

The Effects of Monetary and Grade Points Rewards on Student Motivation in Collaborative Learning: An Experimental Analysis

ABSTRACT

Motivation is a critical component of educational outcomes; however, the effectiveness of various reward systems in promoting motivation remains under debate. This study investigated whether monetary or grade-point rewards are more effective in enhancing student motivation within a collaborative learning context. A true experimental design, utilizing a between-subject group, was employed with 40 undergraduate students randomly assigned to either a monetary reward group or a grade points reward group. Participants engaged in an "act-it-out" game, and their motivation levels were measured using validated questionnaires assessing engagement, perceived value, effort, intrinsic interest, and collaboration. Results showed that participants in the grade points reward condition reported significantly higher motivation scores ($M = 4.51$, $SD = 0.340$) than those in the monetary reward condition ($M = 3.78$, $SD = 0.661$). An independent-sample t-test confirmed a significant difference ($U(38.0) = 54.0$, $p = <.001$, $r_{rb} = 0.730$). The findings indicate that cultural factors, particularly the collectivist emphasis on academic achievement in the Philippines, shape preferences for grade-based rewards, which align with long-term academic goals, over monetary rewards. Future studies should explore non-monetary incentives in diverse cultural and institutional contexts and address limitations by implementing controls for extraneous and confounding variables.

Keywords: Monetary rewards; grade points; student motivation; true-experimental study; between-subjects group.

1. INTRODUCTION

Imagine a classroom where the desire for a higher grade or the possibility of financial gain motivates every effort. Although both approaches encourage action, which one actually promotes more effective motivation?

One of the most studied ideas in educational psychology is motivation (Koenka, 2020). Motivation, from the Latin word *movere*, which means "to move," captures the essence of what drives people to act and behave in specific ways (Jansen et al., 2022). According to Ryan and

Deci's Self-Determination Theory (2020), there are two main categories of motivation: intrinsic and extrinsic. Intrinsic is a type of motivation that results from an activity's natural enjoyment or interest. Extrinsic, on the other hand, is a type of motivation that involves performing tasks in order to achieve external rewards or outcomes.

Action-oriented goals are shaped by different incentives, including the possibility of rewards, which stimulate motives, needs, desires, and emotions (Roeser, 2022). Particularly, according to Eisenberger & Aselage (2024), monetary rewards can increase performance pressure and

goal commitment, promoting task engagement, higher-order skills, and increased motivation. In addition, external rewards, such as additional points provided by teachers, were proven to be effective motivators in improving student performance and promoting better learning outcomes (Eikmeier, 2019).

A huge amount of money is spent annually on financial incentives for college students; in the US alone, undergraduate students receive over \$20 billion in prizes yearly. Other organizations offer incentives specifically designed to increase student motivation and, eventually, academic performance (Lintner, 2024). According to a study conducted in the United States of America, awarding extra credit or points has also been found to be a decisive factor in motivating students. Additional research showed that students' motivation increased as they gained more extra credit points during a course (Eikmeier, 2019). Given the studies indicating that teachers significantly influence students' motivation, it can be implied that giving extra credit or points for participation in extracurricular activities would be an effective way to encourage students (Foltz et al., 2021).

In contrast, students at the University of Amsterdam were split into two treatment groups at random. The low-reward group was promised a bonus of €227 for an accomplishment, while the high-reward group was offered €681 for the same. The results showed that the incentives had no remarkable impact on motivation (Lintner, 2024). Similarly, Moroccan high school students are under huge pressure to achieve high grades because admission to esteemed colleges and universities is determined mainly by academic accomplishment. They further indicated that extrinsic rewards have the potential to undermine intrinsic motivation, mainly when they are used to regulate behavior instead of recognizing effort or good work (Qasserras et al., 2023).

