

# Artificial intelligence in education: integrating serious gaming into the language class classdojo technology for classroom behavioral management

Yassine Benhadj<sup>1</sup>, Mohammed El Messaoudi<sup>2</sup>, Abdelhamid Nfissi<sup>3</sup>

<sup>1,3</sup>Laboratory: Discourse, Creativity and Society, Perception and Implications Sidi Mohamed Ben Abdellah University, Faculty of Arts and Human Sciences, Fes –Sais, Morocco

<sup>2</sup>Moulay Ismail University, Faculty of Arts and Human Sciences, Meknes, Morocco

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## ABSTRACT

The aim of the study at hand was to examine students' perceptions of game elements used in gamification application. ClassDojo, as a study case, was implemented class-wide in a Moroccan High School EFL classroom. Data was gathered and saved directly through the application. It is qualitative research that opted for structured interviews to collect data. The findings were evaluated in so far as class motivation, participation, cooperation, discipline, attendance, and classroom discourse are concerned. This study has shown a crystal clear improvement in terms of discipline, motivations and classroom participation, suggesting the great need to conduct more research with a view to determine if these areas could be positively or negatively impacted when integrating ClassDojo in classroom management on a large scale. The findings of this study are of much significance to decision makers, curriculum developers, syllabus designers, and teachers in both senior and junior schools in Morocco.

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## Corresponding Author:

Yassine Benhadj,  
Laboratory: Discourse, Creativity and Society,  
Perception and Implications Sidi Mohamed Ben Abdellah University,  
Faculty of Arts and Human Sciences, Fes –Sais, Morocco.  
Email: Yassine150@gmail.com

## 1. INTRODUCTION

In this new technological era, the traditional school, armed with an obsolete, less engaging, and a demotivating arsenal of teaching materials and styles, has been blamed and made responsible for inflicting demotivation and unwillingness to learn and excel at school. Most studies in the field of ICT focused on the leading role of digital natives. In this regard, the terms Digital natives, the Net generation, the Google generation or confirm that new technologies have found a way to the heart young people [1]. When many students, who are by excellence digital natives, compare this to the amount of enjoyment and pleasure they have while embarking on their online journeys, the school becomes nothing, but a nightmare. Gamification, however, which is, by large, about the integration game dynamics and mechanics into non-game settings, offers a way to sort out this serious problem and get back students' trust and passion, especially that the experience of gamifying the learning process has started gaining ground in many countries thanks to its proven effectiveness. The study at hand was held to assess how the classroom environment may be impacted by integrating ClassDojo, which is a free online platform that helps gamify the learning experience. Common sense dictates that new technologies can inject new life in the classroom life, making students active, motivated, and engaged again in various classroom practices. "Technology nowadays makes everything easy and effective. It helps teachers in managing their classroom efficiently" [2]. The debate about the need to incorporate gamification into instructional practices has been gaining prominence lately. Recent evidence

suggests that Game-based learning tools such as ClassDojo can upgrade pedagogical practices. Recently, teachers have shown an immensely intriguing interest in the platform, being convinced by various studies that have confirmed that ClassDojo affects motivation, engagement, discipline, cooperation, and attendance positively, and develops students' metacognitive abilities, promoting empathy, and building teamwork skills.

## 2. REVIEW OF LITERATURE

**Gamifying the EFL Classroom** Recently, researchers and ICT experts have shown an increasing interest in gamifying the EFL classroom. A pioneer in the field, defines gamification as the use of gamebased mechanics, aesthetics and game thinking with a view to not only engaging people, or motivate action, but promote learning and solve problems as well." [3]. In recent years, goal-oriented, feedback driven, rule-based and fun are some of the many terms used every now and then to label gamification. As an effective instructional strategy, gamification has pushed learning and teaching processes to the next level. By large, gamification has been viewed as an effective approach to enact positive change in students' behavior and attitude towards learning, leading to an improved scholastic achievement. On the one hand, gamification affects students' behavior, and motivation, leading to improvement of knowledge and skills [4]. On the other hand, seeing that games are played at home, on the streets and in an environment where opportunities are available, the thinking skills are processed and game strategies are used in education to make learning easier for the students [5]. Assumingly, gamification can affect students positively by helping them learn from mistakes made in class, and it also can support students' emotional experiences and social positioning [6]. Joining the debate, a field expert agrees when he writes that gamification is about using game elements and game design concepts in non-game environments [7]. As discussed above, gamification, revolving, for the most part, around using game mechanics, playful thinking, and aesthetics so as to invigorate people to get together and learn. In a nutshell, research in ICT& ELT shed light on the point that the purpose of gamification is to boost learners' motivation and upgrade their problem-solving skills. It is concluded that using gamification in education may have countless positive effects on the students [6].

