Evaluating Philippine Students' Class Participation with a Token Currency System

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Abstract

Although past studies have validated the importance of active class participation in facilitating student learning, evaluating class participation remains a major issue. This study applies a token economy system to a Philippine university by awarding token currency to students who contributed meaningfully in class. After course completion, an online survey was administered to the 65 participating students, of which there were 26 completed responses. There was no evidence that the token economy increased student performance. However, survey results, coupled with student feedback, suggest that using a token economy is a viable alternative to traditional methods of evaluating student participation.

Keywords: token economy, class participation

1.0 Introduction

"Tell me, and I forget; teach meand I may remember; involve meand I will learn." This phrase was first uttered by a Chinese philosopher over 20 centuries ago(Popik, 2012). However, the lecture method remains the most predominant method of instruction, with the title "lecturer" used to define university teachers around the world (Knapper & Cropley, 2000).

Over the past fifty years, much researchhad been conducted to determine the impact of college on students(Pascarella, 2006).It is long-established that prioritizing discussions over lectures, and student-centered discussions over instructor-centered discussions, lead to better outcomes for retention of knowledge, application, problem-solving, attitude change, and motivation for further learning (McKeachie, 1970).

Active participation has been linked to better exam scores (Reinsch & Wambsganss, 1994), greater student learning (Murray & Lang, 1997), development of critical thinking skills (Crone, 1997),greater student persistence rates (Laird, Chen, & Kuh, 2008),desirable learning outcomes such as critical thinking and grades(Carini, Kuh, & Klein, 2006), and self-reported gains in character development(Kuh & Umbach, 2004).

Despite the clear value demonstrated by active student participation, assessing this in a fair and effective manner remains problematic (Gilson, 1994), especially for large classes (Mello, 2010), to the extent that the merits of grading participation have been questioned (Jones, 2008). Many strategies have been developed to address this issue (Bean & Peterson,

1998; Czekanski & Wolf, 2013), including the institution of a token economy (Boniecki & Moore, 2003).

The bulk of token economy research applied in the academic setting centered on younger children and students with behavioral issues (Soares, Harrison, Vannest, & McClelland, 2016). A few studies were performed on university-level students, but no comparable studies were performed in the Philippines. To address this gap and evaluate the effectiveness of the token economy in the local setting, this case study was conducted to answer the following questions:

1. Will a token economy system encourage Filipino students to participate more in class?
2. Is a token economy system a viable method to evaluate student participation in the Philippines?
3. Will Filipino students accept a token economy system as a fair way to evaluate participation?

Literature Review

Defining Class Participation

Class participation is required in many college courses (Chu & Kim, 1999; Gaffney, 2009; Czekanski & Wolf, 2013).Some courses, particularly in higher-level business courses, give heavier weights to class participation–a survey by Alexander, O'Neill, Synder, & Townsend (1986) found that up to 94.3% of Strategic Management courses included it as a component in a student's grade.

What constitutes as "class participation" varies among professors, researchers, and students. According to Fritschner (2000),faculty classify student participation into six discrete levels, with each higher level represents greater quality of engagement. These levels include: (1) breathing and staying awake; (2) coming to class, taking notes, doing assignments; (3) writing reflective and thoughtful papers; (4) asking questions in class, making comments, and providing inputs for class discussion; (5) doing additional research and coming to class with additional questions, and; (6) making oral presentations where students become the teachers.

From the student point of view, Bippus & Young (2000) formulated seven factors to measure course involvement, namely (1) working hard; (2) interacting with the instructor outside of class; (3) refraining from negative behavior during class; (4) displaying good group citizenship; (5) exhibiting positivity; (6) punctuality and attendance, and; (7) participating in class discussions.The study found that students considered displaying good group citizenship and attendance as more indicative of course involvement, compared to participating in class discussions.

Many studies have suggested that what constitutes as "class participation" be broadened. For example, Vandrick (2000) proposed that class participation should include nonverbal cues and written work by more quiet students. Steel, Laurens, & Huggins (2013)recommended aligning the course towards a "reflective engagement with classmates as part of a community of learning and social development." As such, simply sitting quietly and listening actively can be considered as valid participation so long as the student's reflections can be shared in class in some way.