Nationally, reward systems are a great way to acknowledge student accomplishments and promote positive student behavior. Giving rewards in the classroom motivates students to work together on academic and social learning tasks (Viray-Castillejos, 2022). According to Dean (2019), teachers frequently use incentive systems to raise students' academic performance and/or appropriate behavior. In addition, teachers in public elementary schools that use the reward/token system constantly use extrinsic motivation for their students, with the

majority of the rewards being additional points for grades (Capuyan et al., 2024).

While numerous studies have explored the impact of rewards on student motivation (Ryan & Deci, 2020), a significant gap remains in understanding the comparative effects of monetary and grade-based (points) rewards, particularly in collaborative learning contexts. Research indicates that extrinsic rewards, such as grades and money, can sometimes undermine intrinsic motivation (Ryan & Deci, 2020). However, the specific effects of these rewards on student motivation in group activities remain unclear. To address this gap, this study aims to investigate the differential effects of monetary and grade-based (points) rewards on student motivation in group activities. By understanding how these rewards influence student behavior, educators can develop more effective instructional strategies to optimize learning outcomes.

This study aimed to investigate the comparative impact of monetary rewards and grade-based (points) rewards on student motivation in an academic setting. Specifically, it sought to answer the following questions: (1) Is there a significant difference in the motivation levels of students who are incentivized by money versus those incentivized by grade points? (2) Does receiving monetary rewards enhance students' motivation more effectively than grade point rewards? (3) How do these two types of rewards influence students' perceived value of the task, effort, and engagement during collaborative activities?

This study benefits schools by offering insights to help teachers, administrators, and students develop effective reward programs that enhance learning outcomes and classroom engagement. External incentives, whether monetary or grade-based (points) rewards, can help motivate students to do challenging or less appealing tasks. On top of that, these findings can guide organizations in designing skill-building incentive programs that can use either monetary or grade-based (points) rewards to maximize participant motivation.

2. METHODOLOGY

2.1 Participants

The participants in the study were 40 undergraduate students from the university. The monetary reward group consisted of 20 second-year students (15 males, 2 females, and 3 who

preferred not to disclose their gender). The grade points reward group was made up of 20 first-year students (6 males, 12 females, 1 who preferred not to disclose their gender, and 1 who identified as non-binary/other). The number of participants in this study aligns with Gall et al.'s (1996) recommendation that an experiment should include at least 15 participants. This guideline is further supported by Cohen et al. (2007), who reiterate that 15 participants per group is the minimum suitable for comparison in experimental studies.

To decide which group session would be conducted first, the researchers used cluster randomization through a random lottery process by drawing out a rolled piece of paper from a box containing two pieces of paper, one of which is marked with a monetary-reward group and the other with a grade-reward group. The monetary-reward group was picked as the first session to be conducted, and the grade-reward group was automatically the second session of the experiment. In the "Act-It-Out" game, cluster randomization made it easy for participants to collaborate with peers. Simple randomization was then applied within each session by having participants draw numbers from a box to assign them to groups, ensuring equal chances and comparable groups—this true- experimental design controlled confounding factors through random assignment.

2.2 Instrument

The study used two instruments to assess participants' motivation levels in the Monetary Reward Group and the Grade-Points Reward Group. Each questionnaire utilized a 5-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*) to measure various aspects of motivation, including excitement, perceived task value, effort, enjoyment, and overall satisfaction with the rewards.

The instruments were reviewed and validated by three licensed psychometricians, ensuring alignment with the study's objectives and adherence to psychological measurement standards. Fleiss' kappa was applied during the validation process. Fleiss' kappa (κ) (Fleiss, 1971; Fleiss et al., 2003) is a statistical measure used to evaluate the level of agreement among two or more raters (referred to as "judges" or "observers") when the assessment method, or response variable, involves categorical data. To assess the reliability of the instruments, interrater reliability was calculated using a Kappa

Calculator. Since all three licensed psychometric validators provided the same ratings for each item, the agreement was 100%, resulting in a Kappa value of 1, indicating perfect agreement and strong consistency among the raters. The game activity procedure, used as the experimental basis for the study, was standardized to ensure consistency across both groups in terms of task type, difficulty, instructions, and duration. Content validity was ensured through the expert review process, confirming that the items accurately reflect the study's objectives, and construct validity was supported by the alignment of instrument responses with observed participant engagement during the task.

