

Using Cryptocurrency to Increase Student Motivation and Agency: Thoughts from Vietnam

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John Andre

National Economics University, Hanoi, Vietnam
john.andre@isneu.org

Abstract—This paper will argue that cryptocurrency can be used as a tool to motivate and increase the agency of students in higher education. Although just a few cryptocurrencies, or coins, dominate the headlines (bitcoin, ether, etc.), more than 10,000 different coins currently exist. Each coin targets specific problems (inter-user payments, unlocking specific services, etc.) and two key problems in Vietnamese higher education are student motivation and student agency. The argument is that by rewarding particular behaviors (good grades, attendance, etc.) with a grant of coins to each student, the coin can bring the benefits of badging but can go even further because coins, unlike badges, can be spent. One major weakness of cryptocurrencies is that they are like money but with less utility. This paper argues that this weakness can be turned into a strength by making a new coin that is targeted specifically to education. Students with better academic performance would receive more coins than other students. These coins can then be used to purchase exclusive options such as entry to watch or even meet a guest speaker or the student could buy time from the teacher to help them improve their study plan. While teachers do offer office hours, some students are hesitant to attend as they feel they do not deserve to consume the teacher’s time, because it was their parents, not the students, who paid the tuition. However, by earning the coins to buy the teacher’s time, it is anticipated that students would become more agentic and more willing to take advantage of those resources that have been available yet remain underutilized. Students without coins may be able to buy them from other students at a market price. This can provide even greater motivation for students, especially those from disadvantaged backgrounds, to perform well because their reward (the coins) can be exchanged for real world money.

Keywords—cryptocurrency, student motivation, agency, higher education, Global South

1 Introduction

University students in the Global South, including Vietnam, face different challenges than those highlighted in the literature from the Global North. One example is that in the US we see 37% of students do not complete their undergraduate (four-year) degree within six years [1]. However, in Vietnam this is not an issue. While there are some higher education (HE) students who do not graduate on time, the percentage is so

low that it is not something that education professionals worry about here as suggested by the dearth of literature on the subject.

The importance of this difference between the Global North and South was the subject of a book which coined the term WEIRD (Western, Educated, Industrialized, Rich, and Democratic). The essence was that there is a strong bias in literature because most subjects of research tend to be WEIRD [2]. Given that roughly 60% of the world's population lives in Asia, this tendency can lead to problems when policy-makers seek to understand the complex problems facing the Global South. This does not mean we should ignore existing literature, simply that assuming conclusions drawn on WEIRD samples apply equally to those in other parts of the world comes with some large assumptions.

1.1 Background

One challenge that we do have for Vietnamese HE students is motivation. There exists a significant group of HE students in Vietnam that are not worried about their grades (because they believe they do not matter for them) and also are not worried about passing (because they believe they will, regardless of their effort). For these students, the primary concern is motivation. How can HE institutions (HEIs) motivate these students to increase their efforts related to learning?

We know that learning is important. In fact we see countless articles in the newspaper with employers in Vietnam expressing their dissatisfaction with the quality of HE graduates [3], [4]. We also see literature which says the same [5]. As Vietnam's economic growth rate is projected to be one of the two highest in the world [6], producing quality graduates should be of the highest importance for Vietnamese HEIs. If we want students to learn more then dealing with the issue of motivation requires our attention.

One interesting idea from the Global North was that of using digital badges [7]. This was shown to increase student motivation through recognizing student learning and signaling achievement. While some might argue that this focuses on extrinsic motivation, when faced with unmotivated students, increasing extrinsic motivation is better than not increasing motivation at all. In fact, one key point of a TED Talk was how extrinsic motivation was used to push students to do the work to learn math until intrinsic motivation could be developed [8].

This paper will argue that a new cryptocurrency, a virtual coin, could be used to increase student motivation. Although just a few cryptocurrencies, or coins, dominate the headlines (bitcoin, ether, etc.), more than 10,000 different coins currently exist [9]. Each coin targets a specific problem (inter-user payments, unlocking specific services, etc.). While a digital badge can be a way to recognize accomplishment, a new coin could be a way to monetize it.

One natural question is, to what degree does money motivate Vietnamese people? While there is much research into the topic of money and its motivational power, both for good and ill, little has been done specifically in the Vietnamese context. However, if we look into history, we can gain some insights. For example, after Doi Moi (when Vietnam changed from a centrally-planned economy to a more market-driven one), farmers were suddenly allowed to set their own prices and keep any extra money they

earned. This had the very important effect of increasing farming output. Clearly money can influence behavior in Vietnam.