Grading Participation

There is no universal consensus on whether class participation should be graded. Critics of grading class participation argue that it is highly subjective (Bean & Peterson, 1998)and can be abused by faculty, given the human susceptibility to bias such as gender or culture (Gilson, 1994). It is also complicated to implement since the professor must track and record class participation

while their memory is fresh (Lord & Melvin, 1994), which is no simple task for large classes.

In a more general criticism of grading in general, Kohn argues in "Punished by Rewards" that grading replaces intrinsic motivation of learning for learning's sake with extrinsic motivation. Ironically, this can have the unintended outcome of ultimately decreasing the student's motivation to learn (Kohn, 1993).

Furthermore, certain cultures, particularly in Asia, place more value towards passive learning (Chu & Kim, 1999; Girgin & Stevens, 2005; Tani, 2005). Furthermore, participating in class may not fit the student's personality (Bean & Peterson, 1998); thus, being forced to participate to earn grades increases student anxiety (Armstrong & Boud, 1983). If care is not taken to emphasize quality over quantity of participation, participation-intensive classes often turn into high-pressure environments where students fight for "air time" (Litz, 2003).

Finally, there is a tendency for more outspoken students to monopolize class discussion. Fritschner (2000) found that 18% of students accounted for 79% of all student comments in class, a phenomenon termed "consolidation of responsibility" (Howard, James, & Taylor, 2002). Therefore, it is unfair to apply one-size-fits-all class participation policies (Cain & Klein, 2015).

On the other hand, those who believe class participation should be graded argue that although class participation is indeed subjective and may convert intrinsic motivation into extrinsic motivation, the same is true for grading of all subjective student output, such as student papers and essays.

One of the strongest arguments in favor ofgrading class participation is that this forces the student to study the material, and prepares them for the real world, in which verbal presentation skills and articulation of arguments are arguably just as important as writing skills (Gilson, 1994). When students knew they were being gradedfor it, their participation increased (Aspiranti, 2011).

Finally, grading class participation signals to the student what kind of learning and thinking is valued by the instructor(Bean & Peterson, 1998). It is a form of live assessment that can't be faked or plagiarized (Mello, 2010), and allows students to be continuously observed and evaluated through the duration of the course compared to examinations or essays(Armstrong & Boud, 1983).

In summary, it cannot be denied that grading class participation has numerous shortcomings. However, with the right preparations and tools, it remains a strong pedagogical tool in the professor's arsenal. For example, the bias towards more outgoing students can be mitigated by allowing students to express themselves outside of class through Twitter (Dayter, 2011), or participating collectively in groups (Girgin & Stevens, 2005; Chaves, 2016).

Ways to Grade Participation

At a very basic level, some professors used class participation largely as a "fudge factor" in computing final course grades. Others create detailed rubrics for scoring participation(Bean & Peterson, 1998) and make these available to students at the beginning of the term.

Other than professorial grading, student evaluation (via self-evaluation and peer-evaluation) is the most common alternative way to measure student participation. A study by Krohn et al., (2010)showed that students who graded themselves for participating in class did so in good faith. A separate study by Foster et al., (2009) found that students' self-recording of class participation is a reasonably accurate proxy for tracking participation –deviations between student and observer records were caused by student under-

reporting than over-reporting.

One of the key pitfalls of self-assessment is a tendency to overestimate one's contribution. In a study by Burchfield & Sappington (1999), two-thirds of students ranked themselves among the top one-third in class participation; their self-assessed grades did not correlate with either peer evaluation or instructor grading. A study by Howard et al., (2002) found that over twice as many students self-identified themselves as "talkers" compared to those identified by observers. Self-evaluation can also be tainted by perceived instructor impressions, such as physical and social attractiveness and perceived background (Myers et al., 2009).

Gopinath (1999) found that self-assessment was not liked by students, and did not correlate very well with the instructor's evaluation. Peer evaluation tracked the instructor's score more closely but was not considered very reliable by students. On average, both techniques gave higher scores than the instructor, although higher-GPA students gave lower scores to themselves and to others.

