on the development and clarification of rigorous approaches and methods to conducting field research, particularly within the context of education.

Postphenomenology in Current Educational Research

Currently, educational researchers conducting postphenomenological studies include Peggy Jubien (2014; 2015), Jesper Aagaard (2015; 2017), Cathy Adams (2010; 2016; 2018), Stacey Irwin (2016), Tobias Rohl (2015; 2018), Tracy Boger (2018), Cathrine Hasse (2015; 2018), and Joni Turville (2018). Additionally, Adams and Turville (2018) point out that educational technology researchers who studied with phenomenologist Max van Manen (1990, 2014), for example, Stefan Baldurrsen (1989) and Norm Friesen (2012), also conducted postphenomenologies of word-processing software and computer simulations, respectively, even though they did not identify their methodology as such. That is, they conducted phenomenologies that explicitly focused on the perceptual meanings and actional implications of a technology on human experience. Cathy Adams (2010), also a student of van Manen, conducted a postphenomenological study of PowerPoint for classroom teaching and learning.

Since postphenomenology research revolves around the experience of using a particular technology, many researchers have honed in on various applications and contexts. For example, Peggy Jubien's (2015) research examines the ubiquity of mobile technologies and its impact on teacher and student practices in the post-secondary classroom. Tracy Boger (2018) focuses on uncovering the implications and experience of classroom surveillance software.

While postphenomenological research approaches are still relatively new, Aagaard's and Matthiesen's (2016) work examines methodological approaches that emphasize the importance of attending to *material presence* along with *linguistic meaning*

when conducting qualitative research and postphenomenological studies. Specifically, they advocate using qualitative methods that incorporate posthumanist analytic strategies, a study of material presence (i.e., agency, structure, etc.), and drawing situational maps (Aagaard and Matthiesen, 2016, p. 41). For example, Aagaard's 2015 study employs student interviews to investigate the experiences of multitasking, with particular attention to the bodily habits of students and the materiality of laptops in detracting on-task behaviors in the classroom. His study concluded that habits surrounding the use of laptops cause the "mediated impatience" observed in students today. His later work (Aagaard, 2017; Aagaard, 2018) are a preliminary investigation of postphenomenological research approaches.

Tobias Rohl's (2018) postphenomenology research examines the materiality of classroom interactions and the transparency of media technologies. His approach primarily employs ethnographic observations to study the contrast between artifacts within the human-technology-world relation. Additionally, he draws concepts from Actor Network Theory (ANT), Social Construction of Technology (SCOT), and postphenomenology to examine materiality in terms of respectively symmetry, emergence and breakdowns (Adams and Turville, 2018).

Stacey Irwin (2016) explicitly describes her postphenomenological research as a case study approach. She distinguishes postphenomenology as a philosophy with "relational sensitivity, interest in peculiarities and a focus on multi-dimensionalities of technologies in material culture" (Irwin, 2016, p. 38). Irwin also agrees with sentiments regarding the co-shaping connections between human-technology-lifeworld pairings, and

cites Ihde's approach to conducting postphenomenology by starting with the familiar and moving towards the radical variational possibilities (Ihde, 2006, p. 289).

Using variational descriptions in her postphenomenological research, Cathrine Hasse's (2008) work revolves around understanding the embodied knowledge and practices of physicists. Her work is largely inspired by Ihde's (2002) description of *body one* and *body two*, which she describes as the interacting "lived sensuous and the cultured body" (Hasse, 2008).

Postphenomenology as a Methodology

In addition to functioning as a theoretical framework, Cathy Adams and Joni Turville (2018) explicitly examine postphenomenology as a methodology to doing educational research; they summarize key techniques and approaches for gathering prereflective materials in the form of observations (of self and others) and interviews. Their work provides an overview of how generated data can be analyzed using a postphenomenological lens combined with elements of variational method (e.g., eidetic reduction) and case study design.

Case Study Design

A case study of a technology is the typical approach to research design in postphenomenology studies. Researchers study instances of individuals using a single technology across multiple variations, such as during a process, activity or event. The qualitative data are then gathered primarily through observations and interviews, and the researcher uses the data to generate detailed reconstructions or accounts of the technological phenomenon. Preliminary or recurrent themes may be identified. Afterwards,

the researcher conducts an analysis of the data, employing concepts such as multistability and variants to investigate the multi-variant ways a technology is used across different users and contexts.

Case Study of ClassDojo-Teachers

For this study, I utilized a qualitative, postphenomenology approach to frame the research questions and methodological approaches. Because the study was focused on one specific technology, ClassDojo, and how teachers use the application, it is considered a case study design. Data was collected via classroom observations and interviews with K-6 teachers who used ClassDojo in their classrooms. Afterwards, I employed postphenomenological concepts of technological intentionality, multistability, and human-technology-world relations to analyse teachers' ClassDojo experiences.

Data Collection

Postphenomenology data collection involves gathering prereflective data from multiple sources, and usually includes anecdotal information generated via self-observation, observation of others, and/or interviews.

Research Methods in Postphenomenology

Methodology differs across research disciplines, and can include data collection methods like interviews, observations, surveys, or even ethical issues related to conducting field research. Additionally, there are various analytical approaches to understanding the data, including employing concepts of multistability, variation or mediation (Aagaard et al., 2018, xii). Conducting postphenomenological research as a method of studying technological developments is a way of combining theory with empirical investigation.

Because philosophical analyses are derived from a close examination of the technology itself, it is often considered a philosophy of technology (Verbeek, 2015, p. 190) which impacts both data collection and analysis methods.

Postphenomenological data collection approaches tend to incorporate two main methods: interviews and observations involving the users of the technology. This data is generated by directly examining and gathering lived experiences through multiple sources, utilizing exploratory open-ended questions, and employing an interpretive inquiry lens when observing or collecting the data.

Gathering Prereflective Materials

For postphenomenologists, conventional sources of prereflective materials generally include gathering field observations and interviews of the subject (i.e., the user of technology) and the object of interest (i.e., the technology artifact). These prereflective materials may also be gathered from online sources, historical documents, journals, policy reports, artworks, etc., and then reassembled into posthuman anecdotes for data analysis (Adams and Thompson, 2017, p. 27). It is crucial to record experiences related to the digital technology *in use*, as well as the humans (i.e., users of technology) and nonhumans involved. Of further significance to postphenomenological research is attending to the seamless, taken-for-granted habits (actions and perceptions) that set in when a technology becomes transparent or "ready-to-hand" (Adams and Thompson, 2016 p. 28).

Gathering, Generating, and (Re)assembling Data

Interviewing and observing subjects/objects. According to Adams and Thompson (2016), postphenomenological research involves "interviewing" a human about their

interactions with a technology by first "attending to objects...and attuning to things" (pg. 23). Such "object interviewing" can be carried out by employing a set of heuristics, which begins with "gathering [posthuman] anecdotes" and "listening for the invitational quality of things" (Adams and Thompson, 2016, p. 46). Ultimately, the purpose of these posthuman object interviews is to gather and then (re)assemble anecdotal material in order to enhance one's understanding of the phenomenon in question, and provide key data for further postphenomenological analysis.

Assembling posthuman anecdotes. Another important component of interviewing involves gathering observational and human interview materials to allow researchers to generate posthuman anecdotes. An anecdote is a "recounting, in lived-through detail, an incident of life" that involves a human interacting with the technology of interest (Adams and Thompson, 2016, p. 25). This experiential narrative is concise, describes how a single event transpired as if it is happening in the present tense, is typically written from first-person or third-person perspective, and is based on concrete, real or perceived experiences (Adams and Thompson, 2016, p. 25). These anecdotes act as devices intended to reveal or show the phenomenon through detailed descriptions, rather than attempt to explain why something happens (van Manen, 2014). When interviewing a human about their technology use, a postphenomenological researcher may pose a question like: *Can you recall the last time you interrupted a face-to-face conversation to respond to a text message on your phone?* Such a question may prompt the research participant to recollect the details of their concrete interactions with the technology as it transpired, and thus provide the researcher with necessary human-technology relational data.

In addition to collecting anecdotal data, it is equally important to understand how posthuman researchers organize and assemble anecdotes in a representative way. The researcher becomes a "modest witness" by writing coherently and objectively (e.g., inter- and intra-viewing), while striving to limit personal opinions or biases from colouring the original narrative (Adams and Thompson, 2016, p. 32). The anecdote highlights the lived-through dimensions of the thing's appearance, intensity of impact, and "trace[s] motion and vital gesture" (Adams and Thompson, 2016, p. 33); It attends to the complexity of each situation as it changes, and attempts to bring compelling events or ideas that were previously unnoticed or taken-for-granted.

(Re)assembling the human-technology experience. Adams and Thompson note that an anecdote should "*reassemble* and *resemble* a possible human experience or observed moment of everyday life" (2016, p. 25), which may sometimes involve fictional or creatively reassembled elements that help bring the moment to light. The anecdotes may be sourced from the researcher's notes from sociomaterial-oriented observations, personal experiences, online sources, participant/research journals, historical documents, policy reports, technical manuals, films, visual art, novels, to name a few (Adams and Thompson, 2016, p. 27).

An example of postphenomenological research involving both observation and interviewing is demonstrated in Aagaard's (2015) study on laptop multitasking in the post-secondary classroom. First, he began with ethnographic-like observations of students and their laptops in college lectures over a period of several months; he used the concept of multistability and researcher reflexivity as the basis for his field notes. Then, he conducted

semi-structured interviews with six teachers to understand their experiences with using technologies in the classroom. Finally, Aagaard interviewed 14 students individually for about fifteen minutes to discuss their experiences with technology and perceptions of any off-task behaviours. He transcribed the interview data and identified several themes over multiple readings. The key finding from the study include the habitual distraction caused by laptop use during lectures.

Listening for invitational quality of things. A second heuristic, listening for the invitational quality of things, beckons the question of how a specific technology implicitly or explicitly invites and constrains a user's perceptions, actions or activities (Adams and Thompson, 2016). It asks the researcher to consider the prereflective "conversations" (van Lennep, 1987, p. 219) and gestural "correspondences" (Ingold, 2012, p. 435) that take place between actors and their environment. An examination of a technology's valences[10], or "affordances," may assist in answering these questions. The concept of affordances germinated from ecological psychologist J. J. Gibson's ideas about an object's or environment's possible actions that enable or constrain creatures (depending on the creature's capabilities). For example, a tree may offer shelter for a bird, but reduce its visibility of a predator nearby. In his discussions, Gibson suggests that an affordance moves past the idea of a subjective-objective dichotomy by focusing on revealing not only what an object can facilitate, but also where its inadequacies lie (Gibson, 1979, p. 129). In 1988, Don Norman, who conducted work in human-computer interaction and design,

[10] Valence: In the field of social sciences and psychology, "valence" is used to describe a force of attraction or repulsion to an object or situation (Lewis, 1951; Solomon & Stone, 2002). For an example, feelings of happiness is considered a positive valence.

adapted the term "affordances" to help him describe and advocate for the intuitive functional design of an object, which would facilitate or enable its meaningfulness and utility for a user (e.g., usability of a software interface). Norman strongly supported the explicit (e.g., manufactured) material design of these affordances into objects so that its functions would be immediately apparent to the user; phenomenologists, on the other hand, suggests that an object's affordances may also become apparent once the user begins with a purpose in mind, and appropriates the object accordingly. That is, while objects may communicate clues as to how it may be used, Norman's views were somewhat limited to the openly accessible and "designed surface of things" (Adams and Thompson, 2016, p. 46). Gibson's description of affordances, then, encapsulates an "invitational quality of things" (Adams and Thompson, 2016, p. 46) aligned with postphenomenology values. Put another way, postphenomenology research dives deeper by uncovering the many co-constitutive and ecological human-technology relations that precedes the object's boundaries (Adams and Thompson, 2016, p. 46).

Another component to listening for the invitational quality of things can be drawn from the works of Jakob von Uexküll, who believed objects were "functionally toned" by "perceptual and actional endowments" (Adams and Thompson, 2016, p. 47) within the creature's lived world. Uexküll elaborated on this idea by explaining an intertwining network of call-and-response melodies exists between living and nonliving forces (Adams and Thompson, 2016, p. 47). Marshall McLuhan, a media ecologist, also described a similar idea in his conceptualization of a technology's "utterance," or a silent melody that

teaches or habituates the user about its uptake. McLuhan implied that technology tends to reveal its identity or character through these utterances.

Data Collection Methods Used in this Study

For this study, I began gathering prereflective materials by conducting online background research about ClassDojo's start-up timeline and promoted features. To immerse myself in the app first-hand, I also conducted a screen-recording of my exploration of ClassDojo by vocally articulating my thoughts out loud as I attempted to set up my own classroom instance using the application. The screen-recording of the procedural steps were then transcribed and summarized into notes to inform my "Interview with the object: ClassDojo" (See Chapter 4 Analysis). Based on this initial object interview, I also generated a "checklist" table of ClassDojo's features and affordances to assist with organizing my notes for the field observation days; this checklist was used to guide my understanding of which features a teacher chose to use or not in his/her classroom. With this approach, I was able to actively attend to ClassDojo's "invitational quality of things" (Adams and Thompson, 2016) and identify which features each participating teacher opted to use or not.

Observing and Interviewing the ClassDojo-Teacher

For this study, data collection consisted mainly of two parts: classroom observation and an interview with the teacher. The first part took place in the school and involved one to two days observing the teacher using ClassDojo in-class. I observed the classroom activities from a non-obstructive distance, and made notes related to the teacher's interactions and integration of ClassDojo. In part two, I met with each teacher for

approximately one hour to discuss the teacher's pre-interview materials, and take part in a semi-structured one-to-one interview (see *Appendix 2: Teacher Interview Prompts*). This open-ended interview attempted to draw out teachers' pedagogical reflections and recollections about their uptake and thoughts on using ClassDojo in the classroom. Two sample interview questions are: *What was it like for you when you first worked with ClassDojo? As you gained experience teaching with ClassDojo, are there some ways in which your teaching practices, student interactions, or classroom dynamics have changed?* With the consent of the teacher, each interview was audio-recorded and transcribed for record-keeping and post-analysis. Additional observational notes about the teacher's schedule, ClassDojo use-cases, and teacher-student interactions were kept by the researcher.

Before analysis, all interview materials were anonymized, and any identifying information or names were replaced with randomized pseudonyms. A master list was retained to allow for data-verification purposes and necessary follow-up with participants; this file was password-protected and stored securely on a computer only accessible to the researcher.

In my ClassDojo study, I chose to write re-assembled anecdotes based on a combination of classroom observation notes, teachers' interview materials, and ClassDojo descriptions as explained by the teacher in follow-up conversations. All significant observations and events in the re-assembled anecdotes are detailed as they are experienced first-hand.

Data Analysis

The process of data analysis tends to involve reflecting phenomenologically on the data collected, including but not limited to: studying breakdowns, accidents, and anomalies, discerning human-technology-world relations, unraveling translations, and tracing responses and passages. This type of qualitative research can be considered a *(post)phenomenology of practice* (Adams and Turville, 2018), wherein technology in education is examined from an empirical perspective.

Postphenomenology Analytical Concepts

Postphenomenology distinguishes itself as a philosophy of technology framework that extends beyond examining a technology's affordances by exploring the multi-variant ways in which the technology is applied across varying contexts. With that in mind, there is no one particular way to analyse the data, and postphenomenologists have attempted to uncover the intricacies of the human-technology-world relations by referencing these key analytical concepts below:

Variations. Husserl first used "variations" as a brainstorming technique to distill the essential elements of a phenomenon (i.e., distinguish the variant from the invariant parts, or the essence of the object) by viewing an object from multiple angles. Over time, postphenomenologists like Ihde have adapted this technique to align with the concept of multistability, which emphasizes the context-dependency and material relations that exist for a particular technology.

Mediations. Ihde used "mediations*"* to describe how a technology actively shapes the relations between humans and their world by amplifying/facilitating some features,

while reducing/inhibiting other features (Ihde, 1990, p. 75) of an experience. For example, with the ubiquity of smartphone messaging, it becomes easier to communicate quickly to a greater number of people. However, this ease of communication can also be limiting. Because both the sender and the receiver of a text message must rely heavily on symbols or choice of words, rather than noting contextual non-verbal social cues (e.g., tone of voice, facial micro-expressions). As a result, the meaning or context of a message may be lost in translation, as often demonstrated in the misinterpretation of texting slang or emoticons. In this sense, users may perceive smartphone messaging as being more ambiguous in meaning, and less genuine or impersonal because of its ease of convenience to contact anyone, anytime.

Multistability. As the uptake of a technology is intricately tied with the human user across different contexts, the various combinations of relations (e.g., pairings) can be perceived as contributing to a whole that is greater than the sum of its parts. This holistic idea can be paralleled with Gestalt theories of psychology, in which smaller parts affect the perception of the greater whole, and vice-versa. As technology may manifest itself in diverse ways, and serve various purposes across different contexts or use cases, it can be understood as embodying more than a singular "essence." The idea that technology is "stable" in its materiality across multiple contexts is what Ihde calls "multistability". Ihde adapted this idea from the 3D Necker cube example from psychology (*Figure 4*), and parallels this experience to how some variations of a phenomenon become more active (apparent) or passive (hidden) when the cube is rotated at different angles. For instance, by

switching between different dimensional perspectives of the 3D cube, new orthogonal views, figures, or possibilities are revealed.

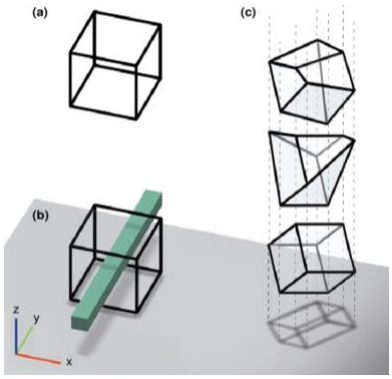

Figure 4: The 3D Necker Cube represented in multiple configurations and perceptual possibilities. Retrieved from Marc O Ernst (2004).

When applied in the context of postphenomenology, variations of a phenomenon reveal themselves through the examination of a technology's diverse use cases and functions. Oftentimes, studying a technology's multistabilities reveal familiar uses or cultural norms, as well as a variety of partial trajectories or alternate views that may help consolidate multistable thinking (Ihde, 2002). One example is that a smartphone is primarily used to communicate or contact others in real-time and at a different place. However, innovations in smartphone technology has created other new possibilities for experiencing this phone, including functioning as a camera, mobile gaming platform, event planner, timer, habit tracker, document/media transfer system, GPS, etc. In this way, while the smartphone retains its original function and identity as a communication device, it has evolved in its capacity to shape the human behaviour and experience through its additional features. Kyle Whyte (2015) builds on this idea by suggesting there are, in fact, *imaginative multistabilities* and *practical stabilities*. Whyte then explains that

multistability can be viewed as an empirically-testable hypothesis about how various stable patterns of the same object can be perceived from the first-person perspective, thus adding another practical layer that can be used to describe the interactions between human, non-humans and technologies.

Postphenomenology Analytical Approaches

There are many strategies to interpreting and making sense of the qualitative data collected and generated from interviews or observations. Some approaches include (re)assembling the human experience using anecdotal examples, studying breakdowns or anomalies, using Ihde's human-technology-world relations to understand technological intentionality, unravelling translations and connections, as well as tracing responses and passages. The following section details these postphenomenological approaches to analysing the research.

Studying breakdowns, accidents and anomalies. Another heuristic involves the study of breakdowns, accidents, and anomalies (Adams and Thompson, 2016). Because much of our attention to technology-use fades into the background when it becomes taken-for-granted, it is equally important to uncover moments when an object works in a surprising manner, or fails to work in some capacity. Examining these anomalies and frictions allow the postphenomenologist to bring the "invisible" qualities and mediating role of a technology to light (i.e., a "ready-to-hand" tool becomes "present-at-hand" when it doesn't work). In postphenomenology, this is described as *revealing* and *concealing* structures, which focuses on the user's attention (or lack thereof) towards the technology artifact and the background of one's lifeworld (Kiran and Verbeek, 2010). For example, a

disruption or breakdown of a particular technology may reveal the material presence and practices associated with it, such as a user's reliance or habits. These ideas are examples of phenomenological methods of eidetic reduction or imaginative variation.

Another way of studying a technology's variations or breakdown is a new technique of re-writing posthuman anecdotes by removing the occurrences or interactions with the technology itself. By comparing the differences between the anecdotes with and without the technology, the researcher can more readily identify variations of the technology when it is removed from the equation, and can bring other perceptual or actionable relations to the forefront.

Discerning human-technology-world relations. Another heuristic involves an examination of intentionality in the form of Ihde's human-technology relational analysis. This process involves the researcher examining different entanglements and relations (e.g., embodiment, hermeneutic, alterity, background) between human-technology-world.

Postphenomenology-aligned methods

Although there are no set methods, according to Adams and Turville (2018), the research methods tied closely with postphenomenology include: (a) variational method, (b) variational cross-examination, (c) conversational analysis, and (d) case study. The final approach, case study, will be used for this research, and thus elaborated in detail.

Performing Variational Method

The first approach, *variational method*, involves incorporating Husserl's concept of eidetic reduction by brainstorming, reflecting and unpacking the multistabilities of a technology across various instances. The key to variational method involves identifying

different possibilities or uses of a technology by examining the materiality of the technology itself, the physical/bodily use of the technology, cultural context or practices surrounding its use, embodiment or developed habits related to its function, as well as its multi-stabilities across various historical and cultural environments (Ihde, 2009, p. 19). Irwin suggests this approach allows for a thorough analysis of the "range and limits of the possibilities for interpretation" (2016, p. 39). In order to capture various perceptions, interpretations and trajectories, multiple participants are interviewed in-depth, and these are captured as digital media or written texts. The idea behind this approach is to examine how technology mediates being-in-the-world, or what is known as the "empirical turn" technique (Irwin, 2016, p. 41). Then, ideas are coded and grouped thematically. Following this qualitative analysis, a "pivoting technique" is used to determine the multistability (constant features/factors) of a technology across diverse contexts. To do this, a researcher "assume[s] the identity of the artifact remains constant across the variations" (Whyte, 2015). All data analyses are then compared and contrasted to describe the multistabilities and variations that exist in the case study.

Performing Variational Cross-examination

Another approach, *variational cross-examination*, begins with an analysis of an artifact's dominant stability, followed by a juxtaposition of selected alternative stabilities. Three key elements of this approach include a discussion of: (a) "comportments and habits", or how a technology relates to the physical body and one's perception; (b) the technology's role within the bigger picture of networks and actors; and (c) "concrete

tailoring", or the physical reformation of technology for new functionalities (Adams and Turville, 2018, p. 6-7).