2.3 Procedure and Design

The 40 participants were randomly assigned to two groups: the money-reward group and the grade-reward group, with 20 participants in each. The experiment was conducted in two separate sessions: the first session for the money-reward group and the second session for the grade-reward group. Cluster randomization was implemented to ensure the experiment's validity and eliminate selection bias. Through a random lottery process, the first session was assigned as the money-reward group, and the second session was assigned as the grade-reward group. Despite the sessions being conducted at different time frames, both sessions were scheduled in the morning to maintain fairness and prevent bias and other extraneous variables.

Each session began with the participants being provided with a brief overview of the experiment, after which they were asked to sign an informed consent form. The 20 participants were then randomly split into two groups through simple randomization by drawing a number from the box. As the participants were seated comfortably, one of the researchers held a box containing ten #1s and ten #2s, and each participant drew a number to determine their group. This method of random assignment ensured that each participant had an equal chance of being placed in either group. Once all participants had drawn their numbers, they were directed to their designated sides of the room and asked to settle comfortably.

The researchers welcomed the participants, introduced themselves, and disclosed the game's name. Participants were then asked for consent to document the whole activity or experiment. One researcher consistently explained the game instructions to ensure uniformity across both

groups. Participants were informed that the winning team would receive a monetary reward (₱20) or grade points reward (an additional 10 points from the teacher), depending on which session they belong to.

The activity played was an “act-it-out” game. The speaker would announce a word or setting for the participants to act out. Participants were given 10 seconds to perform their actions and then 1 minute to explain their scenario. The game was repeated four times.

After the game, participants completed an instrument designed to assess their motivation levels in response to the potential rewards. Depending on the session, participants filled out either the Instrument on Monetary Reward or the Instrument on Grade Points Reward. After all instruments were completed, one of the researchers conducted the debriefing. The purpose and whole nature of the study were explained, and the researcher revealed that all members of both groups would actually receive rewards (monetary or grade points) regardless of the game’s outcome. Finally, the researchers thanked the participants for their cooperation and provided them with sweets as a token of appreciation.

This study used a true experimental design with random assignment. In a true experimental design, often considered the “gold standard” of research designs, the researcher(s) manipulate one or more independent variables, randomly assign subjects to different treatment levels, and observe the effects of the treatments on outcomes (DeCarlo et al., 2022). In this case, each cluster was placed in either the monetary-reward or grade-reward condition, and each participant within the two groups was further randomized into different subgroups. This study also implemented a between-subjects design. In this design, each participant is placed in one treatment condition, and the researchers analyze the participants’ responses to assess the differences between the groups (Simkus, 2024). The post-activity evaluation scores of monetary-reward and grade-reward groups were compared using an independent samples t-test.

3. RESULTS

Table 1 shows that the Shapiro-Wilk test was conducted to assess the normality of the data. For the types of reward, the results indicated a significant deviation from normality, $W = 0.891$, $p = 0.001$. These results suggest that the

assumption of normality was violated for this variable.

Table 2 compares the monetary reward type and grade points reward type based on their mean scores, standard deviation (SD), and standard error (SE). The mean score for the grade points reward type ($M = 4.51$) is higher than that for the monetary reward type ($M = 3.78$), implying that participants preferred the grade points reward or performed better under this condition. Additionally, the standard deviation for the monetary reward type ($SD = 0.661$) is higher than that of the grade points reward type ($SD = 0.340$), indicating that responses for the monetary reward condition were more varied or inconsistent, while the grade points reward revealed more uniform responses. Furthermore, the standard error, which reflects the precision of the mean estimate, is smaller for the grade points reward type ($SE = 0.0760$) compared to the monetary reward type ($SE = 0.148$), showing that the mean for the grade points reward condition is estimated with greater precision. Both conditions included $N = 20$ participants, ensuring a fair comparison.