A mixed system that combines professor and peer rankings was found to work effectively. Lord & Melvin (1994)used peer rankings from graduate-level Accounting courses to supplement professor-supplied ratings. If the professor and peer rankings corresponded to each other, the student receives the professor's grade. If the peer evaluation is meaningfully higher, an average is taken. A majority (65%) of the study's student-respondents agreed that the method was "fair," "a good idea," and an "improvement" over professorial grading.

Whatever method is used for grading participation, Dancer & Kamvounias (2005)conclude that students should be involved in specifying rubrics for assessment.

Token Economy

Money, in itself, best exemplifies the concept of a token economy. Much like money, these symbolic "tokens" have very little value by itself. Only the convertibility to a desired good, service, or privilege, termed as "backup reinforces" in psychology, gives value to the token (the "conditioned" or "generalized reinforcer"). Token economies are therefore defined as positive reinforcement systems in which display of desired behavior is awarded by tokens, which are then accumulated until they can be exchanged for the greater reward.

While token economies operate on the principles of operant conditioning (Skinner, 1948), their application in education predated Skinner's theory by over a century. In fact, the system introduced in England during the 1800s by noted public education innovator Joseph Lancaster, who awarded leather tags to students that could be exchanged for prizes ("Joseph Lancaster's System," 2014), would qualify as a token economy system if applied today.

Token economy systems share six common components: (1) definition of target behavior; (2) selection of appropriate backup reinforcers (something that can be used to motivates the subject to display target behavior); (3) selection of appropriate tokens (which ideally should be inexpensive to procure, but unique enough to prevent counterfeiting); (4) create strategies to distribute, redeem, and exchange tokens; (5) communication of desired behavior and token system to the subjects; and once the desired behavior is achieved, (6) fading out the system (Myles, Moran, Ormsbee, & Downing, 1992).

Most studies that applied a token economy to education were performed on pre-University level students (for example, seeFilcheck, McNeil, Greco, & Bernard, 2004; Ivy, Meindl, Overley, & Robson, 2017; Kistner, Hammer, Wolfe, Rothblum, & Drabman, 1982; and McLaughlin & Malaby, 1972) and to special-

education classes (Knapczyk & Livingston, 1973; Anderson & Katsiyannis, 1997). However, there were a handful of token economy studies performed on university undergraduates:

Junn (1994) distributed strips of paper to students, who then filled these up whenever they participated in class. The filled strips could be "cashed in" for points, up to a maximum of 20. The students also found the exercise "fun" and useful in increasing participation even in classes without the token economy.

Boniecki & Moore (2003)gave wooden checker pieces to the first person to answer a question correctly. At the end of each class, these could be immediately exchanged for 1 point to the next exam grade (worth 0.25% of the final grade). When the system was in place, class participation doubled, and students were more responsive in answering questions.

Wooldridge (2008) created the "Golden Duck Award" to be given to people who make a significant contribution ("duck-worthy comment") and passedon to the next person making duck-worthy comments. After the day's session, students voted for the most "duck-worthy" contribution; at the end of the course, a "Top Duck award" is given out to the top students. Although participation was not graded in this instance, the students enjoyed the exercise.

Wright, Gragg, & Cramer (2009) employed "participation tickets" that could be entered into a draw for gift certificates. Results showed that students enjoyed and benefited from the activity and overall class participation increased, although there was little change for students with high initial participation.

In a study by Chylinski (2010), "participation money," a note resembling a $1 million bill on one side, and space to write the student's name and identification number on the other side, was dispensed to students who made quality comments. The students wrote their details on the money and returned it after class ended. The total participation money earned was weighted in a way as to diminish the incremental value of an additional bill. Although the quantity of participation unexpectedly decreased in one of the classes studied, the overall quality of student comments markedly improved.

Nelson (2010) implemented a system in which students received Bonus Points (BPs) token slips for asking good questions in class. A "good question" was defined as (a) related to the course content; (b) made sense to the instructor; (c) related directly to the course material, and; (d) did not repeat a question already asked. The study suggested that the token economy was useful for increasing participation.