Conducting Technoethical Analysis

Since technology is understood to be non-neutral, a recurring topic within postphenomenology research involves the contemplation of ethical considerations related to technology use and mediation (e.g., Rosenberger and Verbeek, 2015). For example, a technology's affordances, societal impact or constraints may have specific moral or value-laden dispositions. Common ethical questions concerning technology may include facets found in Adams' (2019) *Technoethics for Teachers* framework, which examines instrumental or means-end issues such as the positive or negative use and impact of technology as a tool (instrumental technoethics), uncovers a technology's embedded values, scripts or political biases (sociomaterial technoethics), or explores how the human experience is co-constitutively conditioned by technology use or habits (existential technoethics).

Another perspective comes from Rosenberger and Verbeek (2015), who suggest that technological mediations tend to have an inherent ethical duality (e.g., involvement or alienation of actors) as well as ambivalence, particularly in situations where new technologies are developed or integrated (p. 134-135). They add that this ethical dichotomy of technology should be ethically assessed by the simultaneous opportunities and hindrances that it creates in one's life-- or what they call the *involving-alienating structure* (Rosenberger and Verbeek, 2015, p. 136). One example of this *involving-alienating structure* is observed in the integration of handheld technologies to allow students to

quickly communicate and share ideas with one another during class activities. On the other hand, these technologies may also facilitate opportunities for in-class social distractions or even cheating on a test. While there are many factors that affect the ethical dimension of a specific technology, Verbeek emphasizes the importance of a technology's design in its uptake and subsequent ethical implications (e.g., Rosenberger and Verbeek, 2015, p. 137; Verbeek, 2008).

Based on Michel Puech's 2016 work on technoethics and Introna's 2017 research on phenomenological approaches to ethics, Adams (2019) suggests three main branches to thinking about the ethics of technology: (a) instrumental technoethics or "ethical assessment", (b) sociomaterial technoethics or "political critique", and (c) existential technoethics or "existential awareness". The basic and most common type of ethical questions about technology are classified as the *instrumental ethics* perspective, which is the assessment of cause-and-effect ethical impacts commonly associated with the use of a particular technology. Here, the technology is acknowledged as a neutral tool or artifact, and humans are seen as autonomous agents that determine how the technology positively or negatively impacts themselves, others or society at large. Put another way, the underlying beliefs driving this perspective include the idea that technology is simply a tool, and people are the agents that decide its use and ultimate impact. This *instrumental ethics* perspective also begets the exploration of human values or rights, particularly topics concerning the consequences of technology use such as privacy, quality of life, relationships, communication, participatory policy development, and general technology uptake or trajectories.

The second way of approaching the ethics of technology is what Introna (2017) calls *disclosive ethics*, or the socio-political perspective of technoethics. This approach to ethics unpacks the political interests and values that a technology enables or "scripts" for the user. Technology is observed as a non-neutral, socially-constructed artifact or political actor. In this vein, the human-technology relationship is considered a hybrid agent or network of combined human and non-human elements-- similar to a cyborg. Each technology's design is considered to have built-in biases regarding its moral or value positions, and facilitates specific behaviours. As such, the key ethical issue for *disclosive ethics* examines technology's mobilizing power to script or inhibit certain actions, while also serving a specific group's political or economic interests. Common ethical questions of this nature revolve around a technology's design and scripts, such as designing technology to enhance its accessibility and the moral or discretionary use of technology in the classroom across different contexts.

The third approach to examining the ethics of technology is what Introna (2017) refers to as *existential ethics*, and is most aligned with postphenomenology. This type of ethics focuses on the (post)phenomenological, lived experiences of technology — or as some media ecologists call "media" to describe lived-through technology. From this perspective, technology is considered a medium, and ethical questions revolve around who or what a human becomes as part of the co-constitutive relation it shares with technology. Here, technology is deemed as non-neutral and co-constitutive in embodying humanity and morality. The foundational belief of *existential ethics* is that both the human and the technology condition one's experiences and relations to the world and others. As such, the

most prominent ethical issues relate to how technology scaffolds certain habits or relations, as well as amplifies or reduces aspects of one's perceptual frameworks (i.e., ways of knowing) and human capacities. For instance, ethical questions from this standpoint typically centre around habits of technology use or relations, and creating a balanced media ecology environment to support students' developmental or well-being needs in the classroom.

Data Analysis Methods Used in this Study

To analyze the collected observational/interview data and reassembled human anecdotes, I performed a combination of techniques including variational method, variational cross-examination, and technoethical analysis. I also examined instances in which ClassDojo did not function as the teacher anticipated (i.e., technology breakdown), re-wrote anecdotes without references to ClassDojo to compare the human-technology-world relations that changed, and applied postphenomenological analytical concepts of variations and multistability to frame my understanding of the perceptual and actionable possibilities that were uncovered in the process.

Methodological Validity and Reliability

Aagaard (2018) proposed two key methodological elements that are essential to conducting postphenomenological research in an academically rigorous way: (a) researcher reflexivity, and (b) analytical validity.

The first element, *researcher reflexivity*, stems from Aagaard's counter-argument about what constitutes reliable research in conventional qualitative research and phenomenological practices -- specifically, Aagaard contends that postphenomenology

researchers should not be restricted from doing pre-research activities, or utilizing prior knowledge. Although conventional wisdom in qualitative research cautions against biases from the researcher's perspective of a phenomenon, Aagaard argues that prior knowledge about postphenomenology theory and methods help with generating empirical data. Aagaard also supports a pro-active, pragmatic approach to methodologies by combining the researcher's current knowledge (thus "reflexivity") with observations and interactions in the field. These interactions might include a researcher's prompts and follow-up questions to delve further into analyzing the phenomenon from the participants' perspectives. In this sense, Aagaard implies that data is given *and* taken (i.e., understood, structured and supported by a theoretical framework).

The second element, analytical validity, deals with controlling for and measuring the validity (and thus, quality) of postphenomenological research. Here, Aagaard frames his argument with the support of van Manen's 1990 discussion of descriptive phenomenological resonance. That is, quality research should impart a strong resonance of a shared human experience, and depart from the objective-subjective lens dichotomy.

Postphenomenological research is a re-configurative exploration of how experiences and relations are shaped beyond the known human-environment pairing (i.e., within Don Ihde's human- technology- world relations), with a more objective lens that removes technology from a pedestal. Specifically, in postphenomenology there is an attentiveness to *multistability*, or the idea that technology is capable of being perceived as many things across various contexts or use cases. This shifts the emphasis away from a reductionist technological determinism to how society and culture would also influence the

uptake of technology (Adams and Turville, 2018, p. 6). To understand the impact of technology it is imperative to examine the interface between the paired relations between human-technology or technology-world within the human-technology-world triad. Moreover, because humans designed technology to help them, some functions or aspects will amplify and become more effective, which in turn will tune out other aspects— much in the same manner that telescopes can assist one's view of distant objects, but limits peripheral vision. In order to overcome biases in studying technology, one must step back and look at the big picture: when a technology is seamlessly integrated in the world or becomes an extension of one's self (i.e., Heidegger's "ready-to-hand technology"), it can become omitted or overlooked.

As such, utilizing human science methods such as writing anecdotes (self-observed or observation of others), or collecting glimpses of lived experiences through interviews are some approaches to gaining a prereflective understanding of the phenomenon and technology in question. This stage of anecdotal writing is analogous to the data collection step observed in many research methodologies, and is followed by data analyses in the form of reflecting postphenomenologically on these anecdotal materials.

Postphenomenologist and sociologist Tobias Rohl employed this method of prereflective observation in his classroom studies involving science education. Because Rohl's research is heavily rooted in ethnography (i.e., observations of others), he describes the researcher-observer as taking on a partial role as a participant. He further legitimizes his stance by suggesting that being in the classroom environment itself (as well as participating in select classroom activities) therefore allows him as a researcher to

understand and be influenced by material objects in a similar manner as the participants. Following this line of logic, Rohl then makes the presumption that the researcher shares the same perspective and experiences as the participants. Not all researchers agree with this notion, however, as researchers Adams and Turville (2018) point out that the participants are still in the best position to describe their own experiences and the meanings attached to them. Adams and Turville (2018, p. 16) contend that postphenomenology of practice includes a return or attentiveness to the individual students as the participant and meaning-makers, in addition to the return to artifacts or things.

In order to maintain and understand a technology's multistabilities, a postphenomenologist can combine prereflective observational methods with reflective techniques such as *epoche-reduction* (derived from phenomenology; the idea of honing in or simplifying a phenomenon to its essential meaning and removing assumptions or things that are taken-for-granted; also described by Ihde as as "*phenomenological looking" or "hermeneutic rules"*). This kind of reflective process on the prereflective material includes determining the phenomenon's uniqueness: what the phenomenon is and is not, and how it changes across various contexts (i.e., multistabilities). In this vein, researchers adopt the method of *eidetic reduction*, or the act of distinguishing the uniqueness of a phenomenon from other related phenomena.

The reflective data analysis process includes an analysis and "eidetic reduction" of experiences-in-action, and suspending one's judgement about the natural world. In this way, postphenomenology posits itself as an academically-rigorous and disciplined

methodology within qualitative research, particularly within the sub-field known as "phenomenology of practice" (Adams and van Manen, 2008; Adams and Turville, 2018).

Chapter 4: Study Research Design and Background

Study Research Design

This project is an exploration of elementary K-6 teachers' experiences of and insights about using ClassDojo in their classrooms, and their perceptions of how it has affected their teaching practices and students' learning. The overall goal of the research is to explore teachers' experiences with and insights about using ClassDojo for teaching and learning. As a reminder, research questions guiding the direction of the case study include:

(1) How do K-6 teachers use ClassDojo to facilitate their teaching and students' learning?

(2) How do teachers perceive the influence of ClassDojo on their teaching practices, interactions with students or parents, and students' learning?

(3) Based on their experiences, what insights can current users of ClassDojo share with other K-6 educators?

(4) From a postphenomenological perspective, what are the ethical considerations of ClassDojo?

Sampling Procedures

After ethics approval from the Research Ethics Board and Cooperative Activities Program at the University of Alberta, I contacted school district administrators for permission to conduct the study in Edmonton Public Schools and St. Albert Public Schools. Upon district approval, a letter of introduction was sent to school principals outlining the research, its objectives, time frame, and request to contact their school

teachers about the study. Once approved by the principal, K-6 teachers were contacted via email to voluntarily participate in the study.

Ethical Study Procedures

The plan for this study was reviewed for its adherence to ethical guidelines and approved by the *Research Ethics Board* (REB) at the University of Alberta (Project ID: Pro0087321), and later by the *Cooperative Activities Program* (CAP) at the Faculty of Education prior to the research commencing. There were no foreseeable risks or harm resulting from this study. Instead, teachers found the study to be an opportunity to reflect on their experiences with ClassDojo. I completed all applications and school board/district requirements prior to conducting the research, including compliance with security measure checks.

The *Cooperatives Activities Program* (CAP) ethics applications were sent out to three Western Canada urban and suburban districts in February 2019. After a few months of ongoing communication clarifying or revising aspects of the study, I received approval from two school districts. With REB and CAP approvals in place, I contacted school district administrators for permission to conduct research in an urban and suburban school district in Western Canada. Upon district approval, a letter of introduction was sent to school principals outlining the research, its objectives, time frame, and request to contact their school teachers about the study. Once approved by the principal, K-6 teachers were contacted via email to voluntarily participate in the study. Each participating teacher received a Research Letter and signed an Informed Consent Letter before proceeding with the teacher observation day(s) and interview. Additionally, a letter outlining the research

taking place was sent home before the observation day to inform students' parents/guardians.

Recruitment Process

By the end of April 2019, I had secured school district approvals and began contacting school principals and teachers. There was a short time window for teacher recruitment as school policies outlined that no external studies were to be conducted during the summer months starting in June; This meant I only had the month of May to assemble the study materials and carry out the data collection process.

The most challenging part of the data collection process was ultimately the recruitment of teachers who used ClassDojo. Due to the number of other in-school studies running at the same time, one school district initially limited my principal contact list to three schools (only one of which had a teacher who used ClassDojo). This limitation was problematic in my attempt to cast a wide net to find a variety of teachers who used ClassDojo across the district. After further back-and-forth communication with the district coordinator, I was later permitted to request additional school-contact approvals (one at a time), and was only then able to begin contacting any principals. Because I needed principal approvals first, there was no direct way for me to find out whether the teachers in those schools used ClassDojo. Moreover, for each new school I wished to contact, I had to submit a new study amendment to the school district coordinator and wait for approval, causing further delays in the data collection process. The other school district streamlined this recruitment process by connecting me with the district technology coordinator. With the technology coordinator's assistance, I was able to share my study invitation to a district

committee of administrators, teachers, and stakeholders, and then narrow down a list of potential teacher contacts who identified themselves as ClassDojo users and interested in participating in the study. This process helped tremendously in finding ClassDojo-Teachers for this study.

Across both districts I was permitted to contact a total of ten school principals based on the coordinators' lists. One district provided me a list of principals where no other in-school studies were being conducted, and the other school district provided me a list of principals who were identified as having ClassDojo teachers in their schools. Unfortunately the first list of principals did not necessarily match my study criterion of needing "teachers who use ClassDojo," so although I reached out to these principals, some of the schools were simply unable to participate in the study. Sometimes the principal would help identify which teachers used ClassDojo, and other principals simply shared my study invitation with all their teachers. Nearly half of these principals declined to participate due to: (a) the number of concurrent studies being carried out in their schools, or (b) they were unaware of any teachers who used ClassDojo in their school.

After obtaining principal approvals, I was then able to proceed to contact teachers. Once teachers responded to the study invitation, I would contact them with further details about the study, outlining the time commitment required of them (i.e., classroom observation day and a teacher interview). No teacher incentives were allowed to be used in the study due to school district policies. Four teachers reached out to me about the study indicating that they no longer used ClassDojo with their students, used it in a limited capacity, or were philosophically opposed to the use of ClassDojo in general. Ultimately,

five teachers agreed to participate in the study, and invited me to observe their classrooms and interview them about their ClassDojo experiences. Thus, this study consisted of the five teachers who agreed to participate in the research, and no participants were declined.

Data Collection Procedures

This study consisted of two parts which took place over the course of two separate days. The first part took place in the school and included a full-day classroom observation of the teacher using ClassDojo. The researcher observed the classroom activity from a non-obstructive distance, and made notes related to the teacher's interactions and integration of ClassDojo. Following the observation, the participating teacher was asked to complete two short pre-interview activities (see Appendix 1: Teacher Pre-Interview Activities) on their own time in which they would make a diagram, timeline, or other visual aid to represent an experience, lesson or idea related to their teaching practice or classroom setup using ClassDojo. An interview was scheduled at the teacher's convenience for part two of the study (typically within 10 days of the observation day).

In part two, the teacher met with the researcher for approximately one hour to discuss the pre-interview materials they brought with them, and responded to open-ended interview prompts (see Appendix 2: Teacher Interview Prompts) that invited pedagogical reflections and recollections about their use of ClassDojo in the classroom. Two sample interview questions are: *What was it like for you when you first worked with ClassDojo? As you gain experience teaching with ClassDojo, are there some ways in which your teaching practices, student interactions, or classroom dynamics have changed?* With the expressed permission of the teacher, the interview was audio recorded, and subsequently

used to generate an accurate transcription and post-analysis of the interview. All notes were kept by the researcher. Before analysis, all interviews materials were anonymized and replaced with pseudonyms. A master list was kept linking individual names to pseudonyms and related files; this file is password-protected and stored securely on a computer only accessible by the researcher. The master list has only be used for verifying data during analysis (e.g., check for anomalies), and will be destroyed after 5 years.

Data Analysis Procedures

This research study was carried out as a case study and analyzed using a postphenomenology framework. My classroom observation notes, combined with the teachers' interview data and anecdotes, were first analyzed using *variational theory method*. This process involved identifying different possibilities or uses of ClassDojo by looking at the materiality of the technology, the physical/bodily use of the technology, cultural context or practices surrounding its use, in addition to analyzing examples of embodiment or habits centered around ClassDojo. Next, I investigated the technology's multistabilities across various historical and cultural environments. Teacher perceptions and interpretations (trajectories, user connections) of ClassDojo will be coded and grouped thematically. Then, I attempted to use the pivoting technique to determine the stability (e.g., constant features/factors) of ClassDojo across diverse contexts. Finally, I compared and contrasted the variations of teachers' ClassDojo experiences.

***Researcher Training and Biases*.** I am a PhD student trained in both qualitative and quantitative research methods. Previously I have obtained a bachelor's and master's degree in education, and taught in both elementary and secondary schools. Over the last

few years, I conducted community-based research and evaluations for multiple Alberta universities, K-12 schools, and other educational organizations. To minimize researcher bias such as confirmation bias, I actively exercised researcher reflexivity to become more self-aware of my own preconceived beliefs surrounding ClassDojo and pedagogy. Furthermore, I have acknowledged my own cultural or personal biases up front that may influence the data collection and data analysis process. When designing the study, I checked that the guided interview questions used inclusive language and are phrased in an open-ended manner so that there is no implied right or wrong answer. In this way, I was able to *listen to the invitational quality of thing*s, and noted the human-technology relations and habits that seamlessly blend into the background. When surveying teachers' perspectives, I asked for clarification from the participating teacher about any ambiguous statements to ensure the validity of its interpretation. When analysing the data, I continually re-evaluated the data via multiple readings under the tutelage of other practicing postphenomenological researchers and academic supervisory committee members. Using postphenomenology approaches such as multistability also helped me unpack different perspectives of ClassDojo's uptake across diverse contexts.

Early Study Limitations. By attending to the co-constitutive human-technology-world relations, this postphenomenological study sought to extend our understanding of teachers' experiences with ClassDojo, the pedagogical decisions that inform its integration, as well as the ethical and technological implications for the future of education. However, because this study involved gathering in-depth prereflective materials, in-class observations, and extended teacher interviews, in addition to the complex analysis process

and inclusion of reassembled anecdotes, only a small sample size of five teachers within Alberta, Canada, were feasibly recruited for this study. Additionally, the scope of this research focused on the teachers' perspectives of using ClassDojo, rather than how it may be perceived by students, parents, administrators, and other stakeholders.

Background on Research Participants: ClassDojo and the Teachers

In posthumanist postphenomenological studies, researchers gather and generate data by interviewing and observing both the object (technology) and the subject (teacher). The next section describes the data collection process of interviewing the object (ClassDojo), followed by a description of the teachers' background and classroom context as provided to me through pre-interview materials and/or directly via teacher interviews.

Interviewing the Object: ClassDojo

As a preliminary step to exploring ClassDojo, I carried out an "interview with a digital object" (Adams and Thompson, 2016) by putting myself into the shoes of a teacher, and talking aloud about my thoughts and observations of ClassDojo first-hand as I encounter its salient features and options. Interviewing ClassDojo allows the postphenomenologist to uncover insights about the technology's affordances and tonal atmosphere by "listening to the invitational quality of things" (Adams and Thompson, 2016, p. 90). By doing so, the researcher can reveal the technology's implicit and explicit scripts, as well as a spectrum of human-technology-world relations (Adams and Thompson, 2016, p. 91).

The following *object interview* describes a hypothetical teacher's perspective and exploration of ClassDojo on a laptop device for the first time, and aids in one's understanding of how such technology could be adapted and integrated in the classroom.

Getting Started. While in the teacher lounge, a colleague waves me down and points at her phone. She asks if I'm interested in using ClassDojo with her as it is a free educational app that I could also try out in the classroom. She said it runs on the phone and computer, and that it sets up the classroom like a game with student avatars and points to motivate good behaviours. As she swipes through the colourful interface, I pull out my phone and add "check out ClassDojo" to my To-Do list.

Back in my classroom, I sit down at the computer and type in Classdojo.com, hit "enter" on my keyboard, and am immediately greeted with a colourful ClassDojo homepage (See *Figure 5*). The ClassDojo logo at the top of the page shows a smiling green monster sporting a black headband, and a video of lively classroom activities. The slogans "Happier Classrooms" and "Bring every family into your classroom" is front and centre, with the subheading "Join 95% of U.S. schools using ClassDojo to engage kids and connect with families! Free for teachers, forever." ClassDojo also promises to be a free platform for teachers to use indefinitely. Four large icons at the bottom give me a choice to sign up as either a teacher, parent, student or school leader. I select "I'm a teacher", then add my name and enter my teacher email.

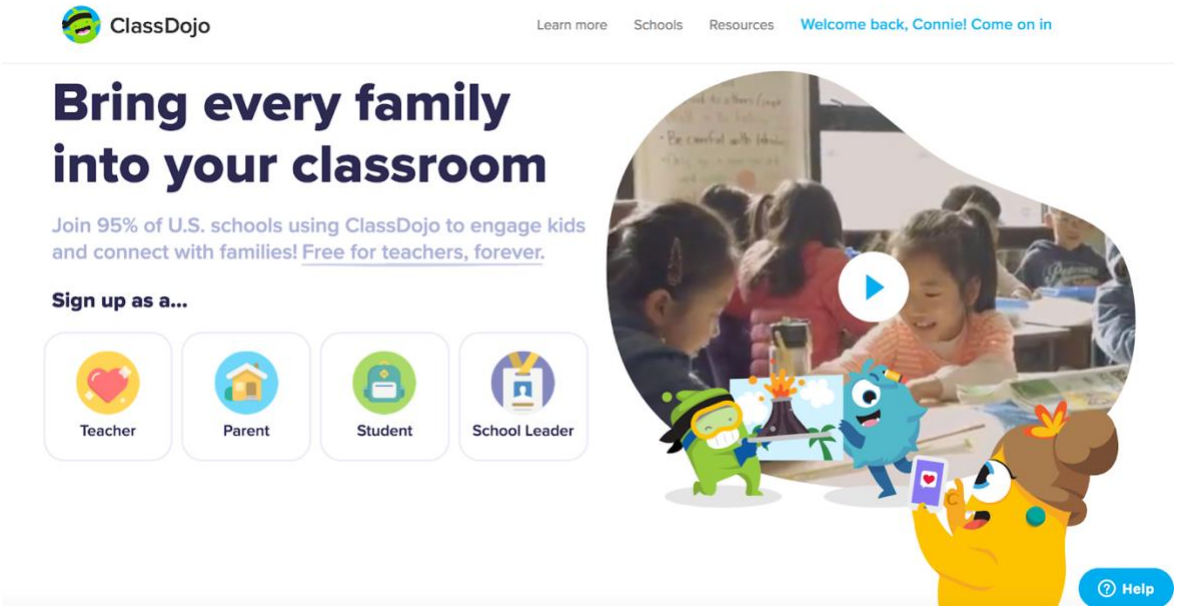

Figure 5: ClassDojo homepage

Classroom dashboard. Once signed up, ClassDojo brings me to the Classroom dashboard page. A few tile icons offer me the option to explore a Demo Class with 5 students, or click the blue "plus sign icon" tile allowing me to set up a "New class". Clicking "New class," a pop-up window prompts me to input a Class name, select a Grade year from "Pre-school" to "Grade 12", or "Other." There is also an option to "Share only positive points with parents (default), Share all points with parents, or Don't share points with parents." For now, I choose the default option to share only positive points with parents. I'm thinking: *I want to start up this new system on a positive note and avoid giving too much negative feedback to students and parents.* It seems I still have the option to deduct ClassDojo points, but it won't notify the parents right away, so I can make the decision to speak with parents if I notice any recurring issues.