### 2.1. ClassDojo as a case study

Principally, ClassDojo is an online platform, which can be accessed through a computer, tablet, or Smartphone. This online platform can be entrusted with a very delicate ELT practice, classroom management. In essence, it can track students' behavior in precise terms by simply adding or subtracting points. The latter falls in specific categories, the teacher and/or pupils can possibly design that. Historically speaking, ClassDojo was launched in August 2011. Nowadays, there is statistical evidence that in two out of three public schools in USA make use of ClassDojo [8]. One implication is to link instruction with accountability. By extension, the reason behind is to get students responsible for the behaviors patterns they may display. The teacher here is in a position to reward or deduct points from students for the behaviors that they display and the choices they make. Thus, ClassDojo imparts both positive as well as negative feedback. By way of illustration, if a student does well by displaying the behavior for that deserves earning a point, a cheerful sounding "ding" is played. It provides instantaneous informative feedback. Similarly, if a pupil makes a poor choice, by displaying the inappropriate behavior for which they may lose a point, more striking negative tone is alarmingly played [8]. This account seeks to shed light on the concepts 'behavior-specific praise' as well as 'behavior-specific redirection'. To take a case in point, instead of saying "good job" or "stop talking" the points on ClassDojo will be rewarded based upon what specific positive behavior. To put it succinctly, the way the pupils perform and what specific negative behavior they demonstrate and whether it is appropriate at the time are taken into account. Nothing goes unrewarded! It has been noted that "ClassDojo is distributed free of charge and is used by roughly 200,000 teachers as a tool to help teachers". He reports that ClassDojo is a great enabling tool that helps tracking assorted behaviors, both negative and positive. He claims, based on ClassDojo Company reports, that teachers using ClassDojo acknowledged a 45%-90% increases in positive behavior and a 50%-85% decrease in incidents of negative behavior [2]. It follows, then, students are encouraged and motivated to do a better job seeing that the program can give minute-by-minute, day-by-day and week-by-week feedback. In line with [2], there is ample evidence that building the avatars as shown in Figure 1, creating classroom rules and choosing icons for each help to develop a caring, supportive relationship with classmates and teachers [9]. It has been acknowledged that ClassDojo can be utilized to sharpen students' social skills and self-regulation [10]. Having just argued that there is solid evidence that ClassDojo positively impacts the classroom context, let us turn our attention to the sundry utilization of ClassDojo.

## 2.2. ClassDojo as a powerful classroom management tool

As regards classroom management, a couple of researchers have noted that that classroom management encompasses all the efforts and endeavors teachers take to create a supportive environment for the academic and social and emotional learning of students [11]. Accordingly, “one of our primary duties as teachers is to get our students to learn. It is not only difficult but also impossible at times, to learn in chaotic environments” [12]. Several studies have revealed that for effective instruction to come into play, classrooms must be well managed” [13]. In essence, the ClassDojo platform provides ample opportunities to facilitate classroom management for teachers. Ultimately, the program is gaining support for use as a classroom management tool as it offers teachers an interactive way to provide students with efficient, consistent feedback, and public feedback, which may provide more compelling reasons and motives for students to engage in appropriate behavior [14]. Previous studies support the concept that students respond and change their behavior based upon information they are interpreting from their environment. To put it bluntly, if students receive feedback from their teachers, positive or negative, they react and tend to display a change in behavior in harmony with the nature of feedback, be it negative or positive. Along the same lines, classroom management is one of the biggest challenges facing new teachers and novice teachers are more concerned about student's disruptive behaviors, conceding that one way to help teachers with classroom management and discipline problems is getting them to use ClassDojo [15].