2.0 Method

The study applied a token economy system to two senior-year undergraduate classes (a Finance elective, and the capstone Strategic Management course) taught by the researcher in a Philippine University. The token used is similar to the "participation money" used by Chylinski (2010), but the fiat money token was customized to the local university and termed a

"CPBuck." Distilling the methodolgy of three token economy studies, CPBucks were handed out to students who participated actively by making quality comments (Chylinski 2010), asking good questions (Nelson, 2010), and answering questions correctly (Boniecki & Moore, 2003).

The study also made several modifications to the systems adopted by the previous studies, which are as follows:

1. **Student-Directed Distribution.** Since Strategic Management involved numerous student group presentations, reporting groups were given five CPBucks per reporting session to hand out to their peers who participated during the group discussions.
2. **Fixed Redemption Period.** To reduce record-keeping, CPBucks were not redeemed immediately at the end of class. Instead, a redemption period was set by the end of the courses for students to convert their CPBucks into grades.
3. **Transferability.** As there was a significant overlap between students in both classes, CPBucks were made fully-transferable between classes and even students. In other words, the study only tracked those who spent a CPBuck, and not those who earned it.

Similar to the system used by Boniecki & Moore (2003), class participation was not included as a component of the final grade. Rather, CPBucks were redeemed for bonus points to be added to any component of the final grade. Table 1 summarizes the parameters of this study across the components of a token economy system.

Table 1. *Study Parameters*

Attribute	Attribute Description	Study Parameters
Target behavior	What behavior is being encouraged, and will earn a token?	Active class participation.
Backup reinforcers	Something of value used to motivate display of target behavior.	Prospect to improve the student's final gradein thecourse.
Token	A tangible item that can be exchanged for a backup reinforcer.	Paper money termed as a "CPBuck."
Token Production Schedule	The schedule by which responses produce tokens. Essentially asks the question: How can tokens be earned?	Continuous reinforcement: a CPBuck is awarded every time a student makes a meaningful contribution.
Exchange Production Schedule	The schedule by which exchange opportunities are made available (When can tokens be earned?)	Available throughout the course term.
Token Exchange Schedule	Schedules by which tokens are exchanged for other reinforces (How much are tokens worth?)	A token can remove an absence or increase grades by a variable amount.

Source for descriptions: Ivy et al., (2017)

To facilitate the students' application of concepts learned in both classes (namely: risk and return, strategic allocation of resources, and sensitivity analysis), the following redemption scheme was used:

1. **Attendance Exemption:** Attendance was accounted for as a 2% bonus point increase in the Final Grade, subject to an exponential decrease if there are absences. One CPBuck can offset a single absence.
2. **Grade Improvement:** Students apply a variable bonus point increase to any component of their final grade, such as the midterm exam, their terminal project, assignments, or group report. The bonus point depends on the results of a dice throw. Students can choose from four different-sized dice (4, 10, 12, and 20 sides). A roll of 1 results in 0 points and a maximum roll is worth 3 points. The points are intentionally distributed to cause the smaller dice to give higher expected returns while also bearing more risk (see Table 2).
3. **Midterm Information:** The instructor revealed certain aspects of the Midterm Exam, depending on the amount of CPBucks spent. First, CPBuck reveals the number of item sets. Second, CPBucks will also reveal the number of questions. Third, CPBucks will also reveal the distribution of points, and fourth, CPBucks will reveal general information about each question.