Setting up a class. The next step involves adding students. Clicking the "Add students" tile opens a new window. I'm prompted to enter each student's full name. To

respect student privacy, especially since I don't know how ClassDojo stores or secures data, I try adding just the first name and hit "enter." An error message indicates I need to add a last name on file, noting that the last name won't be displayed on the class list unless I change this in the "Display settings". I add the students' last names. (I rationalize: *it will probably make it easier for me to search and track my students on ClassDojo in the long-run.*) As I add each student's name to the list, I notice a randomly-generated monster avatar is assigned to his/her name. Now that I've added all my students, I click "Save" and I can see the full class set of monster avatars with students' names displayed (Figure 6).

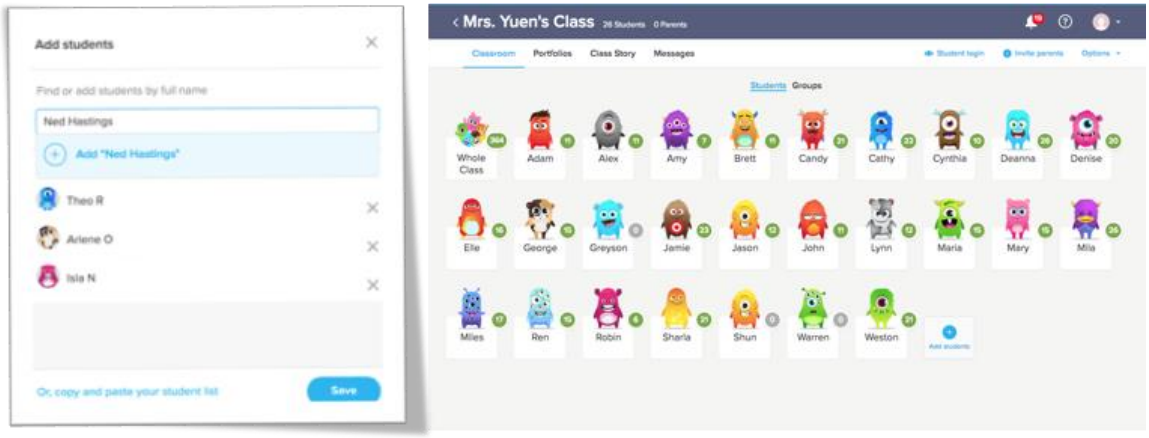

Figure 6: Adding students with randomly-generated avatars

Each student is listed alphabetically with a grey circle and the number "0" , indicating the student's current ClassDojo point total.

Toolkit. Below the Classroom dashboard there is a banner along the bottom which lists options such as Toolkit, Attendance, Select Multiple [students], a Randomizer [student selection tool], a Timer, and a Big Ideas database. I start with the ClassDojo Toolkit and quickly click through each of the buttons (See *Figure 7*). The Timer button

reveals a countdown timer. The Randomizer allows me to randomly choose a student for an activity or discussion question. The Group Maker allows me to randomly group students together for an activity. Here, there is also an option for me to prevent specific students from being randomly grouped together. I glance over the remaining features: Noise Meter, Directions, Think-Pair-Share, Today (classroom announcements board), and a Music feature. I'm curious what kind of music ClassDojo has, and click to discover there are two channels to play "Focus" or "Active" background music.

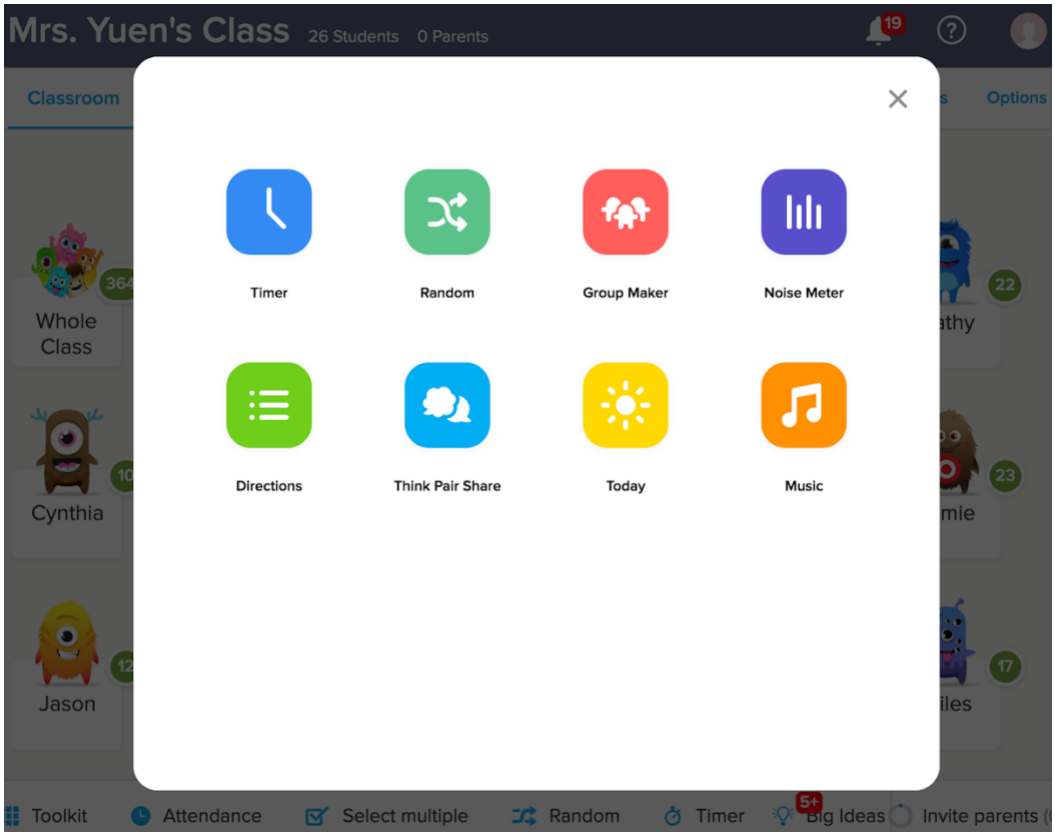

Figure 7: ClassDojo Toolkit

Attendance. Next to the Toolkit is the Attendance feature. Clicking here brings me to a screen that looks nearly identical to the Classroom dashboard, only this time, the student avatars have a small silhouette icon instead of a number (See *Figure 8*). Along the

bottom I see that I can mark all students as Present (green icon) or Absent (red icon). I can also select an individual student's silhouette icon to cycle through different statuses: Present, Absent, Tardy (yellow icon) or Left Early (split green/yellow icon).

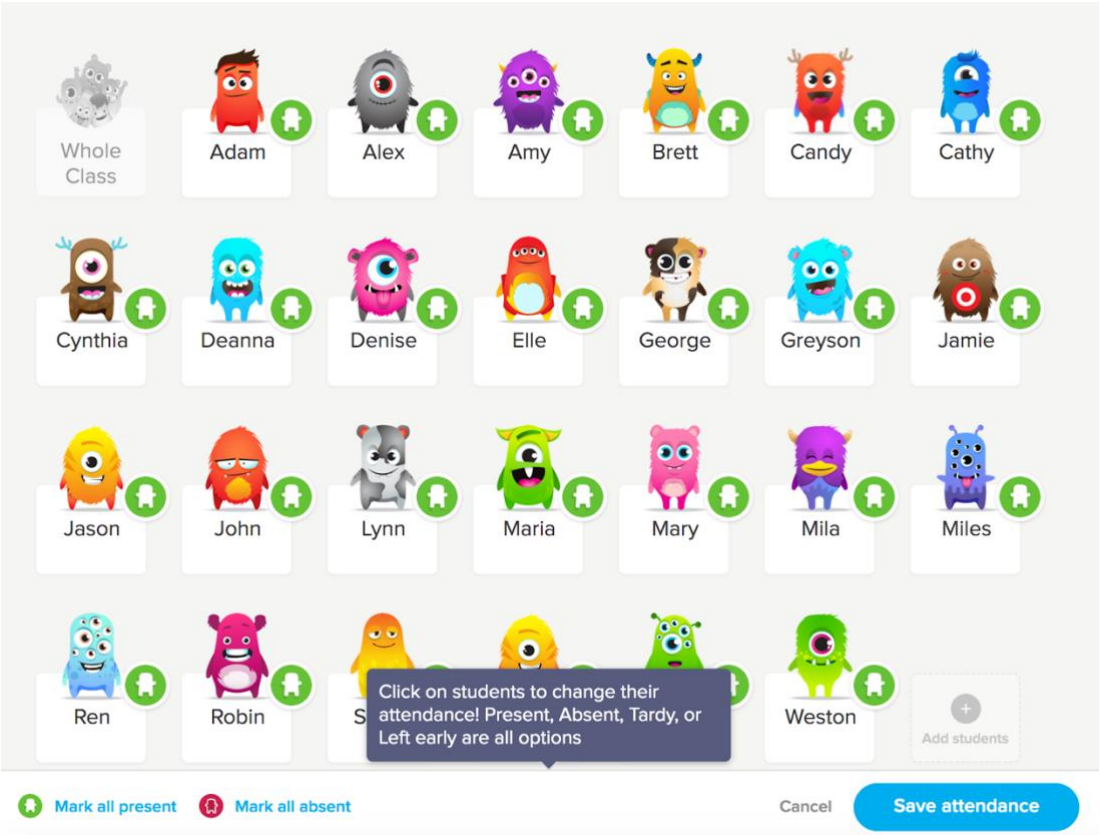

Figure 8: Taking attendance in ClassDojo

Setting up ClassDojo Point Criteria. After saving attendance, I am brought back to the Classroom dashboard. It appears that in order to give feedback to students, I can click on the "Whole class" or an individual student's avatar, then select a skill to award or deduct ClassDojo points. There are some preset "Positive skills" that invite me to award points based on students demonstrating attributes that are "on task", "participating", "persistence," "teamwork" or "working hard." I can also create custom Positive skills by clicking "Add/Edit skill" and then specify a value from +5 points to -5 points. There is also

a category called “Needs work,” but the default shows an empty list. Perhaps this empty list suggests that teachers should focus on positive skills or the “growth mindset.” Clicking on a student avatar and adding a positive skill seems to change the greyed-out net zero score to a green “1” number. On another student, I try clicking the “needs work” skill, and it seems that a student can get negative scores of “-1” in bright red text. I remember that students and parents who sign into ClassDojo can view their points and point changes in real-time.

Inviting Students. After exploring the main features on ClassDojo, I see a notification indicating that I can invite students to join the ClassDojo class (*Figure 9*). When I click on this notification, it brings me to a page outlining the student sign-up process: student would go to dojo.me and register by either: (1) scanning a digital QR code with a unique class code; (2) manually entering a unique student ID code, or (3) signing in with a Google account. Since I have access to a mobile laptop cart, I could have students use this to sign into their ClassDojo accounts. Upon further reading, it seems ClassDojo links the student account to a single Google email, which means students would potentially re-use the same ClassDojo account next year. I wonder to myself: *will the data I track this year still show up next year for the teacher*? I look back at the screen, and notice that students have the option to customize their monster avatar, but only after their parents provide their email to confirm their consent. More importantly, however, I want to make sure there is an easy way to communicate with students using ClassDojo. On the top banner there appears to be two communication methods: “Message” and “Stories.” These

look interesting but I also want to find out how I can connect with other teachers in my school who are already using ClassDojo.

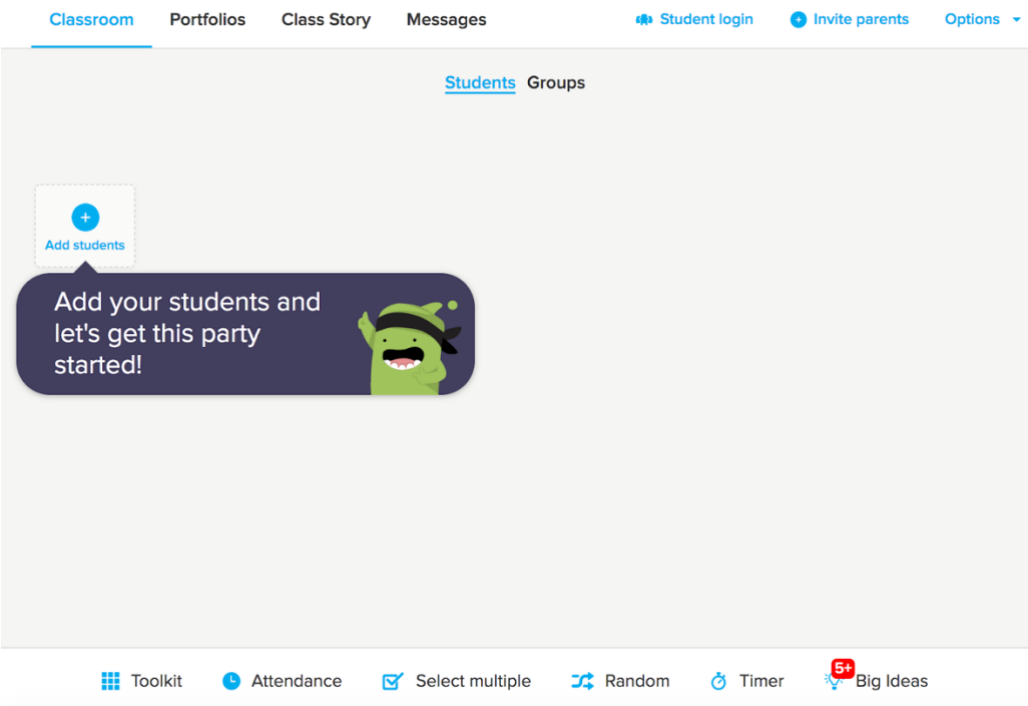

Figure 9: Adding students into ClassDojo

Collaborating with Teachers. To search for my teacher colleagues, I select "Join a school" in the right-column of the main Classroom dashboard. This brings me to a page that requests I input a school name or location. As I begin typing out my school name and city, I notice a list of suggested schools based on the similarity to my school name. Next to each suggested school name there is also a number of how many verified teachers are signed up for ClassDojo. I select my school in the list and see a warning that I must first verify my identity by entering my school-assigned email. After entering my work email, I see a message indicating that I must now wait for approval from the designated school administrator (called the "School Mentor or Leader") in ClassDojo. In the meantime, I will

wait and explore ClassDojo further. The page shows I can still add co-teachers or teaching assistants by sending an email invitation code. From there, it appears co-teachers can also award points, share updates with parents via Class Story, or review student reports.

Portfolios. The next option in the top navigation banner shows "Portfolios." I click on the page and see that it is a place to share activities, images and links with students and parents. Here I can also choose "Create activity" to assign class work to students. This gives me the option to set up an Activity, describe the instructions, and allow students to post or submit their responses as a text entry, video recording, photo or drawing. It appears that once students login and post their activity, I will have to manually approve them before they are published on the Portfolio page for students and parents to see. The top section of the page shows statistics for how many entries have been approved, are pending approval, or not yet submitted. The left-hand column also allows me to filter submissions or activity by student.

Class Story and Parent Invites. The next feature appears to be Class Story. The page is set up like a social networking platform, with a field to share photo, file, recording or event with parents. This is a good way to share photographed moments and class events with parents. In order for this feature to be useful, the parents will have to install the app on their phones and accept the email invitations to join ClassDojo. As the teacher, I will need to send out parent invitations from ClassDojo (with parent codes) to confirm that we are connecting on ClassDojo. I can see a visible "Invite parents" link at the top-right corner of each ClassDojo page. When I click on this link, it gives me two options (*Figure 10*): download an automatically-generated, print-ready invitation with each students' name, a

letter to the parent, and a unique parent code. The second option is to manually enter the parents' emails or phone numbers manually line-by-line.

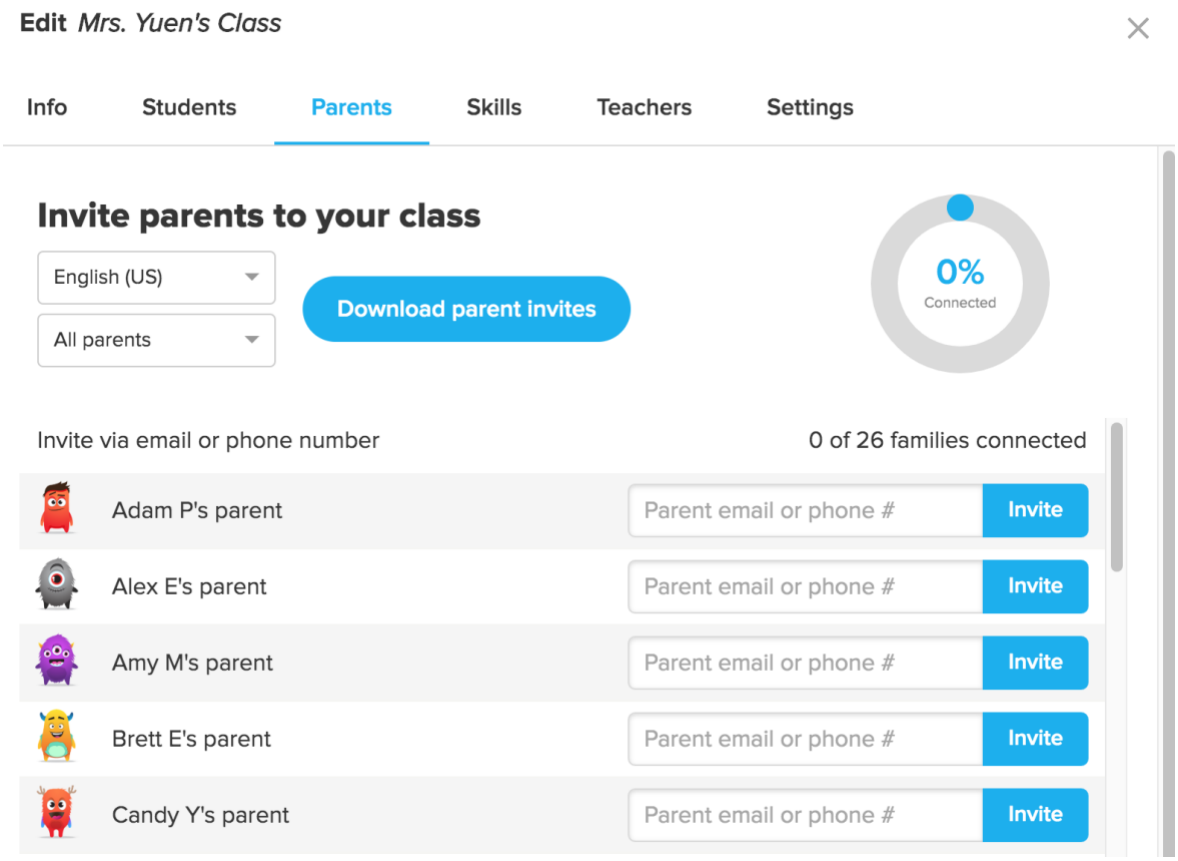

Figure 10: Inviting parents to use ClassDojo

Once parents have accepted the invites, they will be able to see any student's Class Story post that I have approved and add public comments (*Figure 11*). As the teacher, I will be able to moderate or delete posts as necessary, but a lot of time would be spent reviewing and approving posts if I use Class Story regularly.

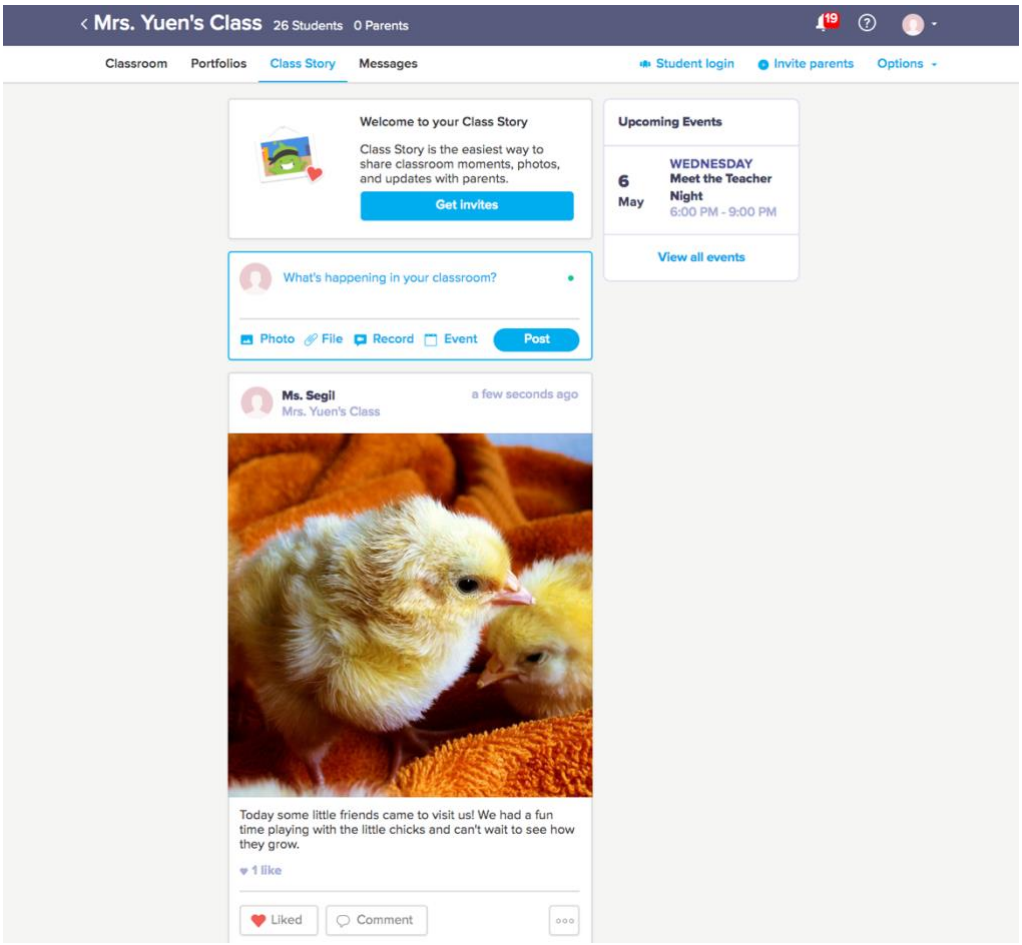

Figure 11: Viewing Class Story posts and events

Messages. The final option on the top banner is the "Messages" feature. This gives me the option to send instant messages to all parents at once, or to individual parents. The ClassDojo mascot also suggests that all the messages can be translated into over 35 languages, which could prove helpful for parents whose English is a second language. I also have the option to set "Quiet Hours" so that I will not receive ClassDojo notifications during a set time frame or during the weekends. This reminds me of my phone's "Do not disturb" mode. I also see an option to download messages from parents, which could be useful if I ever need to refer back to previous communication. It would also serve as a

record of communication in case there are any discrepancies. Perhaps I should streamline communication with parents on ClassDojo so that there is a clear record of everything. I could also continue to use my school email or other school platform, but ClassDojo is a multifunctional system that might be more effective at reaching students' parents on their phones.