MathSpace, the company from the TED Talk mentioned above, used the idea of parents paying real money into the system so that their children could get that money only if the children did some specific work [8]. Money appears to influence not just adults but children as well.

While no literature was found on the topic of cryptocurrencies and student motivation, there have been studies on interventions using money and trophies. In the Global North, research was conducted which involved spending \$400 per student for high school freshmen where students were awarded \$50 per month for eight months for accomplishing certain tasks [10]. Interestingly, younger students appeared to be more interested in trophies while older (high school) students were more interested in financial rewards. Additionally, the sooner the rewards were received after the desired behavior the stronger the impact [11] was. This cuts to the core of what we promise HE students. If they study hard now, they will get higher salaries later. The salience of that future salary is simply lower than that of a more tangible reward now.

The idea of giving students \$400 per year to motivate them to study harder [10] sounds great but for a large Vietnamese public university, with around 50,000 students, that would translate into \$20m per year in additional expense. Such an increase in budget is simply not feasible in the Global South. As such, having a special coin which is focused on education might be beneficial. Indeed, it might help satisfy a recommendation from the World Bank that Vietnam should design a system to support disadvantaged upper-secondary graduates at university [12, p. 49].

Along with the issue of motivation is the issue of learner agency. Vietnam has a national culture which discourages agency in students [13]. However, since firms need graduates to be agentic [14], it must be seen that the responsibility for developing that sense of agency falls squarely on the shoulders of HEIs. Is it possible that by students earning their own money, unrelated to their family's wealth, agency could be increased?

Vietnamese students will often say they are shy but what it really comes down to is that they do not feel agency. Often they study what their parents chose for them. A student might have wanted to study fashion design but the parents instructed the student to study banking, because the parent knows someone in the banking industry and can get them a job there. This only lowers the student's sense of agency. The student did not choose to attend the university or program.

On the topic of agency, one thing that educators at Vietnamese HEIs know is that even when the teacher holds office hours for students, students joining is extremely rare. Even when lecturers encourage the students to come, students are still hesitant to attend. Could a coin help students to feel more empowered? More importantly, could a coin which rewards performance motivate students to work harder in their studies?

For an educationally-focused coin to be successful, the students must find it motivating. The purpose of this research was to discover both how motivating the coin might be and also what the students would like to use the coin to purchase so that information could be used to shape the implementation of such a coin.

2 Methods

2.1 Approach

In this exploratory research, a mixed-methods approach was used. An initial qualitative study was performed to understand the major issues surrounding the concept of a new educationally-focused coin. A follow up quantitative study was performed to measure the prevalence of those sentiments.

2.2 Participants

For the qualitative study, 28 current students in an entrepreneurship course, in their final year of a four-year degree, were asked to share their thoughts on an education-focused cryptocurrency. Responses were highly detailed and included what they thought and what they believed other Vietnamese HE students would think about the topic.

For the quantitative study, current and former students of the author were contacted via email and asked to complete an online questionnaire which was informed by the qualitative study. They were told their responses could be fully anonymous or they could include an email address to be entered into a drawing for one of two 1m VND awards. 322 responses were received. As the email did include the topic of a new educationally-focused coin, self-selection bias cannot be ignored.

Some of the respondents have graduated already and some are still studying. They ranged from graduating in 2014 to expecting to graduate in 2025. Correspondingly, respondents were aged from 18 to 33 years old of which 55% were female.

2.3 Context

All participants studied in a Vietnamese HEI either at the undergraduate or graduate level, or both, where English was the language of instruction.

2.4 Instrumentation

Participants in the quantitative study were asked a series of questions with a five-point Likert scale spread across four sections. The first section contained questions about how strongly the participant would like to use the coin for specific educational purposes (for example, using the coin to be able to choose their own partners for group assignments). The second section asked about using the coin for other purposes (for example, to pay for food or parking). The third section asked questions about how effective the respondent thought such a coin would be in motivating students to study more. The final section was for demographics.

3 Findings

From the qualitative study, 28 participants were all very interested in the concept of an education-focused coin. One student described herself as someone who does not contribute during class or meet with teachers outside of class. She felt she did not deserve to take the teacher’s or the class’s time because she had not paid for such a right (it was her parents who paid). However, if she earned coins used to purchase such a right, she would be more willing to interact with her lecturer as she would feel more deserving.

Unexpectedly, several respondents not only completed the (quantitative) questionnaire but also emailed the author to make additional comments on the concept. The comments universally expressed excitement about the idea but several did also express concern. This was seen as strong engagement in that the students were taking the time to more deeply consider the potential impact of the coin. The positive statements were mostly that such a coin would increase student motivation. The negative statements included concerns that it could continue existing socioeconomic inequality.