Table 2. *Grade Improvement Tables*

8-sided Die		**10-sided die**		**12-sided die**		**20-sided die**	
Roll	Points	Roll	Points	Roll	Points	Roll	Points
1	0.00	1	0.00	1	0.00	1	0.00
2	0.50	2-3	0.50	2-3	0.50	2-3	0.25
3-4	1.00	4-5	1.00	4-5	0.75	4-6	0.50
5	1.50	6-7	1.50	6-7	1.00	7-9	0.75
6	1.75	8-9	2.00	8-9	1.50	10-13	1.00
7	2.25	10	3.00	10-11	2.00	14-16	1.50
8	3.00			12	3.00	17-19	2.00
						20	3.00
μ: 1.3750		μ: 1.3000		μ: 1.2083		μ: 1.0875	
σ: 0.9014		σ: 0.8426		σ: 0.7960		σ: 0.7300	

During the initial class meeting, a CPBuck was immediately awarded to the first student who made an insightful comment or asked a good question, and the CPBucks systemwas explained to the class. The token economy was in place during the entire semester (a total of 33 90-minute meetings), with CPBucks redemption closing a week after the end of classes. After all the CPBucks have been redeemed and the final grades were finalized, an online survey was administered to all students. The survey included the "End of Survey" items, drawn from Nelson's EOS form (2010).

3.0 Results and Discussion

347 CPBucks were handed out across four classes (average of 86.75 per class and 2.6 per class per session). Of these, 323 CPBucks were redeemed; meaning students either misplaced the 24 CPBucks or kept them as a souvenir. Of the amount redeemed, 121 CPBucks (37.46%) showed visible wear and tear. A total of 202 CPBucks (58% of the amount distributed) could be reused.

During the semester, a few students, mostly male, were observed to dominate class participation. To avoid changing study parameters mid-stream, no additional restrictions were placed on how many CPBucks could be earned by a single student. Admittedly, this unfortunately resulted in a situation where a single student accumulated and spent as much as 19 CPBucks even though almost one-third of the 65 students in the study spent none (Table 3).

Table 3. *CPBuck Spending by Course and Quantity*

CPBucks Spent	Finance		Strategy		Combined	
	No.	%	No.	%	No.	%
None	40	61.54%	20	33.90%	20	30.77%
01 to 05	20	30.77%	24	40.68%	20	30.77%
06 to 10	5	7.69%	9	15.25%	16	24.62%
11 to 15	0	0.00%	5	8.47%	8	12.31%
16 to 20	0	0.00%	1	1.69%	1	1.54%
Total	**65**	**100.00%**	**59**	**100.00%**	**65**	**100.00%**

Despite having a lower student population, the core Strategic Management course had almost twice the redemption rates than the Finance elective. As expected, the majority of student spending focused on improving the Midterm exam, which accounted for 20% and 25% of the final grade in Strategic Management and Finance elective, respectively (see Table 4).

Table 4. *CPBucks Spending by Course and Category*

Spending Category	Finance		Strategy		Combined	
	No.	%	No.	%	No.	%
Attendance	1	0.90%	6	2.83%	7	2.17%
Grade Improvement						
Assignments	1	0.90%	36	16.98%	37	11.46%
Midterm Exam	95	85.59%	156	73.58%	251	77.71%
Group Projects	4	3.60%	14	6.60%	15	5.57%
Midterm Information	10	9.01%	0	0.00%	10	3.10%
Total	**111**	**100.00%**	**212**	**100.00%**	**323**	**100.00%**

There is a clear gender divide in the pattern of CPBucks spending. Despite male students accounting for 23% of the class population, they accounted for a disproportionate amount of the students who spent 6 or more CPBucks (see Table 5 and Figure 1).

Table 5. *CPBucks Spending by Gender and Quantity*

CPBucks	Finance			Strategy			Combined		
Spent	Male	Female	% Male	Male	Female	% Male	Male	Female	% Male
None	10	30	25.00%	1	19	5.00%	1	19	5.00%
01 to 05	3	17	15.00%	4	20	16.67%	1	19	5.00%
06 to 10	2	3	40.00%	5	4	55.56%	7	9	43.75%
11 to 15	0	0	—	4	1	80.00%	5	3	62.50%
16 to 20	0	0	—	1	0	100.00%	1	0	100.00%
Total	**15**	**50**	**23.08%**	**15**	**44**	**25.42%**	**15**	**50**	**23.08%**