Reports. Under the *Options* dropdown menu, I notice a few options to "Edit class, View reports, Connect students, Add co-teachers, Reset bubbles or Display settings". I've already added students to the class, and I'm curious what type of reports ClassDojo has. Clicking on the "View reports" option brings me to a page with a "Donut" chart (*Figure 12*).

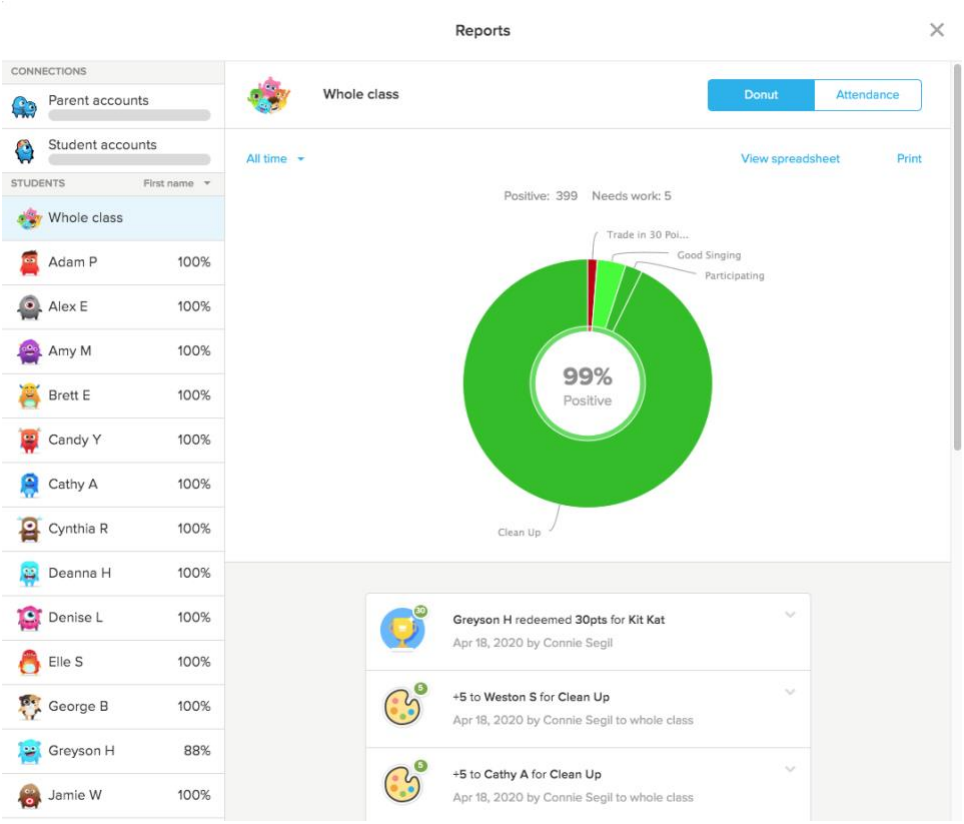

Figure 12: ClassDojo behaviour reports

The chart shows a snapshot of the ratio of positive to negative logged behaviours. On the left, there is a bar showing the number of verified or linked parent and student accounts. Below there is a list of status bars for individual students. While there is a list of logged point changes, there does not appear to be many types of other reports. Looking at the top again, I see an "Attendance" tab next to the "Donut" tab. Clicking this new tab opens up a weekly calendar report of class attendance (*Figure 13*). This can come in handy when I need to quickly find out when a student has been away.

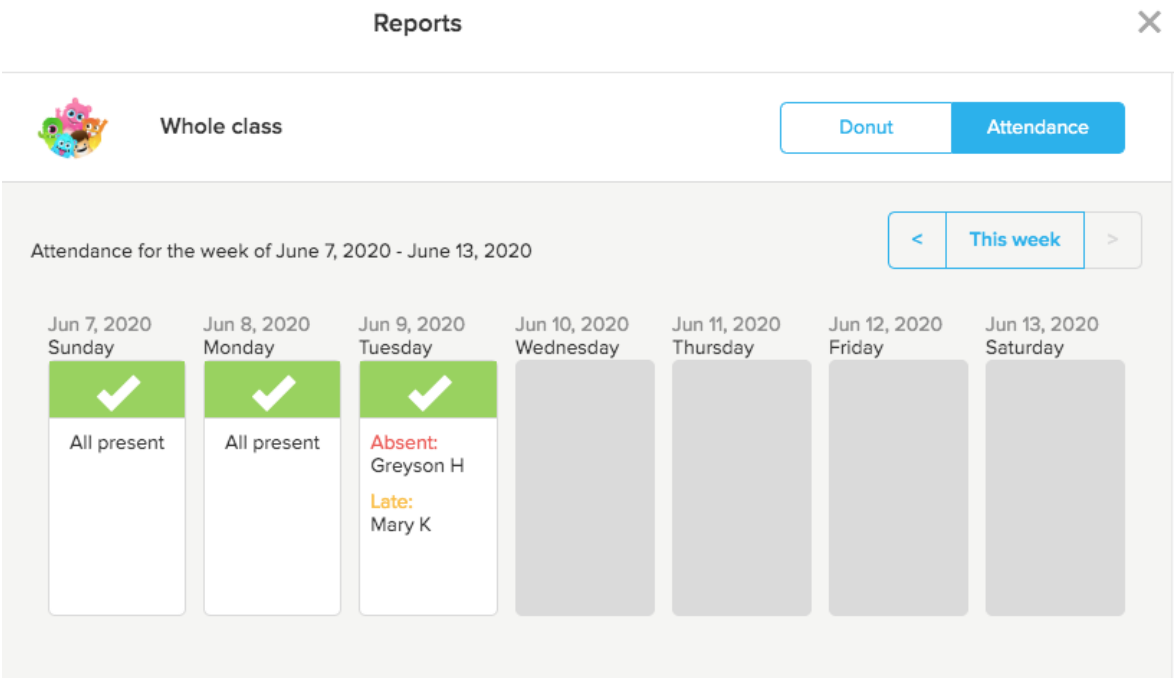

Figure 13: ClassDojo attendance reports

Closing Thoughts on ClassDojo Interview. While ClassDojo offers a plethora of options, I will start by trying out some of these basic features for one class and see which ones suit my classroom needs. There is a fair amount of initial setup with inputting student

names and customizing skill points, and I will still need to figure out how to introduce this to students and parents if I decide to use it for a longer period of time.

Interviewing Subjects: Teacher Profiles

Participants. To collect a wide variety of in-depth experiences and perspectives, five Elementary (K-6) teachers were recruited within the Edmonton Area. Understanding that teachers had the right to withdraw at any time, I recognized that at least 3 of the 5 teacher interviews would be required to conduct a quality postphenomenology analysis.

Beginning in May 2019 I conducted in-depth classroom observations and interviews with five elementary teachers across two school districts. With the exception of two teachers volunteering from the same school, most of the participants represented a unique school mission, context and community/neighbourhood. Each school had varying levels of access to resources, taught different languages and had different accommodations for special learner needs. Furthermore, each school consisted of diverse student populations with varying backgrounds.

Participation was completely voluntary, and each teacher had current experience with using ClassDojo in the classroom. For each participating teacher, I spent one to two days observing regular classroom activities, noting any unique class features, the classroom setup, and the teachers' use of ClassDojo across subject areas and time periods. Throughout the observational period, I kept in mind that ClassDojo has multistability across different use cases, and employed researcher reflexivity to reduce personal biases in the research. Following the observation day(s), I conducted a 45-90 minute semi-structured interview with the teacher using sets of open-ended interview questions. All interviews

were (audio) recorded with the permission of the teacher, and then I played back the recordings to create transcriptions (with all identifying information removed shortly thereafter). Prior to analysis, all names were replaced with pseudonyms to maintain confidentiality.

A quick overview of the teachers (using pseudonyms) who participated in the study include:

- Mrs. Erickson is a teacher (8+ years) who teaches K-6 music and Grades 4-5,
- Ms. Jones is an experienced teacher (20+ years) who teaches Grade 1,
- Mrs. Tracy is an experienced teacher (20+ years) teaching a Grade 2 bilingual class,
- Mrs. Lee is an experienced teacher (15+ years) teaching Grades 3-4,
- Mr. Stewart is a new teacher (1+ year) who teaches Grade 5.

Detailed teacher profiles are provided later in this chapter to aid in the contextualization of each classroom setting.

During recruitment, each participating teacher was asked via email to complete two short pre-interview activities about their teaching on their own time (see Appendix 1: Teacher Pre-Interview Activities). These activities included creating a diagram, timeline, or other visual aid to represent an experience, lesson or idea related to their teaching practice or classroom setup using ClassDojo. Due to a short time frame (less than 2 days) between recruitment and the classroom observation day, only the first, second and fourth teacher completed the Pre-Interview Activities, whereas the other two teachers were pressed for time and unable to do so. To mitigate this issue, I made sure to ask redundant

Teacher Interview Questions that addressed the same topics or ideas included in the Pre-Interview Activities (e.g., Prior teaching experiences during career, class schedule and ClassDojo use during a typical week.)

Teacher Profiles

The following section outlines descriptive profiles of the five participating teachers, their classroom environment, and general uptake of ClassDojo:

Mrs. Erickson. Mrs. Erickson has been teaching cumulatively for about 8 years in a part-time and full-time capacity, moving from school to school each year. Last year she moved to a smaller school in a lower socio-economic status (SES) neighbourhood. Originally trained in mathematics education, she has now been assigned to teach K-6 Music in addition to Grades 4-6 Second Language classes. A colleague has been assisting her with compiling music lessons to teach the curriculum.

Each of Mrs. Erickson's classes average about 26 students per class. As the school's sole music teacher, Mrs. Erickson does not have a homeroom like many of the other teachers— rather, as a specialty subject teacher, she finds herself moving back and forth between two main classrooms: a music room and a regular classroom. As each class block lasts about 50 minutes, she is able to switch subject matters quickly and accommodate for impromptu changes to work around other homeroom teachers' schedules.

Her music class began with lessons at the front of the room, where students sit on the carpeted floor, and then they gradually moved around the classroom to engage in a variety of musical activities. For example, Mrs. Erickson would teach some musical

concepts using the interactive white board, and then have students move to the instruments located on benches at the back of the room, or dance in-tune around the entirety of the classroom. In her Second Language classroom, Mrs. Erickson moves to another classroom with rows of desks and tables. She uses a combination of videos, live music, ClassDojo and other online resources. During recess breaks, she opens up her classroom for students to practice singing or constructing props for student plays.

Mrs. Erickson first heard about ClassDojo last year after observing a supply teacher use it in the classroom, and decided to try it out in her own classes. This year, Mrs. Erickson continued to use ClassDojo regularly for all her Grade 1 through 6 classes, with the exception of her kindergarten classes, as she found ClassDojo to be more distracting for very young students. Her unique uptake of ClassDojo includes allowing students to customize their own avatars at the start of the year, utilizing the *Mindful Moments* ClassDojo video series, and at the end of each class, she tells students to "form a train" with a *conductor* and *caboose* (front and back-end students) and awards points for forming a line quickly. She uses ClassDojo primarily for attendance and classroom management through the ClassDojo points system (adds and deducts points), and shares the ClassDojo points only with her students, not parents.

Ms. Jones. Grade 1 teacher Ms. Jones has been teaching full-time in Elementary schools for over 20 years, and has been in the education field for most of her life. She has been teaching in the education system before technology proliferated in the learning environment, and is a bit shy about experimenting with ClassDojo-- although she is interested in learning about integrating iPads and Chromebooks into the classroom.

Ms. Jones' classroom is set up with the main area lined in rows of paired desks, with a small table in the back next to the cubby-holes, and a small reading area off to the side. When students come in, they walk past the front projector screen and "check in" their ClassDojo avatar for attendance. Her unique uptake of ClassDojo includes the use of customized Positive Skill points for her students (e.g., "Magic Mess Point").

Last year she learned about ClassDojo through her educational assistant (EA), who used it as a reward system to motivate students to behave properly. As this is her third consecutive year teaching Grade 1 students, she has opted to continue using ClassDojo as a tool in her classroom, but acknowledges that she uses it on an intermittent basis. For the most part, her ClassDojo uptake involves taking attendance, rewarding occasional ClassDojo points, and deducting points for off-task behaviour. She believes that Grade 1's are a bit young to understand technology tools, and expresses her challenges teaching a class with numerous English Language Learners.

Mrs. Tracy. Mrs. Tracy has been teaching for over 20 years at a large bilingual elementary school, and has been using ClassDojo for over a year. She is comfortable using other classroom technologies such as the interactive white board and has used online games in the past to complement her lessons. This year she is teaching Grade 2 classes across different subject areas.

In her classroom, Mrs. Tracy has rows of individual desks lined up in the central part of the room. Two large whiteboards and a moderately-sized projector screen are displayed at the front. Off to the side there is a reading corner with a teacher chair and

paper flipboard stand. Individual student folders are set up on the wall next to the teacher's desk.

Mrs. Tracy previously used different types of reward systems including stamp charts. She learned about ClassDojo last year through a colleague who described the positive impact it had on his students' chatty behaviours, and then she began using it in her classroom during the middle of the school year. Currently, she uses the ClassDojo points system only for rewards on a weekly basis for specific activities such as homework checks. She allows only students to see their points on ClassDojo, and uses a separate platform to communicate with parents.

Mrs. Lee. Mrs. Lee has been teaching for over 15 years. For the past few years, she has been teaching in the same school in a large, affluent neighbourhood. Mrs. Lee has 26 students this year, and this is her first time teaching a split Grade 3 and 4 class in a bilingual school. She finds teaching the Grade 3/4 split-class challenging as it crosses over two grade divisions (i.e., Division 1 is K-3; Division 2 is 4-6).

Mrs. Lee first learned about ClassDojo 6 years ago through a colleague at another school. She has been using ClassDojo throughout this time, and is considered a ClassDojo mentor because she likes to experiment with new strategies and technologies, and initates ClassDojo discussion meetings with 4 other teachers.

Mrs. Lee's family grew up in the same neighbourhood as her school, so she shared a special attachment and nostalgia with the place. She feels well-supported by the current school administration and agrees with the values and priorities of the principal. She believes building student relationships are key to teaching and learning.

Mrs. Lee's classroom incorporates flexible seating plans where students can choose where they want to work during independent work time and during some of the lessons, provided that they are on-task. Since she is teaching a split-grade class, Mrs. Lee is constantly on her feet, moving between stations set up for reading, group work tables, individual tables, foam-tile floors, etc. There are a variety of tangible items provided for students such as a medicine ball, pillows, cushions, shorter chairs and a science corner set up for plants by the window. Next to her desk there is a wall filled with student artwork, and just below, a jar labelled "ClassDojo Ballots" filled halfway with students' entries.

Mrs. Lee's first impressions of ClassDojo are positive: she says students were excited to have a market of prizes and rewards, and that parents were enthusiastic and receptive to the ClassDojo messaging system (i.e., they all signed up using the parent codes). Apparently some parents told her they preferred the simplicity of already being signed into the ClassDojo app, and reviewing their children's school activities at the end of the day, rather than checking their email inboxes (often cluttered with other personal or work-related subjects). Mrs. Lee says she enjoys using ClassDojo to highlight positive behaviours and share a glimpse of learning activities and student work with the class and parents. She feels that ClassDojo builds a sense of community beyond school hours, but didn't add more time commitment to her day as she made a habit of only responding in ClassDojo during school hours.

Mrs. Lee indicated that she has mentored other teachers, educational assistants and even some parents on how to use or access ClassDojo. She says at the start of school, she sends all the parent and student code information home along with an Agenda and Teacher

Introduction. She also made a point of copying the Privacy Statement from the ClassDojo website so that everyone would be aware of the security policies in place. While the principal doesn't use ClassDojo, she knows of 4 other teachers who use it on a learn-as-you-go basis, and sometimes they will discuss it amongst each other. Most teachers utilize the ticket system, and she recounts another colleague who also hosts class parties when students obtain a certain number of points.

Mr. Stewart. This is Mr. Stewart's second year teaching Grade 5. He teaches a second language, as well as the core subjects to his twenty-five students, who are predominantly male. Mr. Stewart considers himself somewhat savvy with media and technology, and uses it in different capacities as part of his teaching career and for his own personal interests. He values technology and its ability to facilitate communication between people, particularly the way in which it connects him with students' parents. He easily task-shifts between multiple mobile devices, opting to stay connected and organized using apps and resources on the Internet.

Mr. Stewart has a very sleek, professionally-designed class with musical notes and pop-culture references hanging from the ceiling and walls. At the front, two whiteboards are covered in writing. The room is also furnished with a projector camera and a mobile laptop cart off to the side. A large irregular-shaped table is set up in the back corner of the room, and paper-mache projects are peeking from student cubbies along the back wall. The ClassDojo reward system is set up to look like a pocket calendar, with colourful cut-out construction paper lettering and printed pictures. There are plants arranged throughout the classroom, and plenty of light coming through the windows. Mr. Stewart organizes

students' desks in groups of three, with plenty of moving space in between for him to walk through.

Using a clip-on microphone, Mr. Stewart projects his voice and gesticulates often to attract students' attention during lessons. Most of the interactive activities in the classroom involve students working in smaller groups of three, then sharing their findings with the whole class. The classroom is filled with bustling energy, and Mr. Stewart transitions quickly from one subject area to the next.

Chapter 5: Findings and Discussion

Study Findings: the ClassDojo-Teacher

Using an iterative data analysis process, I first organized my reassembled posthuman anecdotes using broad theme categories based on ClassDojo's functionality as a point system, data record system, and communication system. Over the course of the year, I continually employed postphenomenology techniques of discerning variations in ClassDojo use-cases, exploring the mediations of human-technology-world relations, studying breakdowns and re-configurations, unravelling socio-material translations, and thematic analysis. This analysis-refinement process guided me to the realization that my original theme categories constrained my reflections on the multistability of ClassDojo across different contexts, particularly with respect to identifying the taken-for-granted aspects or habits of using the technology. As a result, I removed my original theme categories and opted to organize each reassembled anecdote as a unique, standalone description of the teachers' lived-through experience. I analyzed each posthuman anecdote independently and created a comprehensive table which tagged recurring ClassDojo themes or keywords. Thus, in the following chapter, I organized my reassembled anecdotes loosely by similar thematic concepts to guide the flow of my analysis process, but integrated pedagogical and ethical implications throughout as they naturally arose in each interaction or passage.

These thematic groupings loosely respond to Research Question #1 (*How do K-6 teachers use ClassDojo to facilitate their teaching and students' learning?)*, which aims to survey each teacher's unique uptake of ClassDojo. For example, I examined which features

are utilized or discarded/ignored, and the creative ways in which ClassDojo was implemented in each environment. By exploring the underlying scripts and relations between the teacher and ClassDojo, I also revealed the taken-for-granted attributes or habits of the technology and the variant applications of using this classroom management tool to support teaching in the classroom.

Based on teacher observations and interviews, I also gleaned insights regarding how teachers felt their use of ClassDojo affected or changed their teaching practice or student interactions, for better or for worse. The implications of these findings roughly corresponded to Research Questions #2 (How do teachers perceive the impact of ClassDojo on their teaching practices, interactions with students or parents, and students' learning?) and #3 (Based on their experiences, what insights can current users of ClassDojo share with other K-6 educators?), which examined teachers' perceptions, capacities and experiences with ClassDojo.

In this chapter I also detail each teacher's perspective and experience of ClassDojo through the use of reassembled anecdotes (based on classroom observation and interview data; *anecdotes are indented and italicized), as well as direct quotes extracted from teacher interviews. All teachers reflected on some pedagogical and ethical aspects as they relate to ClassDojo throughout their classroom observation period or interview. In these instances, I have woven in ethical considerations (Research Question #4: From a postphenomenological perspective, what are the ethical considerations of ClassDojo?) drawn from the teacher interviews as well as insights based on my personal classroom observations. As we proceed through this section, I draw upon postphenomenology

concepts by describing *how* the inextricably-connected network between actants (i.e., teacher-user, ClassDojo-technology) function as a ClassDojo-Teacher *hybrid*. Framing this relation as a ClassDojo-Teacher *hybrid* will help set the stage for the variant interpretations of the lifeworld (i.e., reality) and reveal the technology's multistable nature.

ClassDojo Point System Co-acting as a Pavlovian Signal

> *As Mrs. Erickson adds a ClassDojo point, an uplifting chime is played through the classroom speakers. Immediately the students sit a little taller, turn their attention towards the teacher, and lower their voices to a whisper -- all quietly acknowledging the familiar sound.**

The chime sound in ClassDojo draws students' attention back to the ClassDojo points system and its meaning in the context of their classroom life. Each time the chime plays, students are reminded that their behaviours are being monitored, and of the ongoing opportunity to obtain points for behaving appropriately. In this instance, the ascending "positive" chime brings these 5th grade students to collective attention and order. Their teacher is watching, and at least in this moment, Mrs. Erickson is signalling her approval of what she is observing among her students. The students respond by sitting straight, quieting down, and turning to their teacher. It is hard to know if the students are hoping to obtain more points by falling into line. But it is clear that the chime has provoked this sudden collective change in demeanor and body language. The students are aware that a classmate has just received a ClassDojo point for demonstrating "attentive listening" behaviour by facing the teacher.

