Effectiveness of a Gamification Tool for Classroom Management in Education Setting

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ABSTRACT

Classroom management is a key factor in students' educational achievement. Hence, the purpose of this study is to provide practitioners with clear evidence of the effectiveness of a free and accessible classroom management system, ClassDojo. Therefore, it brings significant implications for addressing the problem of the practitioners in handling class as the strategies of classroom management are not providing the intended results. This will help lessen the number of occurrences of disruptive behaviour. The quantitative results from the pre- and post-ClassDojo intervention of this study have shown a positive change in students' behaviours with the students and these results can be comparable to the previous studies in which there is a significant decline in disruptive behaviour. Implementing ClassDojo as an intervention has the potential to lighten two issues simultaneously— namely, decreasing students' disruptive behaviours that aid the teacher in handling their classroom and achieving teachers' requirements of integrating technology into the lesson.

Keywords: behavioural; education technology; intervention; performance; reward system

INTRODUCTION

Behavioural management in the education system often focuses on students' disruptive behaviour while desirable behaviours are neglected. Hence, the integration of new technologies is on the rise in the educational system as classroom management tools for teachers (Bolick & Cooper, 2006). The utilization of these tools for the purpose of classroom management allows the teacher to implement the reward system to enhance students' performance and classroom behaviour (Akin-Little & Little, 2004). Teachers who have problems with classroom management are frequently ineffective in the classroom and it has been reported that the teachers suffered high levels of stress and burnout symptoms (Browers & Tomic, 2000). Noting that technological integration in the classroom is another criterion that teachers have to fulfil (McInnis, 2002). Many teachers carry out a reward and punishment system where students will be rewarded when behaving accordingly while penalized for disruptive behaviours. The aim of this system is to encourage appropriate behaviour and serve as reinforcement to foster them into good citizens. Despite that, teachers are constantly searching for effective interventions to maintain classroom discipline. Classroom management is one of the common challenges to overcome in the education system. Students with low attitudes frequently struggle academically (Bambol & Sulaiman, 2022). It is designed to assist them in classroom management by using different kinds of devices. An application like ClassDojo enables the teacher to give positive and negative feedback in both short and long-term forms according to the targeted behaviours set by the teacher. This will be easily accessible and shared among teachers and parents.

ORIGIN AND ROLE OF CLASSDOJO

The founder of ClassDojo, Sam Chaudhary and Liam Don, first released the beta application in 2011 while launching it as a full platform in 2013. Classdojo is a free online program that allows the teacher to give rewards and punishments to the students for behaviours that are categorised as good and bad. Initially, the teacher will upload the name of the students into the ClassDojo system and give the students to choose their ClassDojo avatar (monster) for representing themselves. ClassDojo comes with a pre-set of good and bad behaviour that is common. Whenever good behaviour is demonstrated by the students, the teacher will access to ClassDojo and tap on the student's avatar and the targeted good behaviour to add positive points while the opposites for bad behaviour where points will be deducted. The overview of the ClassDojo points of the whole class can be shown in the classroom on either TV or projector slides. ClassDojo will send weekly overall reports to the students via email with the report of their behaviour in the form of a pie chart and indicated behaviours.

BEHAVIOURIST THEORY

B. F. Skinner is a well-known behaviourist that re-evaluate Pavlov's classical conditioning model where Pavlov believed that humans react to reflexes and stimuli, Skinner improvised this concept to operant conditioning whereby humans can respond to reinforcement instead of reflex (Miller, 2011). The models related to discipline models that will be discussed are Skinner's behaviour modification model (1953) and assertive discipline (Canter, 1996). Disruptive behaviour can be closely related to discipline problems and this can be examined from different models of discipline which are developed by behavioural practitioners. The behaviour modification model is developed by the proponent of behaviourism, B.F Skinner. It is a technique that can be used to mould the desired behaviour and decrease the undesirable behaviour because learning takes place through the consequence of an action.