Table 3 shows that an independent-sample t-test was conducted to compare student motivation after exposure to monetary and grade point rewards. The results indicated a statistically significant difference in student motivation scores between the two reward conditions, $U(38.0) = 54.0$, $p = <.001$, $r_{rb} = 0.730$. Participants exposed to grade points reward ($M = 4.51$, $SD = 0.340$) reported higher motivation scores compared to those exposed to monetary reward ($M = 3.78$, $SD = 0.661$). As measured by rank biserial correlation, the effect size suggests a large effect of reward types on motivation. Since the p-value was less than .05, the null hypothesis was rejected, which stated that there is no difference in student motivation between monetary and grade point rewards. These findings suggest that the difference is not only statistically significant but also meaningful in practical terms.

4. DISCUSSION

The study found that students who received grade points as a reward had significantly higher motivation levels ($M = 4.51$, $SD = 0.340$) compared to those who received a monetary reward ($M = 3.78$, $SD = 0.661$), with the statistical analysis confirming a significant difference ($U(38.0) = 54.0$, $p = <.001$) and a large effect size ($r_{rb} = 0.730$). This suggests that grade points were a more effective motivator

than monetary rewards for student motivation. The findings align with several studies suggesting that intrinsic motivation (e.g., motivation driven by personal achievement, learning, or recognition) is often more impactful than extrinsic motivation (e.g., monetary rewards). Research grounded in Self-Determination Theory (Ryan & Deci, 2020) underscores the importance of autonomy, competence, and relatedness in fostering intrinsic motivation. These factors help explain why rewards tied to competence or achievement, such as grade points, tend to bolster intrinsic motivation. Grade-point rewards provide students with feedback that affirms their abilities and progress, thus strengthening their sense of competence. This feeling of competence is crucial for motivating individuals to pursue and persist in challenging tasks because it signals that their efforts are succeeding, making them more likely to engage in future academic endeavors (Ryan & Deci, 2020). In contrast, external rewards like money are considered extrinsic motivators and can sometimes undermine intrinsic motivation, a phenomenon known as the "overjustification effect." This effect occurs when individuals start to attribute their behavior to the external rewards they receive, rather than the inherent enjoyment or value of the activity itself (Pérez-López & Fernández, 2021). For example, Zhong & Yang (2021) examined this effect in workplace environments, revealing that employees who were regularly rewarded for tasks they initially enjoyed experienced a decline in long-term motivation and engagement. This pattern mirrors findings in education, where extrinsic rewards such as grades, when not coupled with meaningful, self-driven learning experiences, may diminish intrinsic motivation over time.

Moreover, the psychological mechanism of relatedness also plays a key role in how grade-point rewards influence intrinsic motivation. Relatedness refers to the desire for connection with others and being valued within a community. In educational settings, grade-point rewards often serve as a form of social recognition, linking a student's academic success to their social identity and relationships with teachers and peers. This sense of being recognized and valued within an academic community can further enhance intrinsic motivation, driving students to engage with learning for personal growth and fulfillment, rather than merely for a grade (Liu & Chen, 2023). Thus, the research suggests that intrinsic motivation thrives when rewards like grade points reinforce personal

competence, foster a sense of relatedness to others, and provide a meaningful connection to one's own academic or professional growth. While extrinsic rewards like money or bonuses may drive short-term compliance, they often fail to support long-term engagement, creativity, and satisfaction—qualities that are typically nurtured by intrinsic motivation (Zhong & Yang, 2021). The study adds weight to the findings of Ryan & Deci (2020), which suggest that rewards aligned with an individual's personal goals and values (like academic performance) are more likely to foster long-term motivation. In the context of students, grade points serve as a direct link to academic achievement, which is a high priority for many students. According to a related study by Lai (2022), non-monetary incentives—in particular, social rewards and recognition—are essential for raising motivation in both teachers and larger educational contexts. According to the study, these incentives are typically more powerful and long-lasting than monetary awards, which might not have a big impact on academic achievement or long-term motivation.