## 2.3. ClassDojo & discipline

In discussions of classroom discipline, one controversial issue has been behavior management systems, namely classroom discipline conduct charts. Arguably, pupils are often penalized for specific undesirable behaviors. Worse is the fact desirable behaviors are unfortunately gone unnoticed. According to literature on the topic, reward systems are often inadequate enough to consolidate and reinforce positive behavior patterns. In this respect, it has been clearly stated that when teachers implement class-wide interventions, classroom interaction patterns get more positive, and in turn result in more engagement on students' part. Consequently, students are more in position to stay on-task, getting focused on teaching appropriate behaviors which will likely materialize in a positive classroom environment, promoting student learning and engagement” [16]. Research tells that “Forty percent of teachers say they spend more than half of their time managing behavior rather than teaching--and it's a reason why they quit teaching altogether” [17]. Reportedly, talking aloud in class, getting out of one's seat, making noises, fighting, throwing objects, using foul language, and avoiding work are some of the negative behavior patterns that make teachers lose control of the teaching-learning episode. Research, again, states that “effective prevention involves the establishment of predictable, positive environments that support students' behavioral and academic needs” [18]. The bottom line, here, is that ClassDojo platform could be powerful enough to sustain engagement and interest in good behavior, keeping track of the ins and outs of the classroom setting.

## 2.4. ClassDojo & class data

Technically speaking, behavior tracking programs tend to allow teachers to track the classroom conduct of individual students and reward or punish it correspondingly. There has been plentiful discussion and research conducted on the efficiency or beneficial use of ClassDojo as a behavior management data recollection tool. Different case studies insist that students have become rewarded or redirected in a logical manner, differentiating between what behaviors are desirably expected and which are prohibited and are to be avoided and evaded. In addition, a number of teachers have recently insisted that the application continuously collects data, allowing staff and parents to further understand the types and frequency of behaviors that the students are displaying. There is research into its use and how it can positively impact a classroom in a general sense. In a recent study, there has been much discussion about how the application can be easily implemented and how its general benefits may change the mould of classroom management. They also noted that the application tracks short term and long term data [19]. This allows parents, teachers, and students to see progress in the short and long run. In addition, the researchers discussed the benefit of student and parent connectivity. This encourages both students, parents, stakeholders, and all concerned parties to track progress and successes from their personal devices, as well as serves as a motivator to the students to see their point status. The upshot of all this is that ClassDojo is gaining popularity and is becoming commonplace in today's classrooms.

## 2.5. ClassDojo & motivation

Incontestably, today's learners are digital natives par excellence, having an upper hand on digital technologies, different learning styles, new attitudes to the learning process and higher requirements for the teaching and learning process. There is a myriad of factors that motivate the students have also been differed by the development of technology [20]. It has been demonstrated that the use of game mechanics improves

the abilities to learn new skills by 40% [21]. A number of investigations into gamification, in a microbiology course, came to the conclusion gamification motivates students and helps them excel in studies. According to the findings, it was determined that the gamification positively impacts the success and motivation of the students. It has been claimed that ClassDojo helps monitoring individual student progress regardless of academic performance level [22].

## 2.6. ClassDojo& class participation

Indubitably, various are the researchers who believe that gamification, in classroom settings, can increase learners' motivation and interest towards the courses. According to [23], using gamified learning activities, in their research studies, has boosted the motivation and satisfaction of students. Yet, it has been argued that if students are sitting in tables or working in teams you can reward participation and collaboration with the new ClassDojo Groups feature [24]. Teachers can now award points to either an individual student or a group of students. ClassDojo Groups can help motivate teamwork in your classroom. This could be a table of students that sit together most of the day, a reading group on a weekly basis, or a group of students who are working together on a short or long-term project. Implementing Class Dojo in a third-grade class, it has been found that it leads to increases in positive classroom behaviors. Most notably, students raised their hand to answer questions 44% more through using the Class Dojo application. She also found that off-task talking to other students decreased by 74.2. %. There was a strong relationship between a number of points a student earned and his or her level of extroversion. I would contest that a platform like Class Dojo would encourage continued participation for those students who are more naturally extroverted. It might also provide that gentle nudge for more introverted students and give them a chance to have their voices equalized in the classroom setting [25]. Regarding classroom management, it has been asserted that classroom management is more organized around specific actions taken to guarantee a learning environment wherein instruction (teaching and learning) can proceed smoothly. Thus, making informed decisions about the physical environment, rules and procedures, strategies to sustain students' attention to lessons and engagement in activities are a case in point. [26]

## 2.7. ClassDojo & stakeholders

Throughout the year, all stakeholders and concerned parties, including parents, administration, and students, are granted the permit to review ClassDojo points, recorded on students' profile. Interestingly, parents also have logins that allow viewing their child's achievements from home as well as have the opportunity to send messages to the classroom teacher. Eva Moskowitz (Transforms Educational System in Harlem) confirms that the classroom communication app helps students to build social-emotional skills. In the meanwhile, concerned parties (students, parents, and teachers) can share what is happening, in a manageable way, during the school day [27].