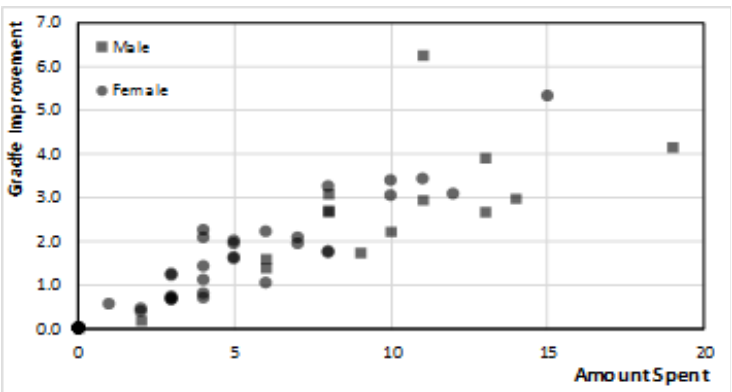

Figure 1. *CPBucks Spending Outcomes by Gender*

Table 6 demonstrates a statistically significant correlation between a student's overall performance before the application of CPBucks and the number of CPBucks he or she spent, in the Finance elective. Students who received higher scores prior to the redemption of CPBucks also spent more CPBucks ($r = 0.35$, $N = 61$, $p = 0.0064$).

Table 6. *Finance Elective Correlation Matrix*

Variable	2	3	4	5	6	7	8	9	10	11
1. Assignment Score	.17	.24	.00	– .25	.04	[B] .35	[B] .34	.22	.12	.11
2. Midterm Score	—	[B] .41	[C] .58	.24	[C] .49	[C] .85	[C] .85	.22	[A] .32	[A] .31
3. Group Project 1		—	[C] .54	.19	[C] .58	[C] .61	[C] .58	.23	.21	[A] .27
4. Group Project 2			—	[C] .59	[B] .41	[C] .67	[C] .65	.18	.22	.24
5. Group Project 3				—	[A] .32	[C] .47	[C] .46	.06	.09	.11
6. Group Project 4					—	[C] .73	[C] .70	.21	.24	.20
7. Unadjusted Score						—	[C] .99	[A] .29	[B] .36	[B] .35
8. Unadjusted Grade							—	– .22	[B] .34	[A] .33
9. Score Increase								—	[C] .74	[C] .68
10. Grade Increase									—	[C] .95
11. CPBucks Spent										—

[A] *p-value < 0.05* [B] *p-value< 0.01* [C] *p-value < 0.001*

However, as Table 7 demonstrates, the same cannot be inferred of the students in the Strategic Management course. In fact, no significant link can be drawn between CPBucks spending and unadjusted grades, other than for a single group project (Group Project 2).

Table 7. *Strategic Management Correlation Matrix*

Variable	2	3	4	5	6	7	8	9	10	11
1. Assignment Score	[A] .33	[B] .45	[A] .29	.12	[A] .30	[C] .61	[C] .62	.18	.06	.10
2. Midterm Score	—	[A] .30	.03	.04	.14	[C] .79	[C] .08	– .06	– .13	– .13
3. Group Project 1		—	[C] .54	[C] .59	[A] .33	[C] .58	[C] .58	.20	.16	.02
4. Group Project 2			—	.12	– .06	[B] .39	[B] .39	[B] .44	.26	[A] .35
5. Group Project 3				—	- .09	[A] .32	– .26	– .07	.22	– .10
6. Group Project 4					—	.16	– .16	.03	.00	.00
7. Unadjusted Score						—	[C] .98	.07	.02	– .04
8. Unadjusted Grade							—	- .08	.08	.05
9. Score Improved								—	[C] .71	[C] .91
10. Grade Improved									—	[C] .39
11. CPBucks Spent										—

[A] *p-value < 0.05* [B] *p-value< 0.01* [C] *p-value < 0.001*

Survey Results

A total of 26 respondents completed the survey. This group accounted for 40.00% of all students; spent 52.63% of all CPBucks spent, and received 57.64% of all CPBucks distributed.

Table 8 shows that the correlation between CPBucks earned is very high to students' self-reported frequency of participation in courses covered by CPBucks (r = 0.7901, p = 0.0002%), student agreement that CPBucks were helpful in increasing their class participation (r = 0.5546, p = 0.003), and their overall enjoyment of the CPBucks system (r = 0.5106, p = 0.008).

