

# Advantages and Disadvantages of Tangible Reward Systems

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**Abstract.** The tangible reward system is defined as the use of material and symbolic rewards to influence students' behaviors. Tangible rewards are widely used in all education systems and have been researched from multiple aspects. However, investigations on the impact of tangible reward systems revealed controversial results. This article summarizes studies that support and oppose the ongoing debate on whether teachers should use tangible reward systems in classrooms. Previous publications on the impact of the tangible reward system on students from kindergarten to undergraduates were analyzed. The findings were compared on different conditions such as grade levels, countries and regions, and the views of parents, teachers, and students. Literatures indicated that the tangible reward system could be used by teachers to an extent for young students or unmotivated classes only as an initial guide to lead students toward adequate learning behavior and self-motivation. Several suggestions were proposed on how to effectively use tangible rewards in the classroom.

## 1 Introduction

Young children are often encouraged to engage in class for prizes such as stickers, candy, and toys. However, the debate continues on whether teachers should use tangible reward systems. The tangible reward system is defined as the use of material and symbolic rewards to influence the behaviors of students in the educational system [1]. Examples of tangible rewards include giving school supplies, snacks, merit certificates, or points for exchanging rewards, and they could be classified into anticipated and unanticipated rewards according to the time of receipt [2]. It is worth noting that there is controversy on the definition of the tangible reward system in different literatures. Some scholars define tangible reward systems as incentives delivered directly to learners without using symbols or tokens as intermediaries [3]. The system is more frequently used in compulsory schools from kindergarten to primary school in China [1]. It is one of the most direct and efficient methods to help students set learning habits, improve behaviors, and address values simultaneously in many countries [2].

Tangible rewards can be connected to aspects of psychology, sociology, and education, and has been found to have a wide range of effects. Student's positivity and teaching efficiency can be enhanced by the tangible reward system. However, since young students such as middle schoolers cannot set study goals to improve their thoughts and behaviors, they might understand tangible rewards as a material target instead of a supporting motivation for an abstract goal [4]. Moreover, college students were found in a study to have better performances after receiving tangible rewards, regardless of gender, level of performance, or the reward

type [5]. On the other hand, the tangible reward system was found to negatively affect intrinsic motivation, as demonstrated in a publication as early as 1971 [6]. In order to investigate the external rewards' effect on intrinsic motivation, the author conducted two laboratory experiments and one field experiment with different types of rewards to observe the motivation of subjects. Subjects performed the same activity in three different periods and external rewards were given during the second period to the experimental subjects only. No rewards were given to the control subjects. The findings showed that intrinsic motivation decreased when external rewards with monetary value were used, while intrinsic motivation increased when using verbal rewards and positive feedback. The author proposed a new theoretical framework to reconcile the controversies of previous literatures regarding the effects of external rewards on intrinsic motivation [6]. Since then, a number of investigators studied this topic and discovered controversial results. This article summarizes previous publications on the impact of the tangible reward system on students from kindergarten to undergraduates.

## 2 Research supporting the tangible reward system

Various studies have revealed the positive effects of the tangible reward system in different populations. Firstly, a study of kindergarten and primary education in China found that tangible reward systems could reinforce intrinsic motivation, such as self-determination and personal engagement, leading students to contribute more and generate interest in a specific activity [2]. The paper discovered that the frequent use of tangible

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rewards, defined as verbal and material, had become an extensive concern in Chinese primary schools. The authors conclude that the effectiveness of the tangible reward system is influenced by the reward's type, students' age, and when the reward is given. While it provides specific suggestions to teachers on how to utilize tangible rewards, this manuscript addresses its limitations by comparing itself to American pupils [2]. Secondly, a study was performed on 10th-class students from 329 Government Secondary schools in Pakistan and researched the impact of tangible reward systems on student motivation and academic performance using a descriptive correlational technique [3]. A survey was conducted to obtain qualitative data from these students on their opinions on the tangible reward system. The author found a significant relationship between rewards ( $M=2.27$ ,  $SD=1.14$ ) and academic performance ( $M=2.06$ ,  $SD=1.10$ ;  $t=2.18$ ,  $P=.03$ ). They observed a positive correlation so the relationship is significant between factors at  $\alpha=0.05$ . The paper concludes that education is one of many factors that helps people acquire needed information, skills, and talents, and also promotes the development of the person and the community. The findings also suggested that motivation and rewards positively influenced students' academic progress [3].