## 2.8. ClassDojo& critics

Ben Williamson, a lecturer in education at the University of Stirling and the author of Big Data in Education, became aware of it when it was introduced at his children's school. It was launched in 2011 and its behavioral monitoring has been under scathing criticism for labeling children at an early age and for making the classroom a competitive space. Another major criticism is the lack of detailed studies, documenting ClassDojo utilization in classroom. Furthermore, he contends that some teachers have developed a disliking for the platform for having a behaviorist reward system as a basis." In addition, the leaderboards and badges have contributed negatively to the learning outcomes of users [23]. In a different research, it is stated that the imaginary avatars in a gamification application move the students away from reality [28].

## 2.9. The purpose of the study

This present study aims at:

- Evaluating participant students' satisfaction with the use of the ClassDojo platform in managing classroom practices.
- Evaluating participant students' readiness and motivation to use ClassDojo platform to structure future learning experiences.

## 2.10. Research questions

By large, the central research question asks to what extent participants were satisfied/ dissatisfied with ClassDojo platform in so far as behavior management. In essence, the researchers was really interested in receiving students' feedback about this new online learning experience in order to spot the positive and also negative points that need more attention in the future. The study aimed at addressing the following

questions:

- To what extent, has ClassDojo reinforced students' positive classroom behavior management in the classroom context?
- To what extent are participant students willing and ready to try the ClassDojo platform in future learning experiences?

### 3. RESEARCH METHODOLOGY

#### 3.1. Research design

The paper at hand follows a case study qualitative research design. Case studies are meant to investigate a phenomenon, to engender hypotheses, and to ratify a method. Furthermore, it provides a unique example of actual people in actual situations, empowering readers to understand ideas more clearly than simply by presenting them with abstract theories or principles [29]. The researchers' main objective was to find out how the participant students evaluate the integration of ClassDojo in managing classroom discipline, motivation, and participation at the Moroccan high School. Thus, this method is highly qualified to elicit detailed and in depth information in this regard.

#### 3.2. Participants

41 Moroccan first-year Baccalaureate students were conveniently chosen to participate in this study. They all study in the same public high school, in the same class, belong to the science stream and aged between 16 to 17 years. They were offered the opportunity to participate in a study that lasted about 6 months. To clarify, they were given personal codes and invited to have access to an online learning platform called "ClassDojo". The study at hand took place at a huge urban senior high school in Azrou, Ifrane Directorate. The classroom was a regular education classroom that serves the instructional needs of up to 41 students throughout the day. Capitalizing on data show, the ClassDojo home screen was displayed on the whiteboard throughout most of the day unless there was something instructional that needs to be shown. When that happened, ClassDojo points were given through the classroom iPad or the teacher's phone which both had the application.

#### 3.3. Instruments and procedure

Using ClassDojo to determine if ClassDojo were an effective tool to upgrade classroom practices during guided instruction, the program was implemented from October to June in a first-baccalaureate grade classroom. To begin, class account was created by the teacher. It is worth mentioning that the platforms allows having multiple class accounts, if need be. Next, the class roster was uploaded. Afterwards, ClassDojo platform automatically assigns each student an avatar. An avatar is an icon or figure that can be used to represent a person in an online environment [30]. ]. Figure 1 is a case in point.



Figure 1. Students' assigned avatars sample

In an effort to find potential answers to the research questions, interviews were conducted to pull out the real picture and generate knowledge about ClassDojo use in the EFL/ESL classroom. Structured interviews were carried out with pre-defined questions with a sample size of 41 conveniently selected first-year baccalaureate students, belonging to the science stream. They were interviewed in focused groups of five. The questions of the interviews were manipulated in a way to draw students' feelings,

perceptions, and experiences over a specific period of time. Before collecting the data, the researcher met with participants to explain the major objective of the study and acquaint them with the types of questions they would be answering.