The students' immediate response to the ClassDojo system can be compared to John Watson's (1924) idea of *classical conditioning*, which was inspired by earlier works carried out in Ivan Pavlov's studies. Watson surmised that emotional responses are patterns formed (or "learned") through reinforced associations to a particular stimulus such as a bell chime. Although Pavlov's work was carried out on dogs, Watson famously claimed that the same could be applied to human beings, declaring: "Give me a dozen healthy infants, well-formed, and my own specified world to bring them up and I'll guarantee to take any one at random and train him to become any type of specialist I might select--doctor, artist…and thief, regardless of his talents...tendencies, abilities…[and] race" (Watson, 1924, p. 104). ClassDojo's design with coordinated sounds and graphics are similarly curated towards classical conditioning and behaviourist notions. ClassDojo plays sounds that both teacher and student quickly come to associate with positive or negative feedback, as well as the start or end of particular activities (e.g., focus or active music playlist). These sounds act as an extension or amplification of the teacher's signals (i.e., stimulus) that appear to elicit specific response-behaviours or emphasize a transition in classroom tasks. The students' automatic response, triggered by ClassDojo's audio cues, is elicited by the teacher's decision to award or deduct a point at any given moment. While a teacher might normally rely on her ability to whistle or clap her hands to draw students' attention, now she relies on ClassDojo to produce a Pavlovian signal to the class. That is, the teacher is *enacting* classroom management with ClassDojo's functionalities. A postphenomenologist would consider the teacher's actions and ClassDojo's scripts as jointly enacting as a *ClassDojo-Teacher hybrid*. Hybridization, or the re-configuration and derivative of

heterogeneous beings/elements (Oxford Dictionary, 2011), creates new composite meanings and adds subtle nuances to interactions. With ClassDojo, the teacher (i.e., the Classdojo-Teacher) mobilizes and enacts a Pavlovian version of classroom management, whether or not the teacher's implicit pedagogical values align with these structures. In using Classdojo, the Classdojo-Teacher simultaneously enrols her students in the classical conditioning scripts that this technology affords.

Delving further into the interwoven actions of the ClassDojo-Teacher hybrid, it becomes apparent that there is no software setting for teachers to turn off ClassDojo sounds, although a teacher can choose to turn off the classroom speakers or disable the audio from their computer/device until needed. In this study, all five participating teachers kept their audio on for the entire duration of the school day. As an invariant setting in ClassDojo, some teachers may not have considered the impact of sound associations on the young listener, or the implications of silencing the audio. The absence of a switch to quickly disable sounds within ClassDojo reveals a limiting feature within the system, suggesting that ClassDojo, while fully-integrated with audio-visual cues, inhibits a teacher from utilizing their own sound cues such as a whistle or clap to capture the class' attention.

In Pavlovian fashion, the ascending and descending chimes playing with each ClassDojo point can strengthen a learner's positive or negative association and perceived significance of an action. As a result, hearing a descending chime, for example, may inadvertently lower class morale when students are aware that points are being deducted

(not necessarily from them, but from others). Mrs. Erickson noted the sound associations in ClassDojo:

> "I decided to use ClassDojo with all my classes just to see how it applies across different grades and age groups. I figured this system might appeal more to younger groups, especially since ClassDojo uses sound cues to *grab students' attention*. I also appreciate the anonymity of ClassDojo in the sense that I no longer have to call out a student's name—instead, *I let the sound cues act as stand-alone reinforcers*. Students who are misbehaving usually know what they're doing, and I see them *responding quickly to sound* cues. It seems the older students lose interest as time goes on, but it still serves as a *musical reminder* when the entire class is getting too loud. The ClassDojo point system is also a motivator for students to work together towards a common goal and reward." (Mrs. Erickson, Interview)

Teachers like Mrs. Erickson may appreciate ClassDojo's incorporation of auditory elements. As she suggests, the chimes are a stimulating way to attract students' attention, and further, the sounds support the teacher's intention to establish routines based on auditory cues. As Mrs. Erickson points out, the audio and visual cues appear to work well to provide an appealing system to manage student behaviours. The "anonymity" factor, or the fact that she can use sounds to signal all students' about their behaviours, in her view, is a better option than publicly singling out one student. She connects this use of sounds as an effective way of providing a "musical reminder" to the whole class, in much the same way a teacher might turn off the lights to signal students to quiet down, rather than try to call out to all her students. In Mrs. Erickson's view, the audio-visual cues, combined with

the gamified token economy system, are appealing attributes of the ClassDojo system that amplify students' care about behaving well, while also providing ways to collect points and redeem desirable rewards in return. Mrs. Erickson believes that ClassDojo's system allows her to enact her "announcements" and "reinforcements" to effectively reassert her position of authority and her goal to set up a conducive learning environment.

ClassDojo Point System as a Recognition Platform and Mediator of Class Flow

> *During music class, Mrs. Erickson pulls out a smartphone from her pocket, strolls over to the piano, and lays the smartphone on top. Standing at the piano, hand on the keyboard, she plays a few notes. She sings the first verse of the song, pauses, and gestures to the students to echo the verse as she plays along on the piano. The students echo the verses line by line. Then, Mrs. Erickson picks up the smartphone and remarks, "I like how Anna is opening her mouth very wide to project her singing voice so that we can all hear. You get a ClassDojo point!" In the ClassDojo phone app, Mrs. Erickson taps on Anna's monster avatar and selects the "Good Singing" ClassDojo skill to award Anna one point. An uplifting chime is played through the classroom speakers. On the classroom projector screen, Anna's ClassDojo point total goes up.**

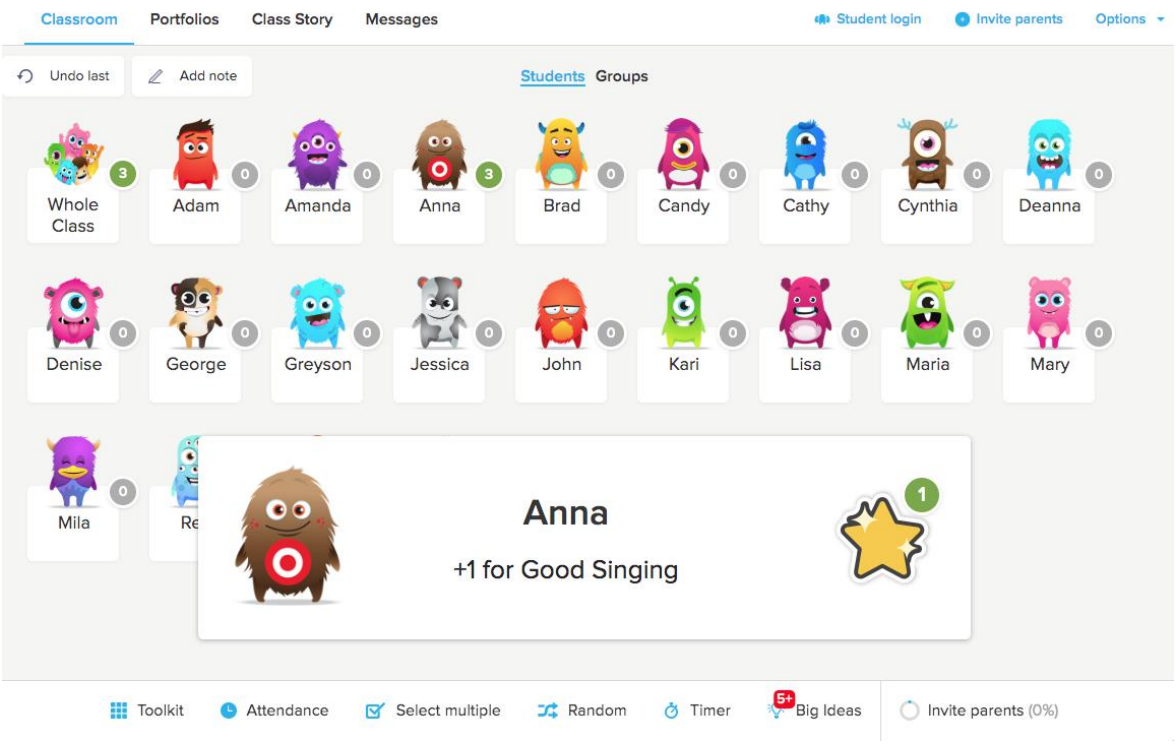

Figure 14: ClassDojo interface for awarding points

The teacher pauses to recognize a student for good behavior and provides feedback on why the behaviour is deemed "good" (See *Figure 14*). With the ClassDojo app within arm's reach and readily accessible, the teacher is able to back up her feedback with a ClassDojo point, further emphasizing the value and desirability of the student's behaviour. The cross-compatibility of ClassDojo, that is, its transferability/accessibility across different devices (e.g., projector screen, tablet device, mobile phone) invites and thereby inclines the teacher to apply ClassDojo during various contexts and classroom activities. Simultaneously, the capacity of the ClassDojo app to be used on mobile devices and update information in real-time can build the expectation that teachers would update points and log behaviours frequently as they occur. This constant connection and record-keeping between the teacher and ClassDojo strengthens the ClassDojo-Teacher embodiment and

hermeneutic relations. Using Ihde's human-technology relations framework, each time the teacher issues a Classdojo point, she is extending her commanding voice [Teacher-Classdojo → Classroom]; each time she accesses the ClassDojo app and sees her students in terms of an avatar, or chooses from a menu of preset behaviors, she is seeing the her classroom of students in terms of the overlay provided by Classdojo (see *Figure 1*) [Teacher → Classdojo-Classroom].

By associating a numerical ClassDojo point with a specific behaviour, teachers can readily enumerate students' good behaviours and infractions, as well as compare points across students. The ClassDojo point system (or ClassDojo-Teacher) also offers students a persistent reminder of the possibility that they can perform the same action and potentially receive a similar result if the teacher notices. In this way, the ClassDojo point system serves as an accountability tracker that can be scaled up or down to look at a student's short-term or long-term behaviours. Combined with gamified elements, graphics, and musical chimes, the ClassDojo-Teacher draws attention to and spotlights students' outward behaviours. Thus, the ClassDojo point system acts as a broadcasted feedback system for students to identify, adapt, and self-regulate their own behaviours or expressions.

A ClassDojo point system can also invite other teacher interpretations or actionable possibilities. For example, a teacher might decide to compare a class's total points from one day to another as a behavioural reference point to see if students' behaviours deviate during certain times of the week, or as a form of reflective teaching practice. ClassDojo points— a simplified and translated measure of behaviours using numerical values— might offer some insights about individual performance as the ClassDojo points

are comparable across students and classes. In this sense, ClassDojo reinforces an ongoing "grading" system since teachers can capture and "assess" students' actions during class. However, ClassDojo does not provide any additional note-taking or comment box to input qualitative statements that could help contextualize why a point was rewarded in the first place, or how a situation transpired. Instead, only preset simplified labels are utilized in ClassDojo: Add points for "Participating" or "Finishing Homework" or "Helping Others", and deduct points for "Getting Off Task" and "Interrupting." These predefined behaviours are often set up prior to the start of the school year, and although a teacher can edit custom skills or behaviours associated with ClassDojo points, the default view presents teachers with a narrow selection of actions for rewarding or deducting points.

The use of point-based criteria could also inadvertently encourage teachers to become more sensitized or reactive to instances of performative behaviours happening in the classroom-- as a result, the ClassDojo point opportunity could enable one's rationalization or decision to devote attention to particular students. This outcome has been noted in an empirical ClassDojo study by Krach, McCreery and Rimel (2017). In this study, they compared the use of behaviour management systems in the form of a ClassDojo-integrated classroom, an in-class paper-pencil charting method, and a control-group class with no behaviour management system. Results demonstrated that teachers using the ClassDojo system were significantly more likely to log positive behaviours, whereas teachers using a paper-pencil logging system recorded more negative behaviours (Krach, McCreery and Rimel, 2017). These findings suggest that using ClassDojo may in fact incline teachers to look for more examples of students enacting positive behaviours, or

divert teacher's attention towards observable behaviours (rather than reference other historical, intangible or internal attributes). In her interview, Mrs. Erickson mentions:

> "One of my favourite things about ClassDojo is that it [enables] me to catch kids being good that I wouldn't normally catch." (Mrs. Erickson, Interview)

Mrs. Erickson explains that ClassDojo is a way for her to acknowledge positive behaviours from students she may not necessarily notice because they are "always doing a good job" under-the-radar. In this sense, teachers may perceive ClassDojo as a way of creating a more equitable environment for students to be recognized. One caveat, however, is thinking about the types of "positive behaviours" that are being encouraged and reinforced by a system like ClassDojo. While more good behaviours may be demonstrated in class, the ClassDojo points might be a means for students to "act out" certain behaviours in order to acquire points or seek teacher validation/approval, thus habituating a classroom culture of "performative behaviours."

Mrs. Lee elaborates on her decision to use ClassDojo as a token economy system to manage behaviours:

> "I've never been a fan of public displays of behaviour management...and I've posted student behaviour charts and used other behavioural management techniques before, so I wasn't sure about using ClassDojo at first. But then I realized kids need recognition...they need extrinsic reinforcement. ClassDojo now plays a huge role in class goal-setting and management, and my students were immediately drawn to it. I can incorporate my existing class plans into ClassDojo, and now it's much easier

to share online. I use ClassDojo to praise students all the time, and I think it's a good way to add positive reinforcement for students." (Mrs. Lee, Interview).

Mrs. Lee describes using ClassDojo *points* interchangeably with verbal *praise*. A teacher may feel that ClassDojo helps her recognize and promote positive behaviours in the classroom. She adopts ClassDojo as a behavioural management tool to relay messages to her students. Mrs. Lee concludes that ClassDojo generated engagement or motivation to change, and is a successful approach to convincing students to care about acting well; thus, she decided to integrate ClassDojo in multiple ways by fitting her existing plans into the token economy system. She also mentions that other behavioural management strategies and charts did not appeal to students in the same way, perhaps in part because of ClassDojo's online and digital nature (i.e., "easy to share").

In reflecting on the ways teachers use ClassDojo points, it is worth considering how ClassDojo's system scripts behaviourist-oriented classroom habits and practices. The ClassDojo point total is a cumulative summary of good minus bad behaviours, which imbues a naive philosophical understanding of how life works: that is, one's value in this world is based on a tallied quantity of good and bad behaviours, and as long as good behaviours exceed the number of bad behaviours, a society would consider that person a good citizen or role model. Since these good behaviours can be exchanged for a tangible societal reward, people might mistakenly attribute good deeds or actions as a redemptive commodity, thus changing one's perceptions, intentions, or morality. The enumeration of ClassDojo points in a classroom establishes the idea that judgment and decisions can be modified through a series of "trade-offs" (e.g. redemption through acts of kindness).

ClassDojo Point System Punctuates, Reinforces, and Enumerates a Teacher's Disapproval

> *As the students finish singing a verse, Mrs. Erickson declares, "I saw a student not behaving properly, so I deducted a point! You know who you are." A downward-trailing sound is broadcast on the speakers.**

Mrs. Erickson expresses her disapproval of an anonymous student's behavior and punctuates it with a ClassDojo point deduction. This act resonates across the classroom speaker system. By capturing and recording the student's infraction on the ClassDojo point system, the teacher's disapproval (or approval) is translated into a numerical point value in real-time. This point total becomes subsumed into a "running total" in the form of a single ClassDojo score, which are then translated again by the student in the form of the acquisition of rewards. In ClassDojo students have a number that reflects their "progress" or "standing" like a report card, but what do the points actually mean, and how is it translated? Does a high ClassDojo total equate to a "good student"? Does a low value denote a "disruptive student" or an "absent student"? In the case where a teacher does not deduct points for infractions, would a higher number of points suggest a student was well-behaved, or just performed proportionally more good behaviours than bad ones? ClassDojo's point system adopts a philosophical idea that you can compensate "bad deeds" for equally "good deeds." This idea of "you-scratch-my-back-and-I scratch-yours," or that things can be "made up for" reveals a theme of redemption where value is translated into points, and translated again into tangible rewards.

Furthermore, since points are tied explicitly to the teacher's anticipations or expectations of the class, other factors might also influence ClassDojo points such as a teacher's attentiveness towards vocal students over the quiet, cooperative ones. In turn, the ClassDojo-Teacher amplifies existing biases and classroom practices rather than opening up more opportunities for different learners.

Under other circumstances in Mrs. Erickson's classroom, if ClassDojo was not readily available, the teacher may have simply ushered a warning to the class and then moved on. While the teacher may be deducting points as an accountability measure, or as a form of punishment, the loss of ClassDojo points may de-incentivize other students from "standing out" or taking risks for fear of repercussion. In this instance, the teacher did not specifically call out the misbehaving student's name, which could mean the teacher wanted to give the student a chance to save face, or that the teacher chose one of many misbehaving students to serve as an example. In some ways, this could lead other students to feel unjustly punished as a whole class for the act of a one or few student(s). Another possibility is that the teacher is calling upon other students to reinforce positive behaviours and stamp out misdemeanors through the act of social pressure. By holding the entire class accountable, teachers can empower students to "develop good judgement" and help others stay on track.

This accountability, however, may come at a cost. Students' interpretation of the event could be that when someone is not behaving properly, the whole class receives an "anonymous" admonishment. Such measures may lead students to under-perform or avoid certain actions out of fear of judgement or loss of ClassDojo points. Would the

consequences still be the same without ClassDojo? Let's imagine the same scenario, but with ClassDojo extracted:

> *As the students finish singing a verse, Mrs. Erickson declares, "I saw a student not behaving properly -- you know who you are."*

The whole class may still be admonished for acting inappropriately, but without ClassDojo, the teacher's verbal disapproval is not punctuated by the additional loss of a ClassDojo point. A student may still feel discouraged for the fear of saying or doing the wrong thing, but the stakes seem even higher with ClassDojo in use because the points account for the student's action and are represented in a tangible way as an accumulated total. As a result, a formal ClassDojo points system may serve to amplify the idea that doing nothing at all may be a safe way to avoid losing points, thus discouraging students from acting spontaneously. This extra layer of classroom structure, management, and data permanence can cultivate a sense of apathy for some conscientious students who feel not only a decrease in personal agency, but controlled or limited to actions predefined by the teacher in ClassDojo. For other students who do not embrace a token economy system, ClassDojo may appear to be just another "policing" system that a teacher employs.

Additionally, with a class-wide token economy system in place, it is not hard to imagine that teachers inadvertently create a "loophole" in the system where students could corroborate and set up a "positive performance" for a teacher to witness. Knowing that ClassDojo points may be awarded, students who can find friends or classmates willing to "act along" with them may find themselves rewarded with even more ClassDojo points (and popularity). A teacher could argue that an increase of any positive behaviours from a

student sets a good role model for others, regardless of whether it was "performative" or not, and thus the ClassDojo system can still be considered contributing towards a conducive atmosphere and classroom ecology. Furthermore, since the control of ClassDojo points is managed directly and digitally by the teacher, it would be difficult for students to capitalize on the "tokens" (i.e., points) used in a traditional token economy system (e.g., physical coupons or tickets), where students might create their own sub-system or black market to trade physical tickets of their own volition.

ClassDojo Point System as a Manifestation and Reinforcer of Teacher's Values

> *As students work on their art projects, Ms. Jones proclaims: "The bell will ring soon, let's clean up...and put away your supplies. I'm giving away a Magic Mess Point for someone who cleans up quickly and quietly! Actually I'll pick two students this time."**

In this anecdote, Ms. Jones advises students to clean up quickly and quietly, and that she will be on the lookout for two students in the class to award a ClassDojo point. By providing some guidelines as to how students can gain points, and creating a special name for the accomplishment ("Magic Mess Point"), Ms. Jones hopes to motivate some students to establish a habit of cleaning up. She utilizes the customizable points system in a way that demonstrates her creativity and development of her own vocabulary around ClassDojo's behaviour-based structure of positive and negative points. In this sense, her use of language reveals a hermeneutic relation in which the teacher perceives or evaluates students' behaviours through the lens of ClassDojo. While the custom ClassDojo skill-point criteria can inspire teachers to expand on different ways to encourage positive

behaviours, it is difficult to discern if the teacher is cognizant of ClassDojo's behaviourist-based scripts, and how it may or may not ultimately align with her own pedagogical values and class activities.

Even though Ms. Jones indicates there is only a possibility that a student will be noticed and receive ClassDojo points, this behaviourist-based incentive may be sufficient in making students feel that completing this task would be meaningful and worthwhile. On the other hand, this reward system perpetuates an emphasis on using extrinsic motivators (i.e., tangible rewards and reinforcements) rather than encourage the development of students' intrinsic motivation. As Deci's (1971) study suggested, external rewards may be helpful for reinforcing students to act a certain way, but it can gradually replace students' intrinsic value and motivation in the long-term, particularly if the student begins associating the external reward with that action. Through employing a rewards-based criteria system like ClassDojo, the teacher may become more inclined to routinely look for observable traits in students that align with her own teaching beliefs about a "model student" (e.g., disciplined, quiet, fast) and thereby overlook other assessment indicators of student character, achievement, or performance.

ClassDojo Points System as a Teacher's Bargaining Tool for Collaborative Efforts

> *Mrs. Erickson eyes the ClassDojo dashboard, and announces, "By the way, our class is sitting at 49 points now, which is a lot lower than our daily goal of 100 ClassDojo points. Do you think we can bump that score up higher today?"* *

Mrs. Erickson enrols ClassDojo as an intermediary to encourage collaboration among students. She presents the ClassDojo class point total as a collaborative challenge

for students, and negotiates with her students by reminding them of their usual daily ClassDojo point goal. The teacher hopes that ClassDojo points will appeal to student desires, motivations (e.g., tangible rewards, social currency) or goal orientations (e.g., performance orientation, mastery orientation), resulting in greater individual and collaborative efforts. In their interviews, some teachers noted that students responded positively to such requests because ClassDojo points provide a specific, measurable, and attainable goal to work towards.

But while using ClassDojo as a bargaining chip for collaborative efforts may appear inconsequential, not all students respond to ClassDojo points in the same way. Depending on the existing dynamics between students, the student's individual mental/physical state, how close or far they are towards reaching the ClassDojo point goal, or the appeal of the available tangible rewards, this approach to negotiating behaviours may or may not be effective. Sometimes, it can even backfire. Take for instance a student who feels that the class does not "deserve" lower ClassDojo points: that student may act out more or give up on the system. Other students may be unaffected by the teacher's ClassDojo bargaining due to other cognitive or affective factors. This could ultimately cause a disintegration of teacher and student rapport, and of the value or meaningfulness of ClassDojo points. In one classroom, for example, I observed a teacher warning a disruptive student that he would lose a ClassDojo point if he continued misbehaving. The student paused momentarily, but then continued to shout louder and got up to pace around the classroom. While it is difficult to determine if the student was acting out in defiance,

boredom, or hopelessness, the teacher's reference to ClassDojo point deductions was not effective in altering the student's behaviour.

It is important to note in ClassDojo that there are two running point totals: one for the individual student, and another for the whole class. Arguably this two-systems approach helps students work towards personal accountability and collaborative goals. The "whole class" points total is the total sum of students' individual points collected over time. Therefore each student's individual contributions to the "whole class" point total is more apparent than if the points were averaged. In this way, ClassDojo instills the idea that individual efforts contribute to the greater benefit of the whole class. If, on the other hand, the "whole class" total was not the sum of students' individual points, but a separate category, then a teacher would have to identify and decide when each action is deemed a "team effort" as opposed to an "individual effort." In this case, a teacher may have to interpret actions in a more "black-and-white" manner.

Having both individual and collective goals may be perceived as a "fair" system of accounting for individual and group behaviours. Teachers can use discretion when deciding a given action warrants an individual or collective acknowledgement. During my classroom observations, more than half of the teachers would use the "Award multiple" option to award many students (or the whole class) points at the same time.