Grade points are more motivating than monetary rewards, according to the studies, but this is not always the case. Other research, like Abela et al. (2020), emphasize that financial incentives can be more motivating when they are linked to more immediate, realistic goals, particularly for students who are more concerned with their financial well-being.

Several factors explain the differences observed in this study. First, the type of task could play a role: the "act-it-out" game is a more intrinsic task where students are motivated by personal challenge and achievement rather than external rewards. Research suggests that creative tasks, such as role-playing, often benefit more from intrinsic rewards, which makes academic rewards like grade points more relevant in such settings. Second, individual differences in how students value rewards might affect the results. Some students might place higher value on monetary rewards for spending on leisure or necessities, which could influence their motivation. This might be more pronounced if the sample is relatively homogenous in terms of academic priorities (Ryan & Deci, 2020). Lastly, cultural values significantly shape how individuals perceive and prioritize different types of rewards. According to the AFS-USA cultural resource, "in the Philippines, a collectivist society, the needs of the family are prioritized over individual needs, and social harmony is highly valued, which extends to educational

aspirations" (AFS-USA, n.d.). As such, rewards tied to academic performance—such as grades, certificates, or recognition from educational institutions—may carry more weight. These rewards align with the values of group cohesion and the emphasis placed on education as a tool for societal advancement. Therefore, students in collectivist cultures may view academic rewards as symbols of hard work and dedication that benefit both the individual and the larger community (Maurya & Sahu, 2021). Vorecol (2022) notes that "in individualistic cultures, such as the United States and Western Europe, reward systems focused on personal achievements lead to higher employee satisfaction compared to collective reward systems". In these societies, rewards like money or material gifts are seen as tangible recognition of one's abilities and accomplishments. For example, students in individualistic cultures may be more likely to appreciate monetary rewards for their academic achievements, as they represent the ability to leverage personal success into greater financial independence and security. The emphasis on individual goals and self-reliance makes financial incentives more

appealing, as they cater to a personal sense of accomplishment and reward.

These cultural differences in reward preferences reflect deeper societal values. Collectivist cultures prioritize social harmony, group success, and collective responsibility, which aligns with the preference for academic rewards (AFS-USA, n.d.). In contrast, individualistic cultures focus on personal autonomy, competition, and self-improvement, which makes monetary rewards more attractive (Vorecol, 2022). As such, understanding these cultural influences is crucial for designing reward systems that resonate with the values and expectations of students from different cultural backgrounds.

The study implies that grade point rewards are a more effective way to increase student motivation than monetary rewards. This is consistent with the Self-Determination theory (SDT), which claims that rewards from outside sources affect motivation according to how well they fit with people's values and long-term goals (Ryan & Deci, 2020). Grade point

Table 1. Normality test (Shapiro Wilk)

	W	p
Monetary Reward – Grade Points Reward	0.891	0.001

Note: A low p-value suggests a violation of the assumption of normality

Table 2. The mean scores of monetary and grade points

	N	Mean	SD	SE
Monetary	20	3.78	0.661	0.148
Grade Points	20	4.51	0.340	0.0760

Table 3. Results of the independent samples t-Test/Mann Whitney U

	Statistic	df	p		Effect Size
Mann-Whitney U	54.0	38.0	<.001	Rank biserial correlation	0.730

Note: $H_0: \mu \text{ Monetary} = \mu \text{ Grade Points}$

^a Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances rewards that are linked to academic accomplishment serve to maintain motivation and engagement by strengthening intrinsic goals and task value.

motivation when associated with academic accomplishment.