This model relies on the idea of operant conditioning which focuses on the change of behaviour. Reinforcement and punishment are part of the process that will determine how an individual behaves. Reinforcement is when consequences are given to promote and encourage certain behaviour. This can be used positively, by rewarding in the form of things or verbal praise, or negatively, by both formal and informal sanction that is not pleasant. On the other hand, punishment is a consequence that serves to lessen undesirable behaviour. Skinner believed that good behaviour can be reinforced through rewards while bad behaviours can be ignored (Skinner, 1987).

Skinner's operant conditioning model is relevant in this research because it is closely attached to ClassDojo's philosophy. The use of this tool is based on the idea of a reward system where behaviour that seems good by the teacher (positive reinforcement) and punishment for disruptive behaviour (negative reinforcement). With this, it can be assumed that the students will be conscious of what behaviours can earn positive reinforcements and behave in that way repetitively to be rewarded. At the same time, the teacher will want the students to be aware of what behaviours are deemed as bad in which negative reinforcements will be given so that the students will refrain from them. In this way, the teacher can view this as an effective management tool.

MOTIVATION & SELF-REGULATION

The teacher plays an important role in motivating the students. Researchers have divided motivation into intrinsic and extrinsic (Bowman, 2007). Intrinsic motivation is stimulation that drives an individual to do something for internal rewards like fulfilment and satisfaction. Meanwhile, extrinsic motivation is reinforcement that is caused by external factors, such as rewards (Bowman, 2007). There are arguments regarding the downside of extrinsic motivation

where it may decrease the intrinsic motivation of the student (Davis et al., 2006). Hence, the teacher should be careful with the amount of reinforcement given extrinsically, in order to enhance intrinsic motivation, by giving rewards to the students for their hard work. This can enhance learning experiences when completing a task (Lepper, Iyengar & Corpus, 2005).

The main aim of teaching good behaviour to students is to educate the students on self-regulation. However, it is important to make use of extrinsic motivators as the initial step to encourage good behaviours in the classroom; hence the reward system is seen as the best option as positive reinforcement (Parsonson, 2012) the use of rewards in school was the outcome of Skinner's operant conditioning theory. Two kinds of motivation were identified by Edward Deci in 1972 as intrinsic and extrinsic motivation. Past studies have indicated how extrinsic motivation can increase students' motivation levels (Wheatley et al., 2009). The way that the teacher has modelled the classroom can highly affect the motivation level of the students. Some strategies have been adopted by teachers in motivating students to learn through setting high expectations, giving feedback or praise, and making students feel appreciated for their hard work (Bowman, 2007)

Another type of motivation takes the form of giving feedback or social praise. These have contributed to the increase in students' motivation levels. Social praise can only be effective when (1) the praise given is conditional upon the reinforced behaviour, (2) specified praise for a specified behaviour (3) Praise must be given immediately after the occurrence of the behaviour (4) praise has to be truthful (Hancock, 2000) It has to be truthful to prevent the loss of credibility and sincerity of the teacher. Giving positive praise to the students will help students to be more engaged and demonstrate appropriate behaviour.

As a behaviour management system, ClassDojo takes students' self-monitoring behaviour into account. The use of self-regulatory skills is closely linked to student's academic success and also motivation（Zimmerman, 1996）. McClelland and Cameron (2011) claimed self-regulation as the route to "children's healthy and adaptive development". To fully comprehend self-regulation, Zimmerman (2002) identified it as the process of changing mental abilities to academic skills where learning takes place voluntarily and consciously. Zimmerman also pointed to the learners' self-efficacy and interest in a certain topic as the important key factors in self-motivation.

In one of the studies conducted by Abigail in 2013, she examined the effects of ClassDojo on students' self-regulation over three weeks of the period. The 24 third-grade students, ranging from eight to ten years old, are allowed to access their ClassDojo points and their behaviours scores were tracked and analyzed. The final data show positive improvements in growth in students' positive behaviour while disruptive behaviours decreased after three weeks of the intervention of ClassDojo. Thus, rewards can serve as an approach to encourage students to behave well in class. When the Students start behaving, they will put more effort and time into their studies, in order to earn the reward that in turn makes the students internalize to behave well.