For the quantitative study, we will consider answers of four or five to represent a positive response. Given this definition, we can see the students’ reported interest in this new coin along with the items they would be interested in using the new coin to purchase.

Table 1. Motivational impact of educational cryptocurrency

Overall interest in coin	Percent rating 4 or 5
Coin would motivate them to study more	89%
Coin would motivate the typical Vietnamese HE student to study more	69%
Parents would like to purchase some coins for their child when they enroll	63%

Table 2. Highly ranked items students would purchase with new coin

What would they like to use coin to pay for?	Percent rating 4 or 5
School fees	91%
Retake a failed assessment	87%
Receive improvement recommendations before assignment submission	83%
To access internships	83%
Teacher’s consultation time how to best complete an assignment	78%
Know if assignment will pass or fail before submission	76%
Take additional classes related to their major	74%
Attend seminar or conference others cannot attend	70%
Take classes unrelated to their major	65%
To access personal counseling services (for general education plans)	62%
To meet privately with a guest speaker (VIP pass)	61%
Retake a course after graduation as a refresher	57%
To attend a guest speaker session	51%

4 Discussion

When people talk about cryptocurrencies, one of the concerns is that they are like money that you cannot use everywhere. People complain “Buying breakfast with Bitcoin is still not a realistic option.” This limitation is seen as a negative for a general purpose coin but it would actually be a positive for an education-focused coin as described herein. The purpose of this coin is to motivate students to increase their study efforts with the reward being more education benefits. It is similar to airlines offering free flights to those people who fly more often.

One of the interesting features of cryptocurrencies is that they can be used in smart-contracts. Sometimes people refer to this as “programmable money.” This is more difficult to do with a national currency and impossible to do with cash. With a cryptocurrency, it becomes possible to reward students with money that can be spent only on certain things. If a student does particularly well on an exam, only then could the student earn a VIP pass to meet a guest speaker and they must use the benefit within six months. This programmable quality could also be used to prevent students from selling their coins to younger students after graduation, if that is a concern.

One of the challenges when instituting a financially-focused project like this is how to fund it. If the intention is for students to earn coins by performing well, but those coins are useful in buying things with real-world value, where does the real-world money come from?

That 63% of students believe parents would pay for an initial stock of coins provides an answer to that question. Yes, there are concerns about perpetuating inequality. After all, the dream of higher education is to be a source of social mobility. A student should be able to be the first in their family to attend university but still have the same chances as a student who comes from a family that has been attending university for generations. This is not the challenge it first appears to be. Students can be means-tested so that students from families lower on the socioeconomic ladder are granted some initial number of coins. Likewise, we can limit the number of coins that any student can purchase and further limit those purchases to the first semester after university enrollment. In fact, having such limits would do much to alleviate concerns students expressed in this study.

Another concern expressed was that disadvantaged students do not want their disadvantaged status to be known. By means-testing and allocating free coins to certain groups, there would be no distinction between those who bought and those who received the coins from their efforts. In fact, this could be an even greater motivator for those from disadvantaged backgrounds as they could end up with far more coins than their wealthier classmates and end up selling those coins for real world money, perhaps to repay student loans.

There could even be multiple classes of coin. For example, a silver coin could be used for certain purposes (like getting advice from a lecturer before submitting an assignment) while a gold coin could be used for a greater range of purposes (like starting a student club or for an entrance fee for a competition). Students suggested that if coins could be bought, those coins could be a different category of coin with greater limitations (such as only paying for books, etc.). This is easy to accomplish with such a coin.

While it might be possible to purchase it, a key aspect of this coin is that students would receive the coins as a reward for desired behavior. Initially it was thought that the desired behavior would include getting good grades on assessments, attendance, and participation during class time. However, some students brought up other behavior that we might include, such as performing volunteer work, summarizing research literature, or having events where coins are given away through random drawings.

The methods of earning is one aspect of this coin which needs further investigation but might need to be kept open to teacher discretion as it was found that the role of teachers is an important one when it comes to students adopting a new technology [15]. Furthermore, research from Slovenia found that teachers might have lower confidence but positive attitudes toward technology use in education [16]. Given the link between these two pieces of research, time should be spent to help teachers understand how to maximize the motivational and agentic benefits of this kind of coin.

4.1 Seven key categories of usage

We can classify the additional comments from students into seven main categories. First is buying things which are currently available for free. We can see that 83% of students claim they would use the coin to buy time and advice from their teachers. This can generally be done now, for free, but students do not take advantage of this opportunity. This indicates an improved sense of agency the students might feel from earning based on their own merit. Some specific examples that students added include: Getting more detailed feedback from their teacher (which teachers will generally do if a student is sincerely interested); buying a more comfortable seat (being able to sit closer to the front of class, which they can already get simply by arriving earlier).