A teacher's integration of the ClassDojo system can also affect how a student can interpret the situation. In a scenario without ClassDojo, a teacher's denunciation of someone misbehaving can seem like a slight against the entire class and bring the overall mood down. In one classroom, I observed the whole class being told off and had to wait to

start an activity because of one student breaking the rules. Perhaps if ClassDojo points were used instead, the teacher could directly and discreetly deduct points from that one student.

ClassDojo Points as a Meaningful Reflection of Student Accomplishment

Mrs. Tracy recalls a poignant moment involving a student who had just returned to class after an extended sick leave:

"When the student saw his points on the board and discovered how low the number was compared to his classmates, he started crying. He felt that he had missed many chances to increase his ClassDojo points and was too far behind to catch up. He didn't want to be seen as the 'bad student with the fewest points.' That's when I realized my students actually take this system seriously, and I started to think about how to make the system more fair by resetting the points every month." (Mrs. Tracy, Interview)

One way to understand the meaning of Classdojo points for this student is in terms of Ihde's human-technology-world relations. In particular, Mrs. Tracy's student was seeing his world through a classroom world overlayed with ClassDojo. His avatar (a ClassDojo monster) and point tally have become a potent reflection of the student's identity and self-worth. ClassDojo is an environment, led by the teacher, and made meaningful through multiple interactions. In the language of postphenomenology, the student has developed a *hermeneutic relation* (Ihde, 1990) with ClassDojo whereby the student's understanding of his self-worth and relative class standing ("world") is perceived through "reading" and interpreting his ClassDojo point total. His relatively low ClassDojo point total translates as him seeing himself as a "failure" or "falling behind." The point total beside his monster,

publicly displayed along with the rest of the class on the ClassDojo "leaderboard," is now a source of embarrassment and shame. This leads to the question of what the accumulation of ClassDojo points represent: does it reveal student *progress* or *compliance*? Depending on when or if ClassDojo points are reset, does the number represent short-term or long-term gains? Does ClassDojo's point system cater towards certain achievement-oriented students (e.g., *performance*-oriented over *mastery-oriented* students)? Are the points an *accurate portrayal* of the student's quality of work and character? All of these questions are also contingent on the assumption that the teacher is observing students *equally* and fairly awarding points in the first place.

The student's grief led Mrs. Tracy to question the long-term impact of using a points system on her students' self-esteem and motivation. Reflecting on her use of ClassDojo in this way aligns with an *existential ethics* approach to technology use (Adams, 2020), whereby the teacher considers how ClassDojo may impact students' well-being and the quality of learning experiences. The discordance of her use of ClassDojo causes Mrs. Tracy to contemplate her teaching value of care about the student. She experiences a sense of cognitive dissonance as she attempts to reconcile how ClassDojo is integrated as a points system in her classroom, and how such a system may be affecting her students in unexpected ways. The teacher's questioning of how to balance ClassDojo technology reveals some developing insights on how she understands technology can amplify and reduce one's teaching practices. In this case, the ClassDojo points can help her identify trends or gaps in student behaviours over time, but it may also inadvertently cause her and others to perceive a student in a dichotomous way (i.e., this student is present or absent,

good or bad). The ClassDojo system also amplifies the significance of attaining points and performance-based goals, shifting the emphasis away from students' holistic development or progress in less measurable/tangible attributes. Reflecting on this incident, Mrs. Tracy said in her interview that she stopped regularly awarding ClassDojo points for attendance, and instead tried to award ClassDojo points more spontaneously based on positive behaviours she witnessed in class.

ClassDojo Points as a Token for Tangible Rewards

It is recess time, and a Grade 5 student approaches Mr. Stewart's desk:

> *"Mr. Stewart, I think last time I had enough points for a chocolate bar, can I have one?" Mr. Stewart nods and pulls up the ClassDojo tab on his computer screen. "Yes, Greyson, thank you for asking me during the break. Let me see...yes, you have saved up more than 30 points. [Mr. Stewart pulls open a side drawer stocked with assorted candies and chocolates]. Did you want a mini chocolate bar for 15 points...or for all 30 points you can have this full-size Kit Kat bar?" Greyson points at the Kit Kat bar and takes it. Mr. Stewart clicks on Greyson's avatar and then selects the "Give feedback" button. He chooses the "Redeem points" option and records the number of points and the specific reward given.* *

Noticing that they have accumulated more than 30 ClassDojo points, a student approaches their teacher to exchange their points for a chocolate bar. After cross-checking the student's points, Mr. Stewart suggests two redeemable prizes (i.e., chocolate bars) that are available. The student agrees to the trade-off and the teacher proceeds to redeem the points through ClassDojo by inputting the number of points to be exchanged for the prize

(shown in *Figure 15*). Mr. Stewart's uptake of ClassDojo exemplifies a token economy system in which ClassDojo points are traded in or redeemed for tangible prizes; This is not unlike a real-world system in which money is traded in for desirable goods and services. The student appears happy to trade in points for a tangible reward despite the fact it will lower his ClassDojo points total. Perhaps the student is not concerned because ClassDojo logs and displays his points as being "redeemed" not "deducted."

Mr. Stewart has already set the precedent that students must approach him about ClassDojo points during break time, not during class learning. In his interview, Mr. Stewart suggests that he does not want the ClassDojo system or rewards to detract from students' learning:

> "I tell my students they are only allowed to check their points or trade in [ClassDojo points] during school breaks….but I don't think using ClassDojo has really changed how I teach." (Mr. Stewart, Interview)

Here, we catch a glimpse of Mr. Stewart contemplating the ethical aspects of integrating ClassDojo: on the one hand, Mr. Stewart actively regulates the students' use of ClassDojo because he is concerned about the possible side-effects on student learning. On the other hand, he suggests the technology "doesn't affect his teaching" and is therefore "neutral" from an *instrumental ethics* perspective (Adams, 2020). This is an example of when ClassDojo brings to surface some of the tensions arising from an integrated token economy system and the flow of instruction/classroom teaching time. The ClassDojo points are intended to provide motivation for students, but the teacher's reluctance to allow students to redeem ClassDojo points at any time suggests that Mr. Stewart recognizes

some kind of negative impact resulting from focusing on ClassDojo during class time. Nonetheless, Mr. Stewart does not appear to have fully reflected on or is unable to articulate what the impact of ClassDojo could be on his own teaching practices.

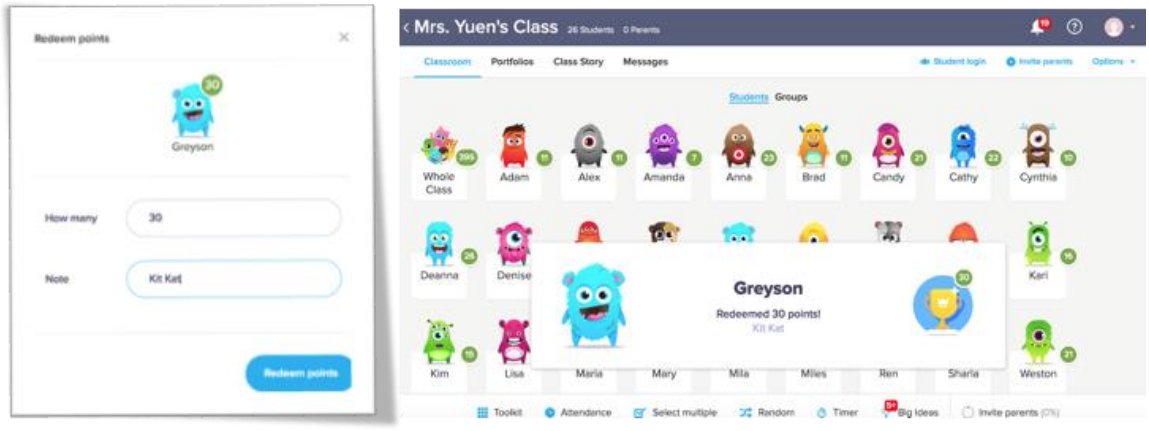

Figure 15: Teacher view when redeeming student points.

Because Mr. Stewart's students trade-in points for prizes, he does not reset the ClassDojo points (individual or whole class) at the end of a week or month. Instead, he revealed in his interview that he schedules a special "ClassDojo Marketplace" event every 3 months in which students can trade in ClassDojo points for exclusive rewards, small toys or items previously donated to him by other students (or parents). Mr. Stewart's approach to the ClassDojo Marketplace is organized similarly to an auction where students are shown an item, and the highest bidder trades in his or her ClassDojo points for that item. That is, he "recycles" other people's items as prizes to be bought at the ClassDojo Marketplace. Mr. Stewart says recycling and reusing is an important value he wants to impart with his students. He also encourages students to develop decision-making skills

based on their own preferences, such as waiting and saving up ClassDojo points for ClassDojo Marketplace rewards, or trading in points for smaller prizes more frequently.

Mr. Stewart suggests he also makes the system fair by recognizing that some students may be more shy or less proactive: He created an extra rule that if two students have the same number of points or both want the same item at the Marketplace, he will give the prize to the student who generally does not claim as many prizes. Once the excitement from the ClassDojo Marketplace has slowed down, and students are finished redeeming points, Mr. Stewart follows-up by giving the whole class feedback about their overall performance and behaviours, and works with students to set class goals for the next few months. I observed Mr. Stewart integrated a rather extensive classroom management system that builds on ClassDojo's branding and token economy structure.

Other teachers have a different take on ClassDojo points: As Mrs. Tracy suggests, providing tangible rewards proved to be challenging to upkeep.

> "When I give [students] points, I know I have to eventually buy them prizes. I have limited class money, so how can I buy prizes consistently? Without prizes the students aren't so interested [in the points]. There are already too many online games that students have access to, so ClassDojo alone won't hold their attention. I used to give away stationary items and books, but at some point I will run out of [prizes] that students care about." (Mrs. Tracy, Interview)

Mrs. Tracy questions the sustainability of ClassDojo by suggesting the system may become another gimmick or "distractor" for students who have interests in other online activities or games beyond the classroom. Over time, the novelty of ClassDojo may wear

off and students may be less engaged or interested in points. She also appears to have some reservations about how a token economy system might encourage students to work towards a goal for the sake of an extrinsic motivator, and the rewards may not appeal to students in the long term. At the same time, once the expectation of a reward has been created, it could be difficult to undo. She then describes the fatigue that has set in over time for the ClassDojo-Teacher: she realizes the system requires constant upkeep with rewards and time allocated towards updating the points and tangible rewards.

While the teachers in this study all chose to integrate ClassDojo as part of their classroom, sometimes teachers use the app because it has been mandated by school administrators, or serves as a contingency approach for a system previously used in a class. Ms. Jones explained that while she sees the value and meaningful features afforded by ClassDojo, she struggled to locate features on-demand and felt pressured to continue a system that had been implemented at the beginning of the school year:

> "Last year I had an educational assistant who helped me set up ClassDojo and award points or prizes. The students seemed to really like it. It's a lot of maintenance work to stick to the [points] system, and ClassDojo seems effective for motivating students at the start of the year, but less so as we get closer to summer. I think students start off by wanting external gratification and rewards for doing good things, but I've been reading about intrinsic motivation for kids, and trying to move away from using the points system all the time. " (Ms. Jones, Interview)

Ms. Jones describes feeling some pressure to continue a system introduced in her classroom, despite the fact that the system perpetuates extrinsic rewards -- a philosophy that is at odds with her own teaching beliefs. She contemplates the sustainability of using the ClassDojo system, describing the burden of upholding the points system with rewards.

ClassDojo System as an Automator of Attendance-taking

> *Mrs. Erickson stands at the front of the class, gesturing at the interactive white board while her students are seated on the carpeted floor. "Alright, take a look around and let me know if you notice anyone missing today." As the students shout out a few names, Mrs. Erickson taps the absent students' ClassDojo avatars on the board, which grey out into the background.**

Mrs. Erickson enlists both the ClassDojo system and her students to assist her in reporting attendance. This interpassivity and transfer of responsibility from the teacher might be a way to empower students to look out for each other, or as a way to automate the process of this routine task. The ClassDojo attendance list shows rows of monster avatars representing each student, and the teacher needs only to tap the avatar to toggle different symbols indicating a student's presence or absence. There is also a symbol for teachers to note students who arrive late or leave early. At first glance, this automated attendance-taking process may appear similar to a traditional teacher's (verbal) roll-call, but with ClassDojo students can visually see the complete class list and avatars, and are tasked with sharing the responsibility of observing and reporting who is present or away. ClassDojo facilitates this tracking process as the main dashboard always displays the student roster of

avatars with points. Visually, it is easy for teachers and students to interpret a greyed-out or coloured avatar, and thus enables everyone to keep tabs on one another.

A teacher's decision to use the ClassDojo attendance board could open up many possibilities with respect to presence: on the one hand, the ClassDojo avatars could make a student feel more "visible" and unique because they will always be accounted for on the online system. On the other hand, students' attendance is publicly displayed and stored permanently, and the permanence of such data could become a liability if students' historical records are interpreted and used out of context. These enduring records could be problematic as teachers, substitute teachers, parents or even students could adopt biases towards students' with lower attendance records.

Another unknown factor is what ClassDojo does with the stored data and student records after a class is done. According to the developers, the data is never "sold" or used for external business purposes. Instead, the developers insist the data is stored securely for the teacher's benefit and records. This begs the question about how ClassDojo can maintain and continually upgrade the system with capital resources. The developers suggest they acquire capital largely through grants, donations, and more recently, with subscription costs acquired from ClassDojo's extension app: Beyond School.

ClassDojo's Monsters as Students: Students as Monsters?

> *After redeeming 100 points to "customize avatar," Mrs. Erickson navigates to her ClassDojo browser tab, opens the Grade 6 class roster, and selects Jordi's monster avatar. Jordi is standing next to Mrs. Erickson, excitedly chattering: "I sent you the new avatar I want! It is the blue-and-purple-unicorn one -- I found it online.*

*Did you get it?" Mrs. Erickson opens the 'Messages' tab and downloads the image file to her computer. She clicks on the 'ClassDojo Monsters' dropdown menu and selects the last option to "Create a new set." She uploads the unicorn avatar image and chooses 'Upload monsters.' Returning to the 'Student Settings' screen, she updates Jordi's avatar. Jordi's new unicorn avatar now distinctly looks different from the default monster avatars on the main ClassDojo dashboard.**

A student requests to change her monster avatar within ClassDojo. The teacher is aware the monster avatar is a desirable customizable feature, and has set up a "goal prize" to allow for avatar changes after obtaining 100 ClassDojo points. Since only the teacher can edit or upload new sets of avatars, and ClassDojo randomly generates a monster avatar when the student is first added, students may feel compelled to update their avatar to reflect their identity. It is worth noting that ClassDojo uses monster avatars by default to represent students. Some observers might interpret this choice as a deliberate play on the idea that students are "little monsters." Others might feel that by depicting students using fictional monster characters, the ClassDojo system feels more fantastical and immersive as an alternate "gamified" world. Using monster avatars with less relatable features such as "fur patterns" and "antlers" and "tails" might also help reduce in-group and out-group discriminatory behaviours among students (e.g., based on ethnic background, culture, socio-economic status, etc).

On the other hand, Mrs. Tracy utilizes the customizable avatars in a different way: she has her Grade 2 students draw (human-like) self-portraits at the start of the year, and

then she scans the images and uploads them to replace the default monster avatars in ClassDojo (See *Figure 16*):

> "I want [them] to feel that their avatar represents them fully, so they feel invested and seen in the classroom, and are happy to show their progress to others...like their parents." (Mrs. Tracy, Interview)

The teacher draws connections between student avatar representation and self-identity, which factors into her decision to override the default settings in ClassDojo's avatars. According to research on avatar representation in educational games, personalizing an avatar to resemble one's own likeness increases perceived identification, engagement and performance in-game, whereas object-like avatars amplifies dissociation and detachment (Kao and Harrell, 2016). In this vein, Mrs. Tracy's decision to trade the monster avatars with students' self-portraits reveals some strategy, depth, and flexibility that ClassDojo affords to the teacher in terms of identity representation and expression.

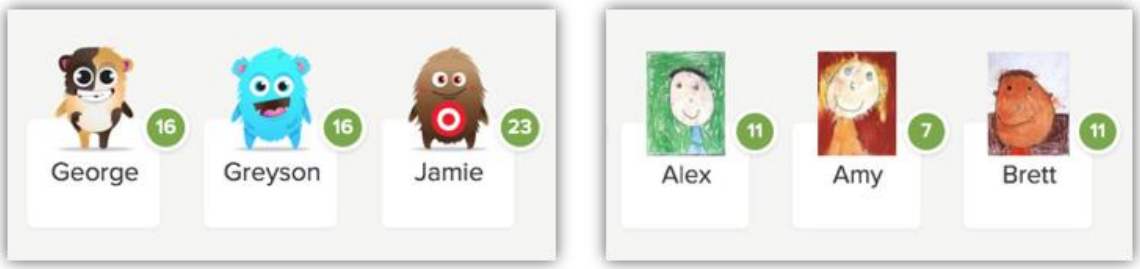

Figure 16: ClassDojo avatars using default monsters (left) and custom student self-portraits (right)

ClassDojo as a Co-evaluator and Automator of Student Reporting

At the end of the day, after all students have left, Mrs. Lee returns to her desk and opens the ClassDojo list. She selects "Options: View Reports" and chooses a time

*window of "Today" in the dropdown menu. A donut chart listing the percentage of positive to negative point changes for the day is displayed for the whole class. In the left column, individual students' statistics are listed as well. She knows linked parent accounts have access to the live ClassDojo reports any time, and that as long as new student data is logged that week, ClassDojo will automatically send an email reminder to parents that Friday. So far she hasn't received parents' feedback about the ClassDojo reports, so she continues to update and share student information as often as possible through a combination of ClassDojo reports and ClassDojo stories. She finds viewing the donut charts allow her to quickly visualize a summary of how students were doing each day, and to look out for any trends or changes in student behaviours. She also consults these compiled reports when writing Report Cards at the end of the term.**

Mrs. Lee produces a daily "exit report" that she has established as part of her teaching and reflective practice routine. She utilizes ClassDojo's reporting functionality to help her quickly generate some statistics about students' point changes and attendance over a specified period of time. She can also use ClassDojo to identify any large discrepancies between an individual student's records with the rest of the class. In her interview, Mrs. Lee implied that the reports were a helpful communication tool for daily reporting (i.e., email reminders and communication with parents), but also to help her generate a "snapshot" used to aid in her student evaluations.

In considering ClassDojo's design, one might think about the impact of retaining an enduring record of students' behaviours, long after the immediacy of the act has passed.

ClassDojo's long-standing records might serve to amplify the consequences of a student's single action, particularly if the teacher has not observed and recorded many instances of the student behaving in the first place. The ClassDojo points give that recorded instance a sense of elevated significance that a teacher might rationalize and report back as an "important and common observation" of that student.

ClassDojo as a Social Connector, Keeper of Memories, and Teaching Assistant

> *After an activity-packed day with a spelling test, bean-planting activities, and a colleague bringing baby chickens to the classroom, Mrs. Lee navigates to ClassDojo Stories and uploads photos she captured on her phone earlier in the day. She posts photos of students measuring the height of their bean plants and playing with baby chickens. She includes a short description of the day's events and tags students' names in the photos. Then she attaches some documents and adds the upcoming spelling test date on the calendar. Within minutes, students and parents begin reacting to her post with "likes" and comments. A student responds to the post by sharing a photo she had taken of the baby chickens. Mrs. Lee quickly reviews the content and approves the post, allowing the student's post to become visible to others.**

The teacher utilizes ClassDojo as a social platform to broadcast class highlights, events and photos using *Class Story.* This feature allows Mrs. Lee to easily share or post events happening in the classroom throughout the day, much like a memory capsule. Even though this adds a greater workload to her day, the teacher may find Class Story a meaningful way to engage students and parents after school hours. With her ability to share

a combination of photos, videos, assignment information, event dates, and links with parents, Class Story can become a curated platform for the teacher to showcase her planning and class lessons for the day. As observed in the anecdote, parents and students can view, react, and post comments in response to the teacher's shared posts. These posts are also moderated by the teacher, which allows her to filter the type of content that appears in ClassDojo, but also empowers students to initiate conversations, create, and share with others. Class stories can serve as a community network outside of the classroom, and foster student/parent connections. It is an asynchronous way for teachers and students to follow-up on class activities and create a type of ePortfolio or album of classroom memories. ClassDojo might also be perceived as a "preapproved" safe space to communicate with others in class, and an effective conversation starter to inform parents about their child's day. This presumption of safety is worth noting as some researchers have raised concerns about the distribution, data storage and permanence of personal data including photos of students in ClassDojo. According to Mrs. Lee, who posts in Class Story frequently, she has not heard any concerns from parents about how ClassDojo stores/uses data, has never received requests to remove any photos/files, or other data-related complaints (Mrs. Lee, Interview). On the contrary, Mrs. Lee reports parents' positive feedback and eagerness to see what their children have been doing in the classroom. She says parents have often praised her for her integration of the ClassDojo app.

With all the commitments and responsibilities a teacher has already, engaging with students and parents after-hours on Class Story can extend a teacher's work hours late into

the evening. The pressure to stay "active" on ClassDojo and connect online can impede the teacher's personal life. Even so, Mrs. Lee is an avid support of the app, describing in her interview how ClassDojo serves as a helpful "teaching assistant" in garnering students' attention, managing class flow, providing new learning resources or classroom-ready tools, and auto-generating reports.

ClassDojo as an "Objective" Teaching Assistant

> *Mrs. Erickson chooses the ClassDojo random selector feature on her phone, and tells the class, "I'm going to randomly pick three students to play on the silver xylophones today." The ClassDojo app displays a student's name and avatar on the phone screen and the classroom projector. Mrs. Erickson announces the student's name, with the caveat: "Okay, before you run off to your instrument, just wait for me to pick two more students." She presses the "Pick Again" button. "Samantha, it picked you but you were misbehaving today so I don't think you're ready to play an instrument. I'm going to choose someone who seems ready."A few students shoot their hands up in the air. "Aria, you will be on the second xylophone." She presses "Pick Again" on the ClassDojo app and calls the final student assigned to the xylophone. The students scurry to their instruments and wait as other students are assigned to the singing group.* *

Mrs. Erickson told the class that she would use ClassDojo's random selector to help her fairly assign students to different instruments for the music activity. Having this random selector feature in ClassDojo could help her instill a sense of objectivity in the classroom because the algorithm randomly selects a student, and thus is free from human

bias or favouritism. However, she was quickly confronted with ClassDojo's "uninformed" selection of a misbehaving student, which was publicly broadcasted on the class projector screen. At this point, she suddenly realized a drawback to this selection method, and that there was no way to input or filter additional information when using ClassDojo's random selector. In this sense, ClassDojo acts as an objective teaching assistant for the teacher, but it cannot account for some on-the-ground situations. Thus, Mrs. Erickson was forced to explain why ClassDojo's "chosen" student was not ultimately selected for the activity. This confrontation can cause awkward scenarios as the teacher experiences cognitive dissonance between the desire to instill objectivity and fairness, while still accounting for discretionary or background factors when making decisions using the random selector. It is possible that with further artificial intelligence (AI) developments, including integrating *human-in-the-loop* (HITL) machine learning, ClassDojo could be "informed" of a teacher's factors in decision-making, or a teacher might be able to input exceptions or variables to help balance the decision-making process.