TECHNOLOGY IN THE CLASSROOM

Researchers have been emphasizing the role of technology in students' lives (Solomon & Schrum, 2010). With the widespread development of technology, students have been exposed to easy access to information sources and communication networks of Web 2.0 (Solomon et al., 2010). Teachers can make use of Web 2.0 as a teaching tool in the classroom. Teachers need to keep in line with globalization and keep abreast with this 21st century's skills and ability to handle various kinds of technology in order to enhance effective teaching and learning. Due to the tremendous effects of technology on the learning of the students, more administrators require teachers to incorporate the use of technology in their classrooms as it

will be included in the evaluation of the teacher (McInnis, 2002). The constant new emergence of new technologies for the classroom makes it possible to meet and attend to the needs of the teachers in their teaching and classroom management.

The implementation of technology in the classroom can help the students to be more engaged, then will, in turn, lead to meaningful and active learning, which increases the academic achievement of the students (Aviles & Eastman, 2012). This can be due to the factor of how learners are keener to learn through visual aids. The students have been exposed to technology since birth, it has been claimed by researchers that technology aids students who are visually oriented and stimulated as compared to the traditional methods (Debevec et al., 2006). The rise of integrating technology into the classroom will gradually lead to higher engagement levels for the students (Aviles & Eastman, 2012).

RESEARCH METHODOLOGY

Behaviours are coded into two categories that separate the representative interpretation of well-behaved behaviour and disruptive behaviours of two classes as it was from the ClassDojo website. Altogether, there were a total of 16 good behaviours that will be allocated to positive points and also 16 disruptive behaviours that will be allocated to negative points.

This study is a two-phase pre-post design. During the initial phase, a consent form will be given to three international institutions, teachers and selected students followed by ClassDojo implemented with all the chosen classes in the same manner. The Classdojo points will be recorded weekly over eight weeks of intervention and the points will be analysed by their variation. After eight weeks of intervention, all the participants will undergo an audio-taped interview session regarding their perception of the effectiveness of ClassDojo as a classroom management tool.

To explore the effects of ClassDojo on students' classroom behaviour, two major primary sources: Pre-post ClassDojo points and observation will be examined. The data collected will be analysed to determine the average range of ClassDojo points before and after the intervention of ClassDojo. It is then followed by the audiotaped interviews, the audio will be transcribed verbatim for analysis by the pattern of themes which provides explanatory insight in relation to the research questions. The data will be analysed until it reaches a saturation point when no new themes can emerge from the data.

THE EFFECTIVENESS OF CLASSDOJO IN INFLUENCING STUDENT BEHAVIOUR

Through observation, the teachers had been adopting a consistent pattern of using the ClassDojo to track their behaviours across four weeks of duration. It involved the implementation of ClassDojo in six classes in the same manner. From week 2 onwards, the students from both classes were aware of the implementation of the ClassDojo system and how it works. Pre-post ClassDojo points and observations will be examined in investigating the effectiveness of ClassDojo in influencing student behaviour. The following is the presentation of the quantitative data collected to determine the average range of ClassDojo points prior to and after the intervention of ClassDojo :