In addition, a study on the parents of students from compulsory schools in China collected parents' perceptions of tangible reward systems. The authors discovered that most parents support using tangible reward systems (as shown in Fig. 1) at school because they believe it could improve the self-esteem, collective sense of honor, and independent learning ability of children [1]. The survey revealed that approximately 67% of the participants agreed with using tangible reward systems at school (Table 1); 69% strongly agreed, agreed, or somewhat agreed that tangible reward systems can improve the self-esteem of students; 80% strongly agreed, agreed, and somewhat agreed statements that the system can help to manage or lead students' behaviors; 81% strongly agreed, agreed, and somewhat agreed that the system improves teaching efficiency [1]. The paper concluded that most participants were satisfied with the tangible reward system and its benefits. This study is different compared to the previous two literatures since the perceptions of parents may not be the same as students' opinions on the tangible reward system. The survey conducted in the study is limited since 20% of the parent's children were not engaged in tangible reward

systems [1]. Nevertheless, it provides a unique perspective to the effectiveness of teachers' utilization of the tangible reward system.

Moreover, a study investigated the tangible reward systems' effects on students in a fully online gamified learning from a large public Asian university during the pandemic of COVID-19 [7]. The authors performed a quasi-experiment study of two groups: a control group used gamification points as intangible rewards, and a treatment group that used gamification points as intangible rewards and high-quality assignment samples as tangible rewards (see Fig. 2 for detailed experiment design). Although tangible rewards showed no impact on learning performance, it motivated the students to engage more in online classes, including creating more posts and replying more often. According to the survey, students preferred both tangible and intangible rewards in gamified classes, and course content closely related to learning material as rewards [7]. Similarly, a case study of art students at a local university found that rewards are an extra encouragement that can increase the motivation of students [5]. Another study researched the effectiveness of the tangible reward system in online gamified classes through an experiment in a virtual simulation, involving participants with an average age of 21, who were assigned to a National Postgraduate Entrance Examination (NPEE) course [8]. The students who were randomly assigned to the tangible rewards group outperformed those in the intangible rewards group. The results of the final exam showed that the tangible rewards group of students significantly outperformed the intangible rewards group of students in multiple aspects, including intrinsic motivation, cognitive and behavioral engagement, and learning performance in the final exam. The authors concluded that tangible reward systems are more effective, and the study's results could be applied to other gamified classes and instructors [8].

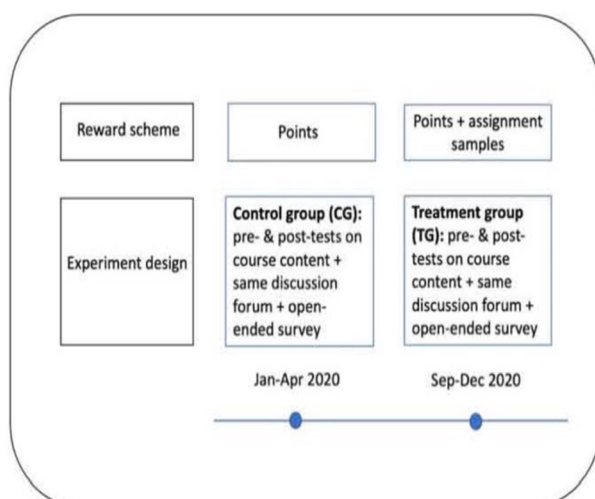
Finally, a meta-analysis showed that tangible awards given unexpectedly to a student after finishing a task are less detrimental to intrinsic motivation since it is less likely seen as the reason for the task's completion [9]. Overall, these literatures greatly differ in country, grade levels, ethnicities, and age of participants. Therefore, it is essential to consider these factors when drawing conclusions to the advantages of the tangible reward system.