Other Issues and Insights from Teachers

In the context of my interviews, teachers also revealed insights and reflections on using ClassDojo. The following section describes notable aspects of ClassDojo that teachers articulated with respect to their practice, classroom setup, and decision-making.

Resource Turnover. Prior to her interview, Mrs. Lee pulled up her laptop and showed me a couple of her favourite ClassDojo videos. "I really like these videos, but I noticed that as new videos are listed in the notifications panel, the older links to my favourite videos disappear." She fumbled around looking for a Search Bar and described

her frustrations to locate ClassDojo features. “I think I will update my browser and look under the “Big Ideas” section. The videos used to show up somewhere else. Sometimes things get moved around and I don’t know what they’re tagged as and how to save or bookmark all the resources for later.”

Mrs. Lee described her struggle to locate ClassDojo resources readily when she needs access to them. She indicated that newer content appears to push out her older favourite resources, and without a search bar or bookmark function, she was not able to save links to these ClassDojo resources. The design of ClassDojo inhibits the teacher from easily searching, accessing, or reviewing previously-viewed content. While this may be an oversight by the ClassDojo developers, it may also reveal the fast-paced turnaround philosophy of constantly generating new content for teachers, rather than looking for ways to help teachers compile and save quality resources in an integrated database collection system.

Multitasking and Quick Acknowledgements. During the first classroom observation day, Mrs. Erickson explained: “I’m always looking for new ways to help students manage their behaviour....and I just wanted to try something new. [...] I don’t think ClassDojo generally impacts the flow of teaching, but sometimes I struggle if I’m multi-tasking and giving points out because I’m at the piano and singing... trying to do it all at the same time. I really want to acknowledge students with just a quick sound, especially if they’re singing really awesome. Sometimes I fumble around a little bit, but ClassDojo can help me keep order.”

Mrs. Erickson starts off by explaining her rationale for using ClassDojo as a "new way" to manage student behaviours, and later acknowledges the difficulty of keeping track of all the classroom occurrences while simultaneously attending to the ClassDojo app. She seems aware that her attention is divided between the technology (ClassDojo) and her students, but also suggests that ClassDojo converges students' attention towards her. In this way, using the ClassDojo points system diverts away some of her attention, while also providing the teacher a sense of control and order in her classroom.

Sustainability, Competitiveness and Maintenance. During her interview, Ms. Jones outlined some problems she encountered with maintaining the ClassDojo system: "ClassDojo is useful for getting [students'] attention when they are off-task, but it's time-consuming and maintenance [of the system] is a problem. I would use it more if it was less focused on external intrinsic motivators. I also find that some students are just seeking attention or get competitive with the points, which can be disruptive for my teaching flow."

Ms. Jones contemplates the time-consuming nature of ClassDojo, and how to maintain a points-based system that is contingent on using some form of tangible reward. She also notes the ClassDojo points system tends to elicit attention-seeking and competitive behaviours from some of her students, which she finds counterproductive to her teaching beliefs and values.

Consistency or Spontaneity. Mrs. Tracy's thoughts on integrating ClassDojo revolve around the reward system; In her interview she mentioned: "Most students care [about ClassDojo] and they are always looking to get more points. As teachers, we have to

make time and outline when they can get points and when they cannot. I used to tell students ahead of time 'if you do this, then you can get a point' so that they know what my expectations are. Lately I have been giving points randomly for good behaviour because I want to reward good intentions without expectations."

Mrs. Tracy describes the appeal of ClassDojo points in motivating her students to act and perform. She suggests that students are more focused on attaining points than doing good things for their own sake. As a result, instead of setting out specific criteria for obtaining ClassDojo points, Mrs. Tracy has integrated more spontaneous rewards to encourage students to act appropriately without the expectation they will be rewarded extrinsically for doing so.

Ethical Implications of ClassDojo

In order to fully understand the mediated role of technology on our lives, Verbeek (2011) points to the importance of first assessing technology in terms of its participation in "moral terms." Ethics is not an exclusively human affair, Verbeek explains, and while technology can be thought of in terms of its affordances and limitations, it is critical to look at the way in which technology actively shapes human actions or experiences in ethical, material ways (p. 2). Technology's "moral agency", as Verbeek calls it, can stem from its design, use or social impact depending on its context. For example, an engineer may contemplate ethics in terms of balancing a machine's safety measures and risks, or a retail business may be more interested in privacy rights and data analytics. Verbeek then goes on to describe how technologies can re-define social boundaries or expectations, as

exemplified by a cell phone's functional convenience in blurring the lines between public and private communication (p. 5), thereby traversing the user's awareness of the immediate environment. Technology presents a multitude of moral choices, Verbeek contends, especially when thinking about how technology can provide sources of knowledge (2011, p. 5). Verbeek cites the example of genetic testing technology that allows medical professionals or patients to weigh the benefits or risks associated with elective surgery.

As discussed in Ihde's description of human-technology relations, technology mediation transforms human experiences in terms of perceptions as well as praxis (actions). For example, technology can impact how reality is *perceived* by humans (e.g., medical technology and cost-benefit decision-making) by amplifying or reducing certain aspects, or the technology embeds scripts that prescribe or incline humans to *act* a certain way (e.g., speed bumps incline a driver to slow down). These scripts carry specific meanings that invite and inhibit certain actions, while also raising questions about human-technology moral actions and responsibility. Verbeek connects his ideas to the Actor Network Theory (ANT) work of Latour in the vein of nonhuman forms of moral agency, while also linking to Focault's ideas about subject constitution and the interplay of power relations on the ethical implications of technology uptake. In the following section, I outline the two predominant ethical implications emerging from teachers' descriptions of ClassDojo technology use: surveillance and values alignment.

Surveillance. An ethical consideration at the forefront of integrating classroom technology is examining the nature of surveillance; specifically, surveillance in the form of

individual privacy (i.e., data privacy), and at a societal level (i.e., invasive or normalized surveillance).

Addressing Data Privacy Concerns Up-front. Mrs. Lee explains that at the start of the school year she sends home a Welcome Package that includes a ClassDojo section with student and parent invitation codes, as well as a description of how to download and use ClassDojo features. In order to address privacy concerns up-front, she pre-emptively copies the Privacy Statement listed on the ClassDojo website so that parents are aware of the data security policies in place. This proactive stance may be a response to a previous inquiry about ClassDojo's privacy protection, or Mrs. Lee may have become aware of the contestable legalities that could arise from the use of such a system. After all, ClassDojo collects an abundance of student and parent information over the school year. This data ranges from a long-term collection of students' attendance, daily behaviours, point changes, contact information, communication messages, photos, student work, or compiled resources over school terms— and ostensibly over a number of years if multiple teachers use ClassDojo at the school. All this information is accessible to teachers, administrators, parents, and students who register in ClassDojo using the unique class code.

Additionally, ClassDojo retains all of this personal information indefinitely as "education records" unless the school formally requests the ClassDojo accounts to be manually deleted. One exception is ClassDojo points data: According to their 2019 Privacy Policy, ClassDojo student points data is automatically deleted after a year, and inactive student accounts are also removed after a year. Nevertheless, personal information collected in ClassDojo is protected only by a teacher's ClassDojo account email and

password. ClassDojo has not yet implemented two-factor authentication or additional protection measures to confirm a teacher's identity, or to thwart hackers or spammers from accessing the data.

Another point of contemplation is what ClassDojo developers do with the stored data; While ClassDojo insists they never share or sell collected data to other organizations or persons, it is reasonable to question how ClassDojo can continually develop, manage and sustain the data if the ClassDojo application remains free. In ClassDojo's 2019 Privacy Policy document, they outline their adherence to the *Children's Online Privacy Protection Act* (COPPA), and commitment to use personal data only to improve their own services for educational purposes. Meanwhile, no known lawsuits have been launched against ClassDojo for privacy infringement at the time of this study.

Ethical Concerns for the Future Workplace: Micromanagement, Surveillance Culture and Invasive-tracking? Mr. Stewart explained in his interview that he feels the ClassDojo token economy system mimics that of a real workplace, and that students thrive in this setting. He suggested using token economy systems is a fun, realistic way to provide students the opportunity to develop transferable skills for the workplace. As such, he has incorporated multiple reward systems in addition to the ClassDojo Marketplace, including a calendar form of a student progress log.

Probing the work culture after a student completes school, a growing concern in the 21st century is the move towards micromanagement work cultures as evidenced by the growing number of employers utilizing technologies to track and evaluate employees'

performance (e.g.,Yeginsu, 2018). From electronic logging devices (ELDs) being installed to track a bus employee's real-time location and punctuality, to using work-assigned phones or apps to monitor an office worker's whereabouts, who they talk to, and logging hourly task/productivity efficiencies for evaluations, the trajectory of such behavioural-tracking technologies enable employers to surveill employees based on statistical measures and historical records. While some employers may deny or contest the use of this quantifiable tracking data (e.g., "for evaluative purposes, formative feedback or self-reflection"), the capacity is there for employers to look up and access this data using these tracking technologies. This type of tracking in work culture is not new (e.g., time punch cards used to log the start of a workday), however, the persistent, minute-to-minute scrutiny of the employee is. Amazon, for example, has patented and piloted the use of ultrasonic wristbands that track warehouse employees' location, tells them where to stock shelves, and records the time and number of inventory items as they are stocked or moved (Yeginsu, 2018). As philosopher Michael Foucault suggested in his discussion of panopticism, modern-day tracking technologies have replaced "traditional,...violent forms of power….for a subtle, calculated technology of subjection" (Foucault, 2008). This kind of power relation is evident in cases of widespread government surveillance that uses technology for invasive means to monitor citizens, as well as in other forms of surveillance that people willingly allow into their lives, such as Youtube's tracking of a user's video-viewing preferences.

ClassDojo, then, is reminiscent of such ongoing scrutiny of a student's minute-to-minute performance in the classroom. The type of student performance that can be tracked

on this eBMP is controlled by the teacher, heavily influenced by his/her observations, interpretations, and prevailing beliefs. A student is made to feel perpetually "watched" and judged for his/her behaviour, which could propagate a heightened sense of self-consciousness or awareness ("everyone is watching, it will be recorded, and reported to my parents"), or potentially lead to mental health issues such as anxiety or depression (Rogers, 2011). In addition, the records saved on ClassDojo are represented as a numerical score, further reducing the student's character and person to one of a performative nature. All of these existential technoethical questions arise as one carefully considers the values embedded in ClassDojo's scripts and design.

Values Alignment. Another emergent ethical implication of using ClassDojo technology involves examining the alignment between a teacher's values with ClassDojo's design. From a sociomaterial ethics perspective (Verbeek, 2011), one can examine how a teacher adapts their uses of ClassDojo to their own value framework. Verbeek (2011) suggests that a technology's design or program always enacts scripts that invite or inhibit the user towards specific actions. These prescribed scripts ("programmed sociality") are informed by inherent socio-political power relations that influence human interactions. That is, technologies are built with specific biases -- often from the vantage point of authority figures -- that are perpetuated further through its uptake. In the case of ClassDojo, the ClassDojo-Teacher is the authority figure that imposes his/her own teaching values through the lens of the reward system.

Recall the ClassDojo anecdote in which Mrs. Erickson wishes to instill fairness into her classroom decision-making by using the random student selector; The teacher

perceives this ClassDojo feature works effectively to create a sense of fairness by using an algorithm to randomly choose an individual for an activity. Despite its convenient utilization, Mrs. Erickson recognized that ClassDojo's random selector sometimes lacks contextual information that a human/teacher would apply under exceptional circumstances. This incongruence or mismatch between the teacher's values and ClassDojo's design momentarily suspends the teacher's habitual use of ClassDojo to make decisions or carry out her actions.

We also observed teachers like Mrs. Erickson and Mrs. Lee who used the ClassDojo application to look for and "capture" demonstrations of positive student behaviours in order to report back to parents about daily occurrences in the classroom and facilitate communication beyond the school environment. In this sense, the technology invites collaborative discussions (but also sets up teacher/parent expectations) regarding a student's progress. At the same time, we cannot know how a student would respond to this ongoing communication: perhaps a child would feel more engaged as part of a classroom community, or a child could feel pressured to justify his/her actions or progress as recorded by ClassDojo. Over time, the ClassDojo system design (and points) could gradually influence a child's motivations or behaviours. Generally, the constant need for reporting and "knowledge-seeking" about a child's progress can have both positive and detrimental effects to exploration and learning. The ClassDojo-Teacher is capable of analyzing trends or problems easily using the ClassDojo reports, but it can also set up certain expectations of a child's learning, which tends not to follow a linear path, but rather, an iterative process of adjustments and trials.

Another example of value-alignment ethics is observed in Ms. Jones' classroom where she adapted her classroom language and routines to match ClassDojo's points system or design: including the creation of a "Magic Mess Point" and tracking of good or bad behaviours. She also utilized the attendance-tracking feature first thing in the morning since she was constantly reminded about it by the homepage of student avatars that appeared in ClassDojo. Overall, one can observe that the alignment between a teacher's values with ClassDojo's design is largely reflected in the frequency and uptake of the technology in the classroom.

Chapter 6: Conclusion

Undertaking this postphenomenological research study helped reveal and describe the variant possibilities in which ClassDojo-Teachers sought to reconcile the affordances/ amplifications of ClassDojo with the confrontations that arise from the app's scripts and limitations/reductions. In this study, I explored how K-6 teachers used ClassDojo to facilitate their teaching and students' learning, interact with others, form perceptions or insights, and address ethical concerns through classroom observations, interviews, and posthuman research approaches.

Based on field examples of how teachers utilized and reflected upon ClassDojo, some emergent themes and implications include examining how the ClassDojo-Teacher: (a) transforms student motivations, behaviours and engagement through the use of ClassDojo's features and the points system, (b) captures and interprets snapshot perspectives of student behaviours and memories, (c) normalizes data tracking or classroom surveillance culture, (d) collects data to interpret, predict, or enumerate student progress and identity, (e) fosters support networks and community ties, (f) reframes or reflects a teacher's sense of meaning-making and values through the lens and structure of ClassDojo, and (g) raises ethical implications of privacy, power-relations, and value-alignment arising from the previous themes.

Using a postphenomenology approach, I investigated the existential questions and taken-for-granted attitudes or practices that underscore ethics, pedagogy, and ClassDojo technology integration in the classroom. Gathering data and re-assembling anecdotes of the ClassDojo-Teachers' experiences with ClassDojo enabled me to illuminate common

pedagogical and ethical implications that impact teaching practices as well as the classroom ecology. As an electronic behavioural management program (eBMP), ClassDojo offers a unique perspective on how teachers conceptualize pedagogy and co-shape systems to reflect their values.

Educational Implications of Classroom Management Technology

A teacher's integration of electronic behavioural management programs (eBMPs) and classroom management technology has a significant impact on the dynamic between pedagogical practices and the ecological learning environment. The teacher's chosen uptake of specific elements or affordances of ClassDojo sets the stage for the amplification and reduction of human-technology interactions, and thus, how a teacher or student perceives the lifeworld. As such, the educational implications of integrating this technology system can have profound and long-lasting effects on one's teaching career and learning outcomes. A teacher might be dazzled by ClassDojo's novelty, variety of classroom-ready features, and apparent student motivation boost, without much consideration of how ClassDojo frames routines and learning in a performance-based, extrinsically-rewarding way. On the other hand, ClassDojo offers creative opportunities for teachers to generate new accountability and record-keeping systems in the classroom, while also offering new multimedia resources that appeal to various grade levels and subjects (e.g., curricular resources, mental health resources, etc.).

In their interviews, teachers frequently referenced how they attempted to align the ClassDojo system to fit with their existing pedagogy and values, such as finding solutions

to ensure a fair and accountable system by resetting points and providing immediate feedback on student behaviours. In fact, the most common rationale brought forth by 4 out of 5 teachers for using ClassDojo was to encourage motivation and fairness. Moreover, 3 out of 5 teachers discussed how ClassDojo created more student opportunities to redeem infractions by performing good deeds in return. Only 2 out of 5 teachers spoke about the disciplinary nature of ClassDojo that could potentially de-incentivize students. Some teachers delved further into their reflections about ClassDojo's integration, citing questions about the sustainability of tangible rewards and long-term emotional impact of ClassDojo's point system on students' well-being. Overall, however, teachers perceived ClassDojo to be a useful asset with primarily positive affordances.

Ethical Use of ClassDojo

One overlooked aspect of educational implications relates to the ethical considerations underlying ClassDojo's applications. Using Adam's (2020) concept of *existential technoethics* can help us unpack the phenomenological, co-constitutive perceptions and actions of the ClassDojo-Teacher as a *conditioned*, *extended* being. This postphenomenological approach utilizes attentive observations of others, self-reflection, and the study of technology breakdowns to reveal how ClassDojo orients the teacher's relations with other subjects/objects in ways that either amplify or reduce perceptual or actionable possibilities in terms of our morality. For instance, thinking about how classroom management technology can incline our mindset towards behavioural-based teaching approaches or evaluations, and changes our perception and judgement of ourselves as productivity machines or worthy individuals. As described in Chapter 5's

anecdotes (e.g., Privacy concerns over ClassDojo, Ethical concerns for the future workplace: micromanagement, surveillance culture and invasive tracking), the ClassDojo-Teacher might encounter ethical questions about the attributed value and meaning behind the ClassDojo points, the persistent real-time linkage/accountability between teacher-parent-student communication, and the normalization of surveillance practices around ClassDojo's structure.

Further Study Limitations and Gaps

During data analysis, I encountered some instances in which I could not explain or extrapolate based on the teachers' perspectives. For example, it was impossible to ascertain the students' and parents' views about ClassDojo without interacting with them directly. I was not able to find out if parents actually checked their child's ClassDojo points, how frequently they communicated with teachers using the app, or if they had any privacy or data concerns. I also did not know how students felt about the ClassDojo points system, whether they found it helpful or stifling, or if they found the app to be a fair system or simply entertaining. As a result, this study is constrained to the perspectives and insights provided by a sample of elementary teachers.

Future Research

Further studies could include investigating how teachers' perspectives and insights of ClassDojo-- or similar classroom management technologies-- evolve over an extended period of time, and how meaningful teaching and learning is developed in tandem with or without this technology. Continued exploration of how ClassDojo is utilized and affects

other stakeholders such as students, parents, and educational administrators would expand our understanding of the co-constitutive relations between humans, classroom technology, and the lifeworld.

One approach could be to investigate some of the recurring themes revealed in the study. As part of the data analysis process, I generated some charts to help map some of these ideas along two continuums: individual and societal issues, as well as pedagogical and ethical implications (See *Figure 17*). While this postphenomenological study emphasized the ethical implications of ClassDojo, an educational researcher could pursue further research on the topic of power relations or control that come into question when classroom management technologies are utilized; This angle could draw upon different aspects of authority and surveillance culture affecting society at large.

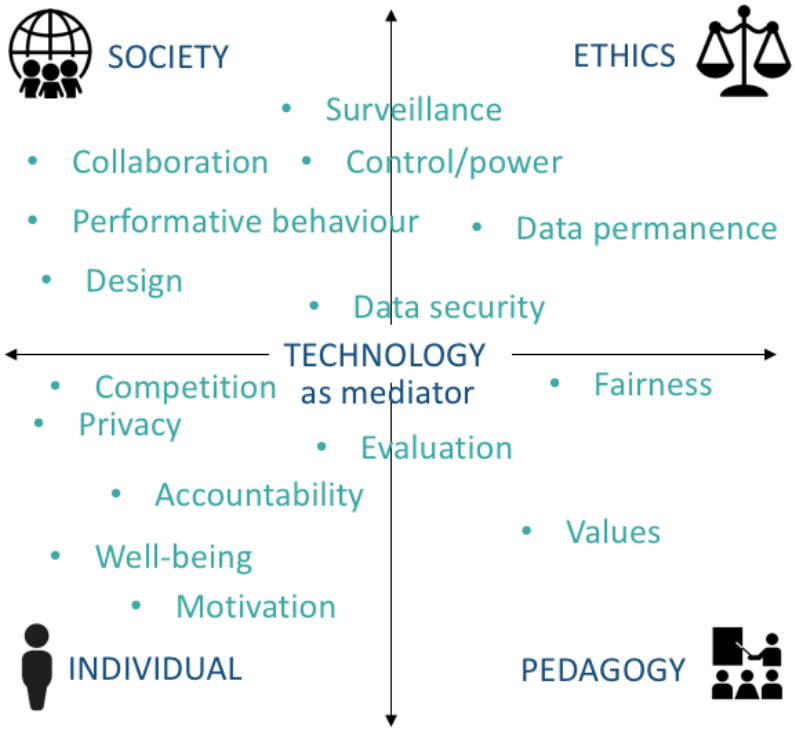

Figure 17: Mapping ClassDojo themes

By reflecting on these themes and one's classroom technology practices, educators would be able to make informed decisions and ongoing adaptations for their particular class needs. This process of critically assessing one's value-alignment and implementation of technology can have profound impacts that transcend the classroom environment and into many facets of our lives.

Closing Thoughts

While this case study examined ClassDojo in-depth as one example of a classroom management technology, the ethical implications and insights could apply to many other instances when teachers bring technology into the classroom. A critical analysis and collaborative discussion of the ethical, educational implications of technology integration is a necessary (but often overlooked) process between teachers, parents, school administrators, and students. Postphenomenology reminds us of the significance of ethics and values-alignment when selecting technologies to ensure our well-intentioned approaches and decisions are thoughtfully-considered, and to minimize the impact that could harm or detract from the human experience and our embodied relations with technology. As technology continues to evolve and become more ubiquitous in our everyday lives, it is even more important to pause and question the "progress" or "advancements" we seek in technology (what it affords, what it takes away, and what it transforms) in paving the way to education and humanity.

References

Aagaard, J. (2015). Drawn to distraction: A qualitative study of off-task use of educational technology. *Computers and Education, 87,* 90-97.

Aagaard, J. (2017). Introducing postphenomenological research: a brief and selective sketch of phenomenological research methods. *International Journal of Qualitative Studies in Education, 30*(6), 519-533.

Aagaard, J., & Matthiesen, N. (2016). Methods of materiality: Participant observation and qualitative research in psychology. *Qualitative Research in Psychology*, *13*(1), 33-46.