TABLE 1. Mean of the Pre-post ClassDojo points of 24 Students
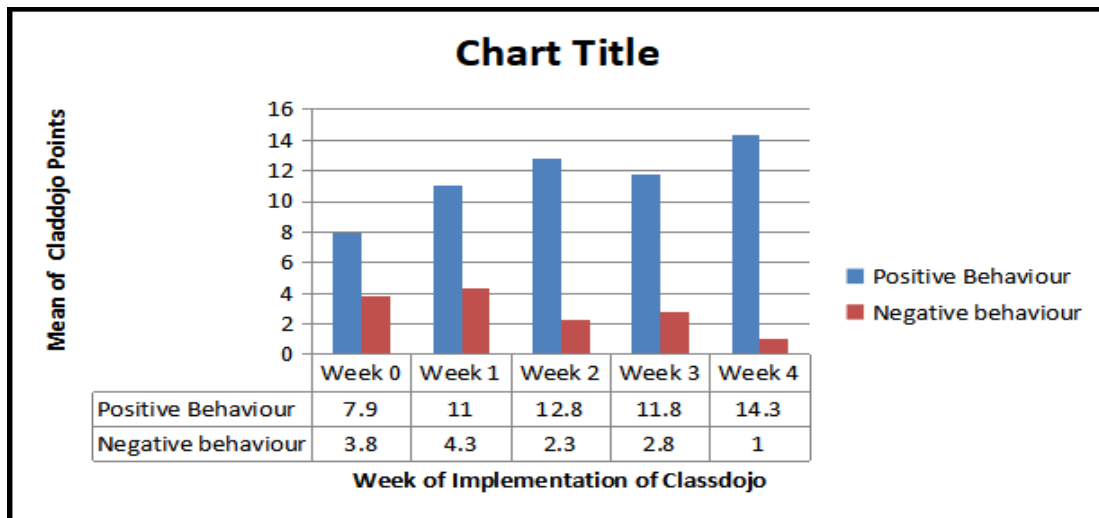
Throughout the whole duration of data collection, the teachers make full use of ClassDojo for every English lesson which consists of five days, estimated to be about 10 hours per week. The initial stage of week 0 which consists of two weeks shows a total point of 125 for positive behaviours and a total negative point of 30 as baseline data. During the later phase of implementation, for four weeks, the students earned a total sum of 197 positive points for positive behaviour while losing 41 points for negative behaviour. Table 1 displays the pre and post of mean frequencies of ClassDojo points along with the time period as weekly data. This enables the comparison between the weekly rise and decrease in both positive and negative behaviours.

TABLE 2. Mean Frequencies of Positive Behavior for Pre-post Implementation

Participants in the form of school (Pseudonym)	Mean Frequency Of Baseline Positive Behavior, Week 0	Mean Frequency Of Post-ClassDojo Positive Points, Week 1-4	Change in Mean Frequency	Percentage of Change in Positive Behaviour
School A	7.8	13.3	5.5	41%
School B	11	17.8	6.8	38%
School C	6.8	10.8	4	37%

TABLE 3. Mean Frequencies of Negative Behavior for Pre-post Implementation

Participants (Pseudonym)	Mean Frequency Of Baseline Negative Behaviour, Week 0	Mean Frequency Of Post-ClassDojo Negative Points, Week 1-4	Change in Mean Frequency	Percentage of Change in Negative Behaviour
School A	2.5	0.3	-2.2	47%
School B	1.5	1.3	-0.2	12%
School C	6	5.5	-0.5	8%

The analysis of the collected data exhibits an increase in the frequency mean of positive behaviours. There is also an overall decline in the frequency mean of negative behaviours when looking at the percentage of change in the mean frequency prior to and after the intervention of ClassDojo. It is to be noted that all of the positive and negative behaviours were equally distributed with one point which holds the same point weightage. The statistically increase in the frequency of those behaviours enables the teacher to handle the class more easily as the teacher makes full use of the intervention as a classroom management tool.

However, there was no significant increase in the behaviour of lining up quietly. From the observation, it was noted that when the students are required to line up, it is usually when the lesson has finished and the teacher in the classroom has turned off the slide projector that was supposed to project the ClassDojo points. Without the display of the ClassDojo, the students had assumed or forgotten about the badge of 'Line Up Quietly' in the ClassDojo. Another reason may be due to the teacher packing up their devices and they don't usually use the ClassDojo anymore.

Meanwhile, for the negative points, the analysis of the data shows a decrease in the points of the badge of 'Out of Seat' and 'Talking loudly 'which had the highest decrease between prior and post-intervention in mean frequency as compared to the other behaviours. Overall, the trend was established and indicates that the implementation of this study encouraged students to be more self-regulated and well-behaved in the classroom.

TEACHERS' AND STUDENTS' PERCEPTIONS OF THE EFFECTIVENESS OF CLASSDOJO

During the final week of intervention, six student participants underwent an interview session with the researcher. In the process of analyzing the transcript, quotations will be directly inserted in the description to ensure the authenticity corresponds to the participants. It is noted that the quotations inserted are not edited for grammar or syntax to ensure the authentic voice of the participants. The processes of collection and interpretation of data have elicited several note-worthy themes regarding the view on the use of ClassDojo over four weeks of implementation. The participants' responses were strongly positive about the usage of ClassDojo and each of the participants presented their views that were regulated around these three recurrent themes, with the aid of direct representation of quotations to sustain the themes.