Table 8. *End of Semester Feedback Questions*

Question Description	Scale	Mean Response	Standard Deviation	Correlation to CPBucks Earned	
1. Importance of participation	A	4.5385	0.6923	0.0539	
2. Frequency of participation during past semesters	D	3.1923	0.7348	0.3971	1
3. Frequency of participation in courses covered by CPBucks	D	3.4615	1.0463	0.7901	3
4. Helpfulness of CPBucks for increasing participation	B	4.0769	0.9577	0.5546	2
5. Effect of CPBucks in increasing participation for non-CPBucks courses	E	3.3846	1.1121	0.1394	
6. Enjoy participating in the past	C	4.0000	0.6202	0.2945	
7. Enjoy use of bonus points	E	3.6154	1.0769	0.2865	
8. Enjoy CPBucks system	E	4.0769	0.9577	0.5106	2

Scale Definitions

A. 1: not important; 5: very important
B. 1: not helpful; 5: very helpful
C. 1: not enjoyable; 5: very enjoyable
D. 1: never; 5: almost always
E. 1: not at all; 5: very much

P values

1. $p < 0.05$
2. $p < 0.01$
3. $p < 0.001$

However, past participation also had a statisticallysignificant correlation with amount of CPBucks earned (r = 0.3971, p = 0.045). In fact, the difference in the self-reported participation frequency for CPBucks courses (3.46 out of 5.00) and previous non-CPBucks courses (3.19 out of 5.00) is not statistically significant (Table 9), inferring that the student participation did not meaningfully increase as a result of the token economy system.

Table 9. *Test of Means: Frequency of Participation*

	Frequency of participation during past semesters		Frequency of participation in courses covered by CPBucks
Mean		3.1923	3.4615
Variance		1.5615	1.1385
Observations		26	26
Pearson Correlation	0.6350	Degrees of freedom	25
T-stat	–1.6592		
P(T≤t) one-tail	0.0548	T Critical one-tail	1.7081
P(T≤t) two-tail	0.1096	T Critical two-tail	2.0595

As shown in Table 10, the student-respondents mostly enjoyed the CPBucks system (4.08 out of 5.00), and their degree of enjoyment had statistically-significant correlations with the number of CPBucks they spent and earned, the amount by which their grades improved, their self-reported frequency of participation in CPBucks courses, and their agreement that CPBucks were helpful in increasing their class participation.

Table 10. *Correlation of Semester Feedback Questions*

Variable	2	3	4	5	6	7	8	9	10	11	12	13
1	[C] .89	[B] .60	[C] .87	[C] .71	.04	.37	[C] .73	[B] .52	.15	.32	.31	[B] .57
2	—	[B] .61	[C] .78	[C] .61	.05	[A] .40	[C] .79	[B] .55	.14	.29	.29	[B] .51
3		—	[C] .68	[A] .47	.16	– .12	[B] .47	[A] .39	.06	– .04	– .26	[C] .62
4			—	[C] .73	.00	[A] .41	[C] .65	[A] .42	.10	.37	.28	[B] .55
5				—	– .05	.34	[C] .64	[A] .39	.05	.32	.22	[B] .59
6					—	.25	.19	.17	.23	.27	.12	.17
7						—	[C] .63	.09	.24	[C] .68	– .10	.20
8							—	[B] .66	.18	[B] .53	.26	[C] .66
9								—	.08	.19	[A] .40	[C] .71
10									—	[B] .50	.16	– .10
11										—	– .06	.19
12											—	.25

[A] *p-value < 0.05* [B] *p-value< 0.01* [C] *p-value < 0.001*

Variables

1. Total CPBucks spent
2. CPBucks earned (self-reported)
3. Average final grade (lower grade is better)
4. Total score improvement

5. Average grade improvement
6. How important is class participation in learning?
7. How frequently did you participate in previous courses?
8. How often did you participate in courses covered by CPBucks?
9. How helpful were CPBucks in increasing your class participation?
10. Did CPBucks increase your participation in non-CPBucks courses?
11. How enjoyable did you find participating in past classes?
12. Did bonus points help you participate more in non-CPBucks courses?
13. Did you enjoy the CPBucks system?