Aagaard, J. (2018). Magnetic and multistable: reinterpreting the affordances of educational technology. *International Journal of Educational Technology in Higher Education, 15*(1), 4.

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, *347*(6221), 509-514.

Adams, C. (2016). Programming the gesture of writing: On the algorithmic paratexts of the digital. *Educational Theory*, *66*(4), 479-497.

Adams, C. (2020). Towards an ethics of technology for educators. In *Education in the Age of Algorithms, Data Doubles and Techno-Surveillance: New Ethical Concerns for Teachers and Learners* (Panel with E. Rose & R. Saul). *The Twentieth Annual Convention of the Media Ecology Association*, Toronto.

Adams, C., Aydin, C., Blond, L., Funk, M., Ihde, D., Petersén, M., ... & Secomandi, F. (2018). *Postphenomenological Methodologies: New Ways in Mediating Techno-Human Relationships*. Rowman & Littlefield.

Adams, C., & Thompson, T. L. (2016). *Researching a posthuman world: Interviews with digital objects.* Springer.

Adams, C., & Turville, J. (2018). Doing Postphenomenology in Education. In Aagaard, J., Friis, J. K. B. O., Sorenson, J., Tafdrup, O., Hasse, C., & Ihde, D. (Eds.), *Postphenomenological Methodologies: New Ways in Mediating Techno-Human Relationships*, (pp. 3-25).

Adams, C. (2020, April). TPACK's Arc of Technology Transparency and Teachers' Ethical Obligations: Understanding The Digital as the New Materia Medica of Pedagogy. In *Society for Information Technology & Teacher Education International Conference* (pp. 1915-1924). Association for the Advancement of Computing in Education (AACE).

Araújo, U., & Arantes, V. (2009). The Ethics and Citizenship Program: a Brazilian experience in moral education. *Journal of Moral Education*, *38*(4), 489–511. https://doi-org.login.ezproxy.library.ualberta.ca/10.1080/03057240903321956

Arkoosh, M., Weber, K. P., & McLaughlin, T. F. (2009). The effects of motivational/reward system and a spelling racetrack on spelling performance in general education: A case report. *The Open Education Journal*, *2*(1).

Baker, P. M. A., Bujak, K. R., and DeMillo, R. The Evolving University: 2012. Disruptive Change and Institutional Innovation. *Procedia Computer Science 14*, 330–335.

Barbour, I. G. (1993). *Ethics in an Age of Technology* (No. 2, 1989-1991).

Bergen, J. P., & Verbeek, P. P. To-Do Is to Be: Foucault, Levinas, and Technologically Mediated Subjectivation. *Philosophy & Technology.* (2020). https://doi.org/10.1007/s13347-019-00390-7

Boger, T. (2018). *Watching our Children Electronically: A (Post)phenomenology of Classroom Management Software in Schools* (Doctoral dissertation, University of Alberta).

Botin, L., Lemmens, P., Liberati, N., Nagataki, S., Rosenberger, R., Secomandi, F., ... & Ihde, D. (2017). *Postphenomenology and Media: Essays on Human–Media–World Relations.* Lexington Books.

Burger, M. (2015). The Perception of the Effectiveness of Classdojo in Middle School Classrooms: A Transcendental Phenomenological Study. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=edsoai&AN=edsoai.922602735&site=eds-live&scope=site

Cameron, J., & Pierce, W. (1994). Reinforcement, Reward, and Intrinsic Motivation: A Meta-Analysis. *Review of Educational Research, 64*(3), 363-423. Retrieved from http://www.jstor.org.login.ezproxy.library.ualberta.ca/stable/1170677

Choi, S. J., & Kim, T.S. (2016) Understanding Factors Affecting Information Security Practice of Elementary School Students. In *Proceedings of the IEEE 10th International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing*, 2016.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches (Third Edition)*. Thousand Oaks, CA: Sage.

Dadakhodjaeva, K. (2017). The good behavior game: Effects on and maintenance of behavior in middle-school classrooms using Class Dojo (Doctoral dissertation, University of Southern Mississippi). Retrieved from https://aquila.usm.edu/dissertations/363

Dahlberg, G., & Moss, P. (2005). *Ethics and Politics in Early Childhood Education*. London: Routledge. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=102685&site=eds-live&scope=site

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The SAGE handbook of qualitative research.* Sage.

Deterding, S., Dixon, D., Khaled, R., and Nacke, L. 2011. From game design elements to gamefulness: defining "gamification". In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9-15.

Dill, B. J., & Anderson, R. E. (2003). Ethics-related technology policies in schools. *Social Science Computer Review*, *21*(3), 326-339.

DomíNguez, A., Saenz-De-Navarrete, J., De-Marcos, L., FernáNdez-Sanz, L., PagéS, C., & MartíNez-HerráIz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, *63*, 380-392.

Dreyfus, H. L. (1979). *What computers can't do: The limits of artificial intelligence* (Vol. 1972). New York: Harper & Row.

Dreyfus, H. L. (1991). *Being-in-the-world: A commentary on Heidegger's Being and Time, Division I*. Mit Press.

Dreyfus, H. L. (2002). Intelligence without representation–Merleau-Ponty's critique of mental representation The relevance of phenomenology to scientific explanation. *Phenomenology and the cognitive sciences*, *1*(4), 367-383.

Dreyfus, H. L., & Dreyfus, S. E. (2005). Peripheral vision: Expertise in real world contexts. *Organization studies*, *26*(5), 779-792.

Dreyfus, H. L., & Hall, H. (1982). Husserl, intentionality, and cognitive science.

Dutton Tillery, A., Varjas, K., Meyers, J., & Collins, A. S. (2010). General education teachers' perceptions of behavior management and intervention strategies. *Journal of Positive Behavior Interventions*, *12*(2), 86-102.

Foucault, M. (2008). Panopticism from Discipline & Punish: The Birth of the Prison. *Race/Ethnicity: Multidisciplinary Global Contexts*, *2*(1), 1-12.

Garcia, E., & Hoang, D. (2015). *Positive Behavior Supports: Using Class Dojo as a Token Economy Point System to Encourage and Maintain Good Behaviors*. Online Submission.

Gee, J. P. (2003). *What video games have to teach us about learning and literacy.* Computers in Entertainment (CIE), 1(1), 20-20.

Gee, J. P. (2005). Learning by design: Good video games as learning machines. *E-learning and Digital Media, 2*(1), 5-16.

Gee, J. P. (2012). *Situated language and learning: A critique of traditional schooling.* Routledge.

Hasse, C. (2008). Postphenomenology: Learning cultural perception in science. *Human Studies*, *31*(1), 43.

Hasse, C. (2019). Learning matter: the force of educational technologies in cultural ecologies. In *Material Practice and Materiality: Too Long Ignored in Science Education* (pp. 217-229). Springer, Cham.

Heidegger, M. (1954). The question concerning technology. *Technology and values: Essential readings*, *99*, 113.

Heidegger, M. (1996). *Being and time: A translation of Sein und Zeit*. SUNY press.

Heidegger, M. (1977). The question concerning technology, and other essays.

Heidegger, M. (2014). *Introduction to metaphysics*. Yale University Press.

Heward, W. L. (2003). Ten faulty notions about teaching and learning that hinder the effectiveness of special education. The Journal of Special Education, 36, 186–205.

Hickman, L. A. (2008). Postphenomenology and Pragmatism: Closer Than You Might Think?. *Techné: Research in Philosophy and Technology, 12*(2), 99-104.

Husserl, E. (1965). Phenomenology and the crisis of philosophy: Philosophy as a rigorous science, and philosophy and the crisis of European man.

Husserl, E. (1970). *The crisis of European sciences and transcendental phenomenology: An introduction to phenomenological philosophy*. Northwestern University Press.

Husserl, E., & Heidegger, M. (1964). *The phenomenology of internal time-consciousness* (Vol. 973). Bloomington: Indiana University Press.

Ihde, D. (1990). *Technology and the lifeworld: From garden to earth* (No. 560). Indiana University Press.

Ihde, D. (1995). *Postphenomenology: Essays in the postmodern context.* Northwestern University Press.

Ihde, D. (2008). Introduction: postphenomenological research. *Human Studies, 31*(1), 1-9.

Ihde, D. (2009). *Postphenomenology and technoscience: The Peking university lectures*. Suny Press.

Ihde, D. (2010). *Heidegger's technologies: Postphenomenological perspectives*. Fordham Univ Press.

Introna, L. (2017). Phenomenological approaches to ethics and information technology, *The Stanford Encyclopedia of Philosophy (Fall 2017 Edition),* Edward N. Zalta (Ed.), Retrieved from https://plato.stanford.edu/entries/ethics-it-phenomenology/

Irwin, S. O. (2016). Digital Media: Human–Technology Connection. Rowman & Littlefield.

Jefferies, P., Carsten-Stahl, B., & McRobb, S. (2007). Exploring the relationships between pedagogy, ethics and technology: Building a framework for strategy development. *Technology, Pedagogy and Education*, *16*(1), 111-126.

Johnson, D. G. & Nissenbaum, H. (1998). *Computers, Ethics & Social Values*. DIANE Publishing Company.

Jubien, P. (2014). *Postphenomenology, smartphones, and learning: students and teachers in higher education*. SAGE Publications, Ltd..

Jubien, P. (2015). *A Postphenomenological Exploration of Mobility in Post-Secondary Teaching and Learning* (Doctoral dissertation, University of Alberta).

Juhl, H. (2019, January 24). *When it comes to classroom apps, ClassDojo is teachers' pet*. Montreal Gazette. https://montrealgazette.com/health/family-child/when-it-comes-to-classroom-apps-classdojo-is-teachers-pet

Kapp, K. M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. John Wiley & Sons.

Kazdin, A. E. (1982). The token economy: A decade later. *Journal of Applied Behavior Analysis*, *15*(3), 431-445.

Kohn, A. (2015). The perils of "Growth Mindset" education: why we're trying to x our kids when we should be xing the system. Retrieved from http:// www.salon.com/2015/08/16/the_education_fad_thats_hurting_our_kids_what_ you_need_to_know_about_growth_mindset_theory_and_the_harmful_lessons_ it_imparts

Krach, S. K., McCreery, M. P., & Rimel, H. (2017). Examining teachers' behavioral management charts: A comparison of Class Dojo and paper-pencil methods. *Contemporary School Psychology*, *21*(3), 267-275.

Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

Luppicini, R. (2010). *Technoethics and the evolving knowledge society.* Hershey: Idea Group Publishing.

Maclean-Blevins, A., & Muilenburg, L. (2013, June). Using Class Dojo to support student self-regulation. In *EdMedia: World Conference on Educational Media and*

Technology (pp. 1684-1689). Association for the Advancement of Computing in Education (AACE).

Maggin, D. M., Chafouleas, S. M., Goddard, K. M., & Johnson, A. H. (2011). A systematic evaluation of token economies as a classroom management tool for students with challenging behavior. *Journal of School Psychology, 49*, 529–554.

Maggin, D. M., Pustejovsky, J. E., & Johnson, A. H. (2017). A meta-analysis of school-based group contingency interventions for students with challenging behavior: An update. Remedial and Special Education, 38, 353–370.

Manolev, J., Sullivan, A., & Slee, R. (2019). The datafication of discipline: ClassDojo, surveillance and a performative classroom culture. *Learning, Media and Technology*, *44*(1), 36-51.

McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world.* Penguin.

McLaughlin, T. F. (1981). An analysis of token reinforcement: A control group comparision with special education youth employing measures of clinical significance. *Child Behavior Therapy, 3,* 43-50.

Merleau-Ponty, M. (1964). *The primacy of perception: And other essays on phenomenological psychology, the philosophy of art, history, and politics*. Northwestern University Press.

Merleau-Ponty, M. (1968). *The visible and the invisible: Followed by working notes*. Northwestern University Press.

Merleau-Ponty, M. (2013). *Phenomenology of perception*. Routledge.

Miller, D. J., & Robertson, D. P. (2011). Educational benefits of using game consoles in a primary classroom: A randomised controlled trial. *British Journal of Educational Technology*, *42*(5), 850-864.

Moor, J. H. (2017). What is computer ethics?. In *Computer Ethics* (pp. 31-40). Routledge.

Morrison, L. A. (2020). Situating Moral Agency: How Postphenomenology Can Benefit Engineering Ethics. *Science and engineering ethics*, *26*(3), 1377-1401.

National Center for Education Statistics. (2015). *Schools and Staffing Survey*. Washington, DC: Institute of Education Sciences. Retrieved from https://nces.ed.gov/surveys/sass/

Pérez Garcias, A., & Marín, V. I. (2016). Ethics Issues of Digital Contents for Pre-Service Primary Teachers: A Gamification Experience for Self-Assessment with Socrative. *IAFOR Journal of Education*, *4*(2), 80–96. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1142079&site=eds-live&scope=site

Peters, R. S. (2015). *Ethics and Education (Routledge Revivals)*. Routledge.

Pilieci, V. (2014). Student app in Ottawa classes gets raves from teachers, but worries privacy experts. *Ottawa Citizen*. Retrieved from http://ottawacitizen.com/news/national/student-app-in-ottawa-classes-gets-raves-from-teachers-but-worries-privacy-experts.

Puech, M. (2016). *The ethics of ordinary technology.* New York: Routledge.

Reindal, S. M. (2016). Discussing inclusive education: an inquiry into different interpretations and a search for ethical aspects of inclusion using the capabilities

approach. *European Journal of Special Needs Education*, *31*(1), 1–12. https://doi-org.login.ezproxy.library.ualberta.ca/10.1080/08856257.2015.1087123

Riden, B. S., Markelz, A. M., & Randolph, K. M. (2018). Creating Positive Classroom Environments With Electronic Behavior Management Programs. *Journal of Special Education Technology*, 0162643418801815.

Riden, B. S. (2017). Using performance feedback to increase teachers' use of behavior specific praise: A review of the single-case literature. *Journal of Evidence Based Practices for Schools, 16*, 102–122.

Robacker, C. M., Rivera, C. J., & Warren, S. H. (2016). A token economy made easy through ClassDojo. *Intervention in School and Clinic, 52*(1), 39-43.

Rogers, K. (2018, November 14). *What constant surveillance does to your brain*. VICE - VICE is the definitive guide to enlightening information. https://www.vice.com/en/article/pa5d9g/what-constant-surveillance-does-to-your-brain

Röhl, T. (2012). Disassembling the Classroom. An Ethnographic Approach to the Materiality of the Classroom. *Ethnography and Education*, *7*(1).

Rosenberger, R. (2008a). Seeing the World through Technology and Art. *Techné: Research in Philosophy and Technology*, *12*(1), 90-97.

Rosenberger, R. (2008b). Perceiving other planets: Bodily experience, interpretation, and the Mars orbiter camera. *Human Studies*, *31*(1), 63-75.

Rosenberger, R. (2009). The sudden experience of the computer. *AI & Society*, *24*(2), 173-180.

Rosenberger, R. (2015). An experiential account of phantom vibration syndrome. *Computers in Human Behavior*, *52*, 124-131.

Rosenberger, R. (2017a). On the hermeneutics of everyday things: or, the philosophy of fire hydrants. *AI & society*, *32*(2), 233-241.

Rosenberger, R. (2017b). Notes on a nonfoundational phenomenology of technology. *Foundations of Science*, *22*(3), 471-494.

Rosenberg, R., & Verbeek, P. P. (2015). A postphenomenological field guide. *Postphenomenological investigations: Essays on human–technology relations*, 9-41.

Selinger, E. (Ed.). (2012). *Postphenomenology: A critical companion to Ihde*. SUNY Press.

Soroko, A. (2016). No Child Left Alone. *The ClassDojo app. Our Schools/Our Selves*, *25*(3), 63-74.

Tavani, H. T. (2011). *Ethics and technology: Controversies, questions, and strategies for ethical computing*. John Wiley & Sons.

Turville, J. A. (2017). If e-mail could speak, what would it say? Interviewing objects in a digital world. *Explorations in Media Ecology*, *16*(2-3), 157-173.

Turville, J. A. (2018). *Email and Its Involvements in the Lives of K-12 Teachers: Phenomenological, Postphenomenological, and Posthumanistic Explorations* (Doctoral dissertation, University of Alberta).

Turville, J. (2019). From “you’ve got mail” to email overload: A postphenomenological genealogy of email. *Techné: Research in Philosophy and Technology*.

Vagle, M. D. (2016). Crafting phenomenological research. Routledge.

Valentine, K. D., Kopcha, T. J., & Vagle, M. D. (2018). Phenomenological Methodologies in the Field of Educational Communications and Technology. *TechTrends, 62*(5), 462-472.

Van Den Eede, Y. (2020). The Purpose of Theory: Why Critical Constructivism Should "Talk" and Postphenomenology Should "Do". *Techné: Research in Philosophy and Technology*, *24*(1/2), 114-137.

Van den Hoven, J., Vermaas, P., & Van de Poel, I. (2015). *Handbook of ethics, values and technological design*. Dordrecht: Springer.

Van Manen, M. (2016). *Phenomenology of practice: Meaning-giving methods in phenomenological research and writing*. Routledge.

Verbeek, P. P. (2005). *What things do: Philosophical reflections on technology, agency, and design.* Penn State Press.

Verbeek, P. P. (2006). Materializing morality: Design ethics and technological mediation. *Science, Technology, & Human Values*, *31*(3), 361-380.

Verbeek, P. P. (2008a). Morality in design: Design ethics and the morality of technological artifacts. In *Philosophy and design* (pp. 91-103). Springer, Dordrecht.

Verbeek, P. P. (2008b). Cyborg intentionality: Rethinking the phenomenology of human–technology relations. *Phenomenology and the Cognitive Sciences*, *7*(3), 387-395.

Verbeek, P. P. (2009). Cultivating humanity: towards a non-humanist ethics of technology. In *New waves in philosophy of technology* (pp. 241-263). Palgrave Macmillan, London.

Verbeek, P. P. (2011). *Moralizing technology: Understanding and designing the morality of things*. University of Chicago Press.

Verbeek, P. P. (2012). Expanding mediation theory. *Foundations of science*, *17*(4), 391-395.

Verbeek, P. P. (2020). Politicizing Postphenomenology. In *Reimagining Philosophy and Technology, Reinventing Ihde* (pp. 141-155). Springer, Cham.

Warin, J. (2017). Creating a whole school ethos of care, Emotional and Behavioural Difficulties, 22:3, 188-199, DOI: 10.1080/13632752.2017.1331971

Watters, A. (2015). The automatic teacher. *Hack Education*. Available at http://hackeducation.com/2015/02/04/the-automatic-teacher

Whyte, K. P. (2015). What is multistability? A theory of the keystone concept of postphenomenological research. *Technoscience and postphenomenology: The Manhattan papers*, 69-81.

Williamson, B. (2017a). Decoding ClassDojo: psycho-policy, social-emotional learning and persuasive educational technologies. *Learning, Media and Technology, 42*(4), 440-453.

Williamson, B. (2017b). Learning in the 'platform society': Disassembling an educational data assemblage. *Research in Education*, *98*(1), 59-82.

Williamson, B. (2017c). Moulding student emotions through computational psychology: affective learning technologies and algorithmic governance. *Educational Media International*, *54*(4), 267-288.

Williamson, B., & Rutherford, A. (2017). ClassDojo poses data protection concerns for parents. *Parenting for a Digital Future*.

Willig, C. (2013). *Introducing qualitative research in psychology.* McGraw-Hill Education (UK).

Winett, R. A., & Winkler, R. C. (1972). Current behavior modification in the classroom: Be still, be quiet, be docile. *Journal of Applied Behavior Analysis*, *5*(4), 499-504.

Yeginsu, C. (2018, February 01). If Workers Slack Off, the Wristband Will Know. (And Amazon Has a Patent for It.). Retrieved October 18, 2020, from https://www.nytimes.com/2018/02/01/technology/amazon-wristband-tracking-privacy.html

Appendices

Appendix 1: Teacher Pre-Interview Activities

Please complete the following two pre-interview activities on paper or computer/mobile device, and bring them along with you to discuss during the interview.
(*Estimated Time: 20 min total*)

1) Sketch your class schedule and ClassDojo use for a typical week (Monday to Friday).

2) Draw a timeline of your teaching career, noting any critical moments or events that have changed the way you experience being a teacher using technology with students and/or their parents.

Appendix 2: Teacher Interview Prompts

The following is a sample set of interview prompts that may be posed to the teacher. Only select questions will be used to ensure the interview fits within the one-hour allotted time.

Part 1: What is the teacher's classroom context?

a) What grade level(s) do you teach?
b) What subjects do you teach?
c) How many students are in your class?
d) How long have you been teaching? Using ClassDojo?
e) How is your classroom structured? Can you describe your classroom setup?
f) Is there anything special I should know about your class or your school?

Part 2: In what ways, and to what extent, does the teacher adopt ClassDojo to facilitate teaching and learning?

a) Thinking back, do you recall how you found out about ClassDojo? What interested you about ClassDojo?
b) What were your first impressions about using ClassDojo? What considerations or factors influenced your decision about when and how to use ClassDojo as part of your class? How did you learn how to use ClassDojo initially?
c) How do you use Class Dojo? Can you elaborate on your primary and peripheral uses of ClassDojo?

d) What is your rationale or philosophy behind using ClassDojo? (e.g., external or internal motivators, reflections)

Part 3: How does the teacher perceive ClassDojo and its impact on teaching and learning practices in the K-6 classroom?

a) How do you think using ClassDojo affects the flow or pace of your class?
b) How do you think ClassDojo affects your interactions or communication with students and parents? (e.g., rapport, timeliness, consistency, feedback)
c) How do you think ClassDojo affects student-to-student interactions?
d) Have you changed or adapted your teaching practices or use of ClassDojo in any way because of your experience with it? Any particular events that stand out?
e) How do you think using ClassDojo affects physical or bodily movements in the classroom?
f) How do you think ClassDojo supports or changes the type of activities that take place in your classroom?
g) How do you think ClassDojo affects behavioural or classroom management practices?
h) How do you think ClassDojo affects your overall well-being? How about your teaching experiences? How does ClassDojo impact your confidence in teaching or using technology? What about your feelings of competency in teaching or using technology?
i) Overall, what do you perceive as the main advantages and disadvantages of using ClassDojo?

Part 4: What are some relevant ClassDojo experiences and insights that could be shared among teachers?

a) What is a memorable anecdote or moment in the classroom that involved ClassDojo? How does this experience compare with other teaching/learning moments?
b) What are some recommendations for using ClassDojo in the classroom?
c) What feedback or changes would be important for the developers of ClassDojo to know about?
d) What social factors, if any, might change your perception or use of ClassDojo? What about technological factors? Organizational factors? Financial factors? Cultural factors?
e) Where do you see ClassDojo in 5 years? (e.g., more integrated? obsolete?)