These results align with Eisenberger and Aselage (2024), who pointed out that financial incentives frequently aim for short-term objectives, and Eikmeier (2019), who emphasized the motivational impact of grade-based incentives like extra credit. Grade-based rewards, in contrast, effectively support intrinsic

This study has a few limitations, and it is essential to acknowledge them. First, the researchers aimed to include undergraduate students from all year levels and disciplines; however, due to time constraints and differences in availability, only first-year and second-year students from limited academic fields participated. Second, although both sessions were conducted in the morning, other factors,

such as participants' schedules, energy levels, and morning routines, were overlooked and may have caused variability. A key limitation of this study is the reliance on self-made instruments, as finding valid and reliable pre-existing questionnaires directly relevant to the research was challenging. To overcome this, the instruments underwent two rounds of validation before being finalized and approved by licensed psychometricians. Additionally, the instruments are not deeply psychological in nature, as they primarily focus on general attitudes and perceptions rather than complex psychological constructs. Given the study's objectives, the use of these self-made instruments, validated through interrater reliability, was deemed appropriate. Since the instruments were specifically designed to measure the relevant variables, the use of established psychological questionnaires was not considered necessary.

The limitations of this study should be addressed in future research to improve its rigor and generalizability. First, to guarantee a more representative sample and explore if year level or academic discipline affects the effectiveness of reward kinds, future research could involve participants from all undergraduate year levels and diverse academic fields. Second, to reduce variability and guarantee consistent contexts, researchers should think about adjusting for other variables like participants' schedules, energy levels, and morning routines. Third, the dependability of the results would be increased by using well-accepted and pre-validated instruments. If appropriate pre-existing tools are not available, researchers should devote enough time and money to creating and thoroughly validating new instruments. Alternatively, future researchers could further validate the instruments used in this study by involving a larger panel of experts and conducting pilot tests with a broader population. While the self-made instrument approach is appropriate for the scope of this study, future research examining more complex psychological constructs could benefit from incorporating standardized psychological scales or expanding the validation process. Moreover, broadening the study to include a more varied sample of individuals from various institutions or cultural backgrounds may provide information on how broadly applicable the results are in different educational settings. Lastly, non-monetary benefits like recognition or social incentives may be included in future research.

5. CONCLUSION

The results of this study revealed the reward types' significant deviation from normality ($W = 0.891$, $p = 0.001$) using the Shapiro-Wilk Test, demonstrating a violation of the normality assumption. In addition, participants in the grade (points) reward condition reported a higher mean motivation score ($M = 4.51$, $SD = 0.340$) than those in the monetary reward condition ($M = 3.78$, $SD = 0.661$). The motivation scores of the two reward types also differed significantly, according to an independent-sample t-test ($U(38.0) = 54.0$, $p = <.001$, $r_{rb} = 0.730$). Based on the huge effect size, grade (points) rewards notably enhance student motivation more than monetary rewards.

The results answered that there is a significant difference in the motivation levels between students incentivized by money and those incentivized by grade points; receiving monetary rewards does not enhance students' motivation more effectively than grade point rewards, and it emphasized the importance of aligning students' priorities with appropriate incentives. Compared to monetary rewards, which prioritize immediate gains, grade point rewards that are linked to long-term academic goals appear to be more effective at raising motivation. These findings indicate that grade-based (points) rewards can promote engagement and intrinsic motivation in learning environments. Furthermore, educators can apply these insights to create incentive programs that enhance student motivation. Educational institutions could encourage consistent effort and better achievement by using grade-based (points) reward systems in classroom activities or assignments.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

CONSENT AND ETHICAL APPROVAL

Participants were given an informed consent form outlining the study's purpose, procedures, potential risks, and their right to withdraw at any time. Consent was obtained before the experiment began. Participant data were anonymized, and all personal information was kept confidential. Only collected data were reported in the research findings, and secure methods were used to store all data. After the experiment, participants were debriefed for

clarifications, for them to understand the purpose and the nature of the reward conditions. They also had the opportunity to ask questions and express concerns. Participation was voluntary, and participants could withdraw at any time without penalty. All collected data were purely for the purpose of this study, and no personal identifiers were included. Letters of approval were submitted to the dean of the college and the course subject adviser, and ethical approval was obtained. The researchers adhered to ethical guidelines, specifically those outlined in their university's experimental research policies.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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