**Fig. 1.** Types of Rewards Used in the Classes at Compulsory Schools, Based on Parents' Replies [1]

**Table 1.** Parents' overall perspectives about using tangible reward systems at school [1].

| Do You Agree or Disagree with Using Tangible Reward Systems at School? |    |         |
|------------------------------------------------------------------------|----|---------|
|                                                                        | N  | Percent |
| Agree                                                                  | 81 | 66.94%  |
| Disagree                                                               | 19 | 15.70%  |
| Neither Agree nor Disagree                                             | 18 | 14.88%  |
| Not Sure                                                               | 3  | 2.48%   |



**Fig. 2.** Reward Schemes, Experiment Design and Timeline of Data Collection [7].

### 3 Research opposing the tangible reward system

The adverse effects of the tangible reward system have been found in multiple studies. A renowned study in 1971 on undergraduates demonstrated that external rewards often decreased intrinsic motivation, while verbal praises and positive feedback tended to increase intrinsic motivation [6]. Furthermore, a study on teachers' overall use of rewards and punishments discovered that the tangible reward system directly conflicts with the theory of moral development that was learned by many teachers, and barely promotes students to have more mature moral reasoning [10]. The author proposed that teachers could avoid the limitations of rewards and praise by using the following methods: rewards should use an informative but not a controlling manner; rewards should only be used occasionally for intrinsically motivated behavior and used more frequently for extrinsically motivated behavior; praise and rewards should be used wisely and with strategy to encourage the cognitive and emotional process and self-discipline; using more private praise rather than public praise and rewards; encourage self-evaluation and self-reinforcement among students promote their prosocial behavior [11].

Moreover, a study found that the tangible reward system could result in students at kindergarten and primary school being less intrinsically motivated for the learning process or experience and more externally motivated by the awards [2]. The authors concluded that tangible reward was likely to change the students from intrinsically motivated to extrinsically motivated, and shift their attention from the knowledge they should learn to the tangible reward they might receive for a good performance [2]. The manuscript also suggested that the teachers should focus on how to improve the student's intrinsic motivation instead of tangible rewards, and the goal of teaching should be concentrated on how to attract the student's interest on learning instead of getting rewards [2].

Another study on parents of elementary school students discovered that there is a negative correlation between the frequency of students receiving rewards and parent-school relationships [12]. In this study, a total of 99 parents were surveyed after observing their children's

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responses to different elementary classroom management systems, and the results showed that the parents were frustrated with the systems that caused the students to be anxiety, rewards-dependent, and oppressed of personalities. The data were analysed using hierarchical regression models and revealed that the frequency of reward to students was negatively correlated to parent-school relationships. However, this negative correlation between the reward frequency and parent-school relationships disappeared when autonomy support from teacher was added to the model [12]. The authors implied that the classroom management system should be more focused on how to promote the students' autonomous motivation [12]. Other investigators believe that tangible reward systems cause students to perform well for rewards, which is obedience instead of actual incentive [3]. Through their investigation of secondary schools in Pakistan, the researchers suggest that teachers should work to promote habits among their students that will intrinsically motivate them [3]. Additionally, another study on the parents of Chinese compulsory schools investigated the adverse impact of tangible rewards on students. The investigation found that more than half of the parents strongly agreed, agreed, and somewhat agreed with the statement that tangible reward systems cause students to work more for outside rewards [1].