#### 4. DATA ANALYSIS

Pieces of information, based on interviews, were interpreted using two different ways: thematic generation and citation. Thematic generation was meant to identify and draw upon common themes across the interviews. However, citations enabled directly quoting parts of the interviews in the report with the names of students anonymously coded. Moustakas' (1994) process for phenomenological reduction was utilized to analyze data [31]. Using the aforementioned process, seven themes emerged from the data: (1) ClassDojo as a Powerful Classroom Management Tool, (2) A unique classroom management Experience, (3) Attention and focus, (4) Participation, (5) Fun and enjoyment, (6) Competition, and (7) Learning and knowledge retention. These themes revolved around two research questions and helped to elucidate the perceptions of the 41 participants regarding ClassDojo and its implementation as a classroom management tool.

Research question 1: To what extent, has ClassDojo reinforced students' positive classroom behavior management in the classroom context? (1) ClassDojo as a Powerful Classroom Management Tool: 34 students voiced out, "I feel happy when I earn a positive Dojo point." (2) A unique classroom management Experience: Participants referred to ClassDojo as a unique classroom that is enjoyable and stimulating to learning. Compared to engagement in other classes, students mentioned that learning with ClassDojo was a rewarding teaching experience that is captivating and desirable. So it did capture everyone's attention straight away [Student 1]. (3) Attention and focus: Most participants seemed to agree that ClassDojo can serve as a catalyst for positive attention and focus in the classroom. They affirmed that ClassDojo was an enjoyable activity that encouraged them to pay more attention during instruction [Students 9 and 10]. The deployment of ClassDojo also motivated students to closely monitor their behavior patterns and do their best to display positive behavior throughout the entire class. "I guess it keeps you more alert because you are always required to be focused if you want to do well in ClassDojo" [Student 8]. (4) Participation: Data analysis showed that ClassDojo gave students more chances to interact and be engaged in most of the classroom activities. 36 participants reported that it positively influenced their participation in class, and yet provided them with the opportunity to choose their desirable way of doing so. According to [Student 3], "ClassDojo was a very encouraging experience because it never stopped urging us to invest more efforts in class; the reward system kept us willing to talk and positively prove our presence in class and in every session". (5) Fun and enjoyment: As a game-based student response system, fun and entertainment lie at the core of ClassDojo. Interviews revealed that respondents enjoyed the avatars. (32) Participants specifically pointed out that ClassDojo was fun. They conceded that in-class use of ClassDojo was an entertaining experience. It was just a funny way of interacting and learning how well students are doing at school [Student 7]. (6) Competition: 27 participants discussed the competitive nature of ClassDojo regarding interaction patterns and engagement levels. Many respondents liked the competitive aspect of ClassDojo, seeing it as a motivating factor to participate, encouraging them earn more points and badges, exerting more energy, and shaping the landscape of a dynamic classroom atmosphere. (7) Learning and knowledge retention: 37 out of the 41 participants stated that ClassDojo was a useful learning tool which had a remarkable influence on their learning experience. Throughout the interviews, participants made positive references to how ClassDojo supported their learning. They stated that engaging with ClassDojo during classes helped them not only remember the previously covered materials but understand new ones as well. "With the intention to earn new points in every session, I come to class prepared, trying to make a relationship between the preceding and also the coming learning episodes" [Student 12].

Research question 2: To what extent are participant students willing and ready to capitalize on the platform in future learning experiences? As shown below, Figure 2, 93% of participant students did report being highly motivated and ready to use ClassDojo in future learning opportunities. This means that their experience with ClassDojo was successful and has positively impacted their behavior at school. Whereas, only 7% showed a kind of disinterest in trying to keep making use of ClassDojo in-class practice.

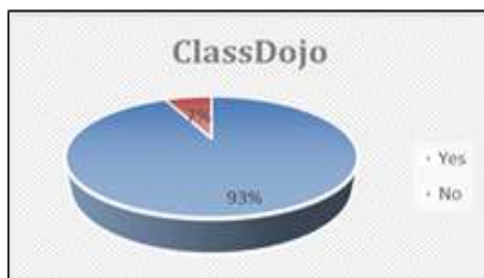


Figure 2. Students' readiness to try ClassDojo in future learning experiences.