CLASSDOJO INCREASES STUDENTS' MOTIVATION TO BE MORE ENGAGED IN CLASS

All of the participants claimed to love receiving positive points while disliked getting negative points. However, the reason behind their love to receive positive points was different and varied. Most of the students seek positive points because of the extrinsic rewards that the teacher has promised to give when their ClassDojo points reach the target points. Meanwhile, the others like it because of the silent competition among other peers in class. The students like the competition where they race to reach the highest ClassDojo points.

REWARDS

The teachers have mentioned the extrinsic rewards with the class when introducing the implementation during the first week is important. One of the teachers has certificates, scratch cards, and goody bags as rewards while the other teachers allowed everyone to have a chance to obtain the goody bag and scratch cards through the point-gift redemption system while the certificate was for the best-behaved student. The students were motivated by the goals given which brought them the urge to perform well in class, not only limited to their academic performance, it changed their behaviours as they are more determined and persevered in classroom activities. Interestingly, ClassDojo has an impact on the student's parents as they are more aware of their children's performance and well-being in the class. This makes the students more alert of how they behave in class as their parents have access to the ClassDojo application. Ultimately, the student participants claimed to be very fond of the extrinsic rewards and as a drive for them to behave well in class. The students have identified what are the good and bad

behaviours regarded by the teachers to obtain the accumulated points for the prizes. This provides support to the effectiveness of this classroom management tool.

SILENT COMPETITION

Students are motivated by the competition with their peers in obtaining the highest ClassDojo points is another sub-theme that makes ClassDojo effective as a classroom management tool. This competition involves achieving more positive points and fewer negative points than all other peers in class. Students have seen this as a silent competition as there was no actual verbal declaration from the students of who was winning at any time. All of the student participants were trying to compete with their peers without voicing it out. One of the student participants said the following:

"I don't like it when I have lower points, it makes me sad but if I get higher than my friends then I will be happy."

By looking at two classes, the competition in Teacher B's classroom seems more prominent as the responses from two of the students from that class said:

"I have to get higher than my friends, my parents will like it if I am at the top so I want to be the first so-so I can get more prizes and beat my friends"

" It's just that I don't want to fall behind everyone and I want to try to get high- to know I am not the top but I just want to get high. When I know other people have fewer points than me, I just feel happy and kinda like a competitive race."

All the teachers have agreed that the competition is one of the causes of their motivation to earn more points by behaving well in class. The teachers revealed that competition among the students makes the class more enjoyable and controlled even though the teacher does not verbally instruct the students to treat the ClassDojo points as a competition. The students acknowledged this competition as a force that drives them to comply with the classroom rules that were set by the teacher, thereby this can be a contributing factor to enabling the effectiveness of this class management tool.

VISUAL AND AUDIO FEATURES OF CLASSDOJO

The students were able to see their points in the class as displayed from the projector on the whiteboard at the front of the class on an occasional basis. The participants acknowledged how the features of ClassDojo are unique from any other classroom management strategies/programs. Among the students, Student B has the highest percentage of change in behaviours in both positive and disruptive behaviours. He obtained 41% of the change in positive behaviours while 47% of the change in negative behaviours. During the interview with Student B, he claimed that "It (ClassDojo) is a good way for the students to know what to do and what needs to be improved". During the first week of implementation, a few students started to warn their noisy classmates that the teacher will minus their ClassDojo points if they do not behave.

The idea of immediate feedback or responses can be closely related to the audio and visual elements of ClassDojo. Both sound and visual serve as a cue for the students to be cautious with their current behaviours. This immediacy was important as one of the teachers explained that "The 'Buzz' or 'Ding' will straight away put them (students) on task…it was really funny."This teacher acknowledged how ClassDojo can make the students on their best behaviour. The audio and visual cues were necessary to curb disruptive behaviours.