Discussion

Although past research suggested that classroom participation results in deeper learning and better performance outcome(Beekes, 2006; Carini et al., 2006; Murray & Lang, 1997), this was only observed in one of the courses. The lack of a link can be attributed to the fungible nature of CPBucks, since students could earn CPBucks in one class and spend it in the other. In fact, the data showed that almost twice as many CPBucks were redeemed in the Strategy course, even if there were more students in the Finance elective. As such, no definitive link can be drawn between the degree of participation in a particular class and the final grade received in that class.

In contradiction to the findings of numerous past token economy studies (Boniecki & Moore, 2003; Junn, 1994; Nelson, 2010; Wright et al., 2009), the token economy system did not appear to encourage students to increase their participation. However, the aforementioned studies also employed class monitors to directly measure the amount of class participation, instead of self-reported participation used in this study.

Student feedback results strongly support the acceptability of the CPBucks system for students. This is further supported by student feedback that the system was "fun," provided "motivation," and was effective in "engaging students" and "increasing participation."

It should be noted that this was not a universal sentiment, as one respondent stated that they did not like it. Student complaints in CPBucks centered around the "unequal distribution of wealth," citing fierce and aggressive competition in class to earn CPBucks. Others also complained about the randomness of the dice rolling system in improving their grades.

The CPBucks system has several strengths. First, explaining the token economy to students provided them with clear rules at the very beginning of the course. Second, it is a transparent way that provides instant feedback to students after they make meaningful contributions, instead of waiting until the end of the course. Third, it greatly reduces the workload for professors by making it easier to assign points for class participation. Finally, the system was generally accepted by students – none of the comments mentioned a sense of being forced to participate (although some mentioned it was "unfair" because of the competition to earn CPBucks.

Limitations

Although the study results suggest that the CPBucks system does not meaningfully increase class participation, study parameters constrain the inferences that can be made. The indicators used to measure the degree of participation, namely CPBucks spent, CPBucks earned, and self-reported participation, are imperfect indicators. Ideally, participation should be measured by independent observers, and observations should be taken during a baseline period

without the token economy, a study period with the token economy, and a fading period where the token economy is gradually phased out.

The small sample size (65 students, and only 29 survey respondents), and the relative heterogeneity of the courses further limit the inferential power of the study. Finance is a highly technical subject that involves quantitative methods, while Strategic Management, which is an integrative course, uses quantitative and qualitative methods in equal measure.

Finally, the study did not set a maximum limit for over-participators who monopolized the discussion. While this sidestepped the problem of systematically underestimating class participation in past studies(Boniecki & Moore, 2003; Nelson, 2010), it also decreased the equity of distribution and student enjoyment.

3.0 Conclusion

The study shows that the token economy system did not encourage significantly more student participation in class. However, it also proved that using a token economy is a viable method to evaluate student participation in the Philippine setting. Student responses were mostly positive, implying that the students have accepted it as a fair way to grade participation in class.

Many of the shortcomings can be addressed without eliminating the token economy system. For instance, the greatest complaint (unequal distribution) can be addressed by combining the token economy with other forms of encouraging class participation, such as "think-pair-share," allowing for written participation, and using electronic personal response systems (Beekes, 2006) instead of cold calling or a show of hands.

Potential directions for future study might include (1) having control groups; (2) incorporating a phasing-in period to measure baseline participation; (3) using independent classroom observers to determine the frequency and quality of student participation; and (4) adopting the system in more classes to study its impact onstudents of different levels (not just fourth-year seniors), in other non-business courses, and with a greater variety of instructors and class sizes.

In all, despite all the limitations in the current study, the CPBucks token economy is a viable and accepted way to grade class participation. It can be easily applied and reused – almost 60% of distributed tokens were returned in very good condition. While there is no evidence that it effectively improves participation, it is an easy and flexible grading method to consider in participation-heavy courses.

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