## 5. DISCUSSION

The current study investigated the efficiency and robustness of a digital behavior management tool called ClassDojo. The objective was to see whether the consistent use of this application would maximize students' positive behavior patterns and minimize the negative ones. This study met the goals discussed above by achieving both an increase in positive behaviors and a decrease in negative behaviors. When analyzing the survey data, the majority of students showed that they had a positive outlook or viewpoint of ClassDojo and its use in their classroom. This shows that students felt that ClassDojo helped them build their self-control and self-monitoring skills. If they lost a point for negative behavior, the application declared, through audio features, what behavior they needed to work on, they made corrective choices and actions and were motivated to receive more positive points. Participants also consistently communicated the notion that students are influenced by the results associated with their behaviors. In harmony with a major theoretical framework for the study, participants voiced out that ClassDojo was influential enough regarding its operant conditioning nature [32]. Participants consistently reiterated that audio features are valuable distinguishing features. Capitalizing on sophisticated technology, the sounds that ClassDojo plays influences and gear students into behaving in certain ways. In line with Social Cognitive Theory [33], when a student gets a positive point, the other students in the classroom pay close attention to the behavior patterns that let that student earn the positive point. Consequently, being engaged in a cognitive process, they start thinking about generating potentially possible behaviors patterns in order to win more points. Similarly, getting a negative point is seen as a wake-up call, a red flag. Therefore, students mark the behavior pattern as inappropriate and blacklist it [34]. Cognitively speaking, this proves that ClassDojo cannot only serve as a source of encouragement and supportive praise but also as an informative and behaviorally educational tool. Figure 3 is a piece of evidence.

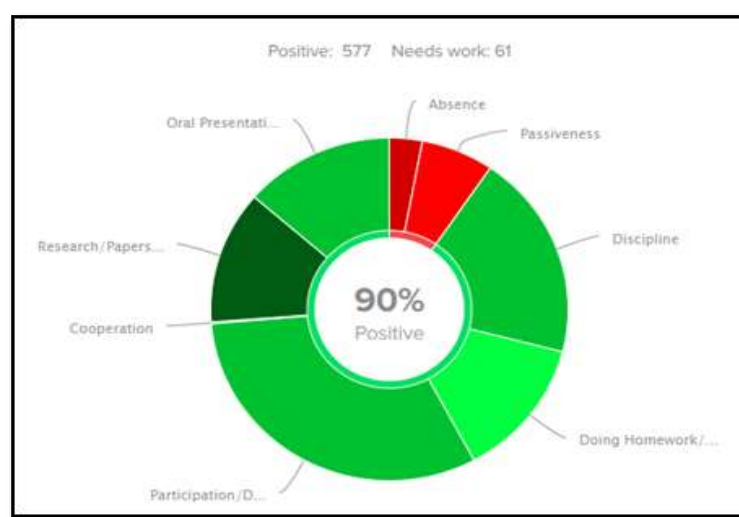


Figure 3. Students' overall experience with ClassDojo report.

## 6. CONCLUSION

The present study was designed to clarify aspects of students' perceptions of the integration of gamification into the teaching-learning process. In this investigation, the aim was to assess to what extent ClassDojo leads to improved classroom practice in terms of class motivation, participation, cooperation, discipline, attendance, and classroom discourse. The most obvious finding of this study is that teachers should teach Digital natives, the Net generation, the Google generation or the Millennials the way they want to learn. Gamifying the teaching-learning process has become a must that each and every teacher, in every nook and cranny, should never evade nor try to avoid. Modern technology, ICT utilization in-class practice, does make a difference. As stated earlier, ClassDojo is a successful educational technology in history that seeks radical disruption in education via popularizing new psychological theories of behavior modification. Although the study yielded positive results and one can determine that ClassDojo can have a positive impact on classroom behavior, there are some things to consider when reviewing the results.

The reader should keep in mind the study is based on a case study. Hence, the data collected is from a small number of students coming from only one public senior high school. The study took place in a self-contained first-baccalaureate class. The teacher in charge found the platform engaging. Yet, some teachers might find time childish or time-consuming. Therefore, the results received may not be generalized to other schools in the Moroccan context. Thus, Future broader studies are to be conducted to enhance the generalizability of the results. Further studies can also touch upon new socio-cultural dimensions and help in exploring new pathways.

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#### APPENDIX A: Interview questions for students

- What did you like most about ClassDojo?
- What did not you like the most about ClassDojo?
- To what extent are you ready and motivated enough to try ClassDojo in a future learning experience?