Student K has received a few negative points over the intervention weeks, she claimed that the sound "makes me know that...like a warning siren that stops you from doing the wrong things or like 'stop walking around the classroom or talking." The examples that Student K gave were supporting the role of ClassDojo which is to remind and alert the students to be on their best behaviour in order to score positive points. Student B is the student who was labelled

as the student that displays the most disruptive behaviours, he explained that he hates the 'buzz' because the whole class knows about it. This student seems to be ashamed to have his points deducted in front of the class. It shows how visual and audible cues can serve as a reminder for them to be on task. This was due to how the students can check the behaviour that was being rewarded or deducted on the projected screen along with the 'Ding' that signifies positive points gained and the 'Buzz' sounds for negative points. The teachers acknowledged how the visual and audio cues can make the teacher see the students' behaviour change: "When the sound goes off, it's like everyone straightens up and everyone goes silent automatically.".

THE EFFECTIVENESS OF CLASSDOJO DEPENDS ON THE CONTEXT

The student participants identified two contexts to evaluate how the effectiveness of ClassDojo as classroom management can alter. According to the student participants, they found that it would be the individual task to be the most effective time to use ClassDojo because the students are more inclined to earn points for themselves individually. Meanwhile, in group tasks, on the other hand, the students claimed that they were too engaged among themselves when sitting together for group activities and therefore can sometimes forget the existence of ClassDojo. According to four teachers, group work is more difficult for ClassDojo to play its role because of the high level of excitement in the activity conducted. In contrast, two teachers believed that ClassDojo is more useful for group tasks and mentioned how ClassDojo has helped the students in a group to monitor and advise one another on their behaviour. Regardless of the different perceptions of the preferred context of implementing ClassDojo, to a certain extent, all the participants feel that ClassDojo is very useful as a behaviour management tool.

DISCUSSION

The quantitative results from the pre and post-ClassDojo intervention have shown a positive change in students' behaviours with the students and these results can be comparable to the previous studies in which there is a significant decline in disruptive behaviour and thereby affirm the current research question one (Hickey & Schafer, 2006; Wheatley et al., 2009; Lambert et al.,2015; Lynne, 2016). Thus, the current findings of this study can be added to the body of research that supports the implementation of ClassDojo as a classroom management tool. This technology has provided a good platform for the teachers to keep track of and display the points for the class which can potentially help the students to be more on task during the lesson. Thus, indicating the effectiveness of ClassDojo in minimizing disruptive behaviours while promoting on-task behaviours.

Skinner (1987) came up with the behaviourist notion of operant conditioning which differs from Pavlov's classical conditioning that preceded his theory. This theory has influenced the approach of this study and how it played into ClassDojo implementation. Skinner asserted that an individual does not just react to stimulus but rather react to the positive and negative reinforcement around them (Skinner, 1987). Students are more self-regulated when they are motivated (Zimmerman, 1996). This was affirmed by how the students perceived ClassDojo as a motivational tool in which they are willing to behave well to earn more positive points. This further rectifies the research study done by Abigail in 2013 as stated in the literature review whereby she examined the effects of ClassDojo on students' self-regulation and discovered improvements in growth in students' behaviour.

All of these themes clarified and elucidated why this classroom management tool can be an effective tool. Every participant has derived a conclusion that ClassDojo is an effective tool for the teacher to use to handle the class. This is due to several reasons that can be closely related to the theoretical framework of this study like Skinner's operant conditioning concept. Most of the participants declared the importance of the 'ding' and 'buzz' audio sound of ClassDojo,

these features of ClassDojo create awareness of the existence of the behaviour tracking system in class as the sounds that are produced are corresponding to the gain of positive points and loss of points.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE STUDY

The small size sample of students chosen for this study could have been more effective if half of the population of both classes were taken into account. Since this study only delimited to the upper-grade elementary classroom, the researcher suggests further research should be done the same for other grade levels. Furthermore, this study can be improvised and replicated with different populations of students that can vary according to the state region like East Malaysia and West Malaysia. The study can be more generalized to the whole of Malaysia in the form of a large-scale study which can increase its representativeness. Future studies might consider taking a longer duration to implement ClassDojo and see the changes as this study was conducted over six weeks of duration. By prolonging the research duration, significant findings may emerge and it would make the data more representative.

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