Finally, a meta-analysis article found that tangible rewards substantially undermine students' self-determination and competence [9]. The study showed that although intrinsic motivation was enhanced by informationally administered verbal rewards ( $d = 0.66$ ), intrinsic motivation was undermined by controllingly administered verbal rewards ( $d = -0.44$ ) [9]. The author concluded that: first of all, verbal rewards improved intrinsic motivation, and unexpected or task-noncontingent tangible rewards does not affect intrinsic motivation; secondly, there is a significant and robust negative effect of expected tangible rewards on intrinsic motivation; thirdly, this negative effect is significant in school-aged children. The above findings are essential to educators in primary and secondary schools because intrinsic motivation has been correlated with high-quality learning and adjustment in a number of studies [13,14]. The author suggested that the primary and secondary school educators should focus more on promoting intrinsic motivation of students via methods including but not limited to: developing more engaging learning activities, providing more learning choices, and ensuring the tasks to be optimally challenging. The author believes that educators would do better to increase the students' intrinsic motivation on engagement of creative tasks, flexibility of cognition, and understanding learning activities conceptually [9]. This meta-analysis provided strong support for the Cognitive Evaluation Theory (CET) and suggested that teachers should use rewards carefully in the classroom [9].

## 4 Discussion

The tangible reward system has been widely used in many countries and various types of education levels and is considered as one of the most direct and efficient methods to help students set learning habits, improve behaviors, and address values simultaneously. Multiple literatures indicate that the tangible reward system could be used by teachers to an extent for young students or unmotivated classes only as an initial guide to lead students toward adequate learning behavior and self-motivation. The benefits of the tangible reward system include the improvement of class performance by reinforcement of intrinsic motivation, self-esteem, collective sense of honor, and independent learning ability. Supporting evidence for the positive effects of the tangible reward system could be found in studies from education systems in different countries, grade levels, ethnicities, and age of participants.

On the other hand, negative effects of the tangible reward system were widely reported in published literatures including conflict with students' moral development, students becoming more externally motivated than intrinsically motivated, and the undermining of students' self-motivation and competence. Moreover, the negative effect of expected tangible rewards on intrinsic motivation was found to be particularly significant in school-aged children. In elementary classroom management systems, the frequency of rewards may even be negatively correlated to parent-school relationships when the autonomy support from teacher was absent. While a number of manuscripts, including those analysed above, underscore the negative effects of the tangible reward system, there are more studies that support the beneficial effects of tangible reward system. As a result, it may be perceived that tangible reward systems have more benefits than consequences, which may not be the case. Nevertheless, teachers should be aware of the potential negative effects on their students when using the tangible reward system. Because intrinsic motivation has been proved to correlate with high-quality learning and adjustment, it has been suggested by various literatures that the educators should focus on how to improve the student's intrinsic motivation instead of tangible rewards. This is especially important for students in primary and secondary schools.

In order to more effectively use the tangible reward system, teachers can take the following strategies: 1) personalize the use of rewards based on each student's level of self-motivation, 2) give rewards to individuals but also groups to highlight the importance of collaboration, 3) avoid using tangible rewards for every activity so students do not rely on awards for learning, and 4) ensure that each student receives an equal number of rewards.

## 5 Conclusion

This article reviewed and compared previous studies that support and oppose the ongoing debate on whether teachers should use tangible reward systems in classrooms. Although the tangible reward system has

been widely used worldwide and demonstrated a number of beneficial effects including the improvement of class performance by reinforcement of intrinsic motivation, self-esteem, collective sense of honor, and independent learning ability, studies has also revealed negative effects of the tangible reward system including conflict with students' moral development, students becoming more externally motivated than intrinsically motivated, and the undermining of students' self-motivation and competence. Literatures indicated that the tangible reward system could be used by teachers to an extent for young students or unmotivated classes only as an initial guidance to lead students towards developing adequate learning behavior and self-motivation. It has been emphasized that the educators, especially in primary and secondary schools, should focus on how to improve the student's intrinsic motivation instead of tangible rewards. A few suggestions were provided on how to improve the teaching effectiveness when using tangible reward systems. Further studies should be performed on how to personalize the use of the tangible reward system on different students and avoid the side effects at the same time.

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