A second category is allowing students to do things that they feel they cannot currently do. This is closely related to agency in that students feel their agency is being lowered by external forces and they would like to resolve that. Examples students gave include having the power to vote to change the way things are done; participate in a foreign exchange program; having tutors and lecturers answer email questions; receive permission to be absent from a lecture to join an extracurricular activity; talk to someone who can counsel them on what they should do to best prepare for the future (like a student counselor, which is less common in Vietnam); to complain about the school and receive a serious response. Interestingly, research in Slovenia found that student agency was the greatest predictor of their adopting a new technology [17]. So there could be a bi-directional relationship here.

A third category is that students would like to use the coin to get something exclusive, something unavailable to other students. Examples include a VIP pass to talk with a guest speaker, attend a seminar or conference that others cannot, time in a massage chair, increasing chances for achieving a scholarship, etc. Some of these would require some financial investment from the university.

A fourth category is to use the coin to bypass an existing limitation. Some of these limitations are decided by the school or teacher (time limits for in-class presentations, an assignment deadline, choosing a teacher for a course, choosing a research coach,

changing the class schedule/timetable) while others are related to infrastructure challenges when dealing with so many students (not enough elevators during peak times, bathrooms being unclean, renting a space for club activities). While some changes might be very difficult for the school, like changing the timetable which requires coordination between room, teacher, and student availability, if enough students are interested it can act as a signal that some limitations need to be addressed (hiring more teachers who can teach a certain subject, etc.).

A fifth category is to make others happier. Examples here included donating to a charity, buying gifts for teachers; donating to teachers so they can hire a replacement in case of an emergency; using to pay off parents' debt.

A sixth category is that students would like to use the coin to buy things that they currently have to pay money for. Examples given by respondents included books, school fees, tuition, entrance fees for competitions, room and board, transportation to school, accessing premium versions of software, using laptops or other technology, using coin as a source of funding for their own startup, buying stocks, etc.

A seventh category is facilitating things that are possible now but students feel uncomfortable pursuing due to a lack of knowledge, lack of agency, or just lower confidence. Examples students gave include buying a creative idea from another student (to start a business), establishing a student club, and peer tutoring.

4.2 Funding the coin

Having parents buy an initial allotment could provide the money need to pay for everything. It is important to note that many things that students express an interest in buying with the coin are not things that actually cost the university any money. For example, getting more feedback from the teacher. If a student is sincere in their desire to improve, most teachers would be willing to provide that feedback. Likewise, using the coins to watch a recorded lecture or having the power to vote to change the way things are done have no real world financial requirements. Because of this, it becomes possible to give free coins to disadvantaged students without putting a financial burden on the university.

The fact that 74% of respondents said they would like to take classes which go deeper into the subjects they already study and 65% said they would take classes unrelated to their major is particularly telling. One of the challenges faced by universities in Vietnam is that when they offer special (free) classes, for example on employability skills, students do not attend. This may be an issue of perceived value where, since the classes are given away for free, students do not see them as important. However, if students use coins to pay for these classes, the perceived value may be increased.

Regarding student agency, it was thought that by students earning their own coins they would feel a greater sense of autonomy. When we see that 78% of students would use the coin to meet with their teacher and 83% would spend the coin to receive improvement recommendations, we see that agency could be increased. Teachers are regularly available for students to meet during office hours but students rarely take advantage of this. Whether this is an issue of perceived value or a lack of agency the fact

that students believe they would spend more time with their teacher to improve the quality of their work is meaningful.

Two more surprises were in the extra comments students made. It was noted that students would like to use the coin to protect their ideas. For example, when a student has an idea for a new business in an assignment or presentation, they would like evidence that this idea was originally theirs. While it is more in the realm of NFTs (non-fungible tokens) than cryptocurrencies, it is closely related (since both usually rely on a blockchain as a record of transactions). Even more interesting was with another student reporting they would like to use the coin to buy another student's idea to start a business. Here we see an idea-generator who wants to monetize their idea and another student who wants to pay for that idea with their hard work. The fact that a coin could facilitate this transaction can only bring benefits to the students involved and to the nation as a whole.

Further on the topic of entrepreneurship, several respondents said that students should be allowed to sell their coins back when they graduate, while 57% of respondents said they would like to use the coin to retake a course (as a refresher) after they had some real-world experience. To satisfy both of these desires we could allow students to sell (some or all) their coins back to the university upon graduation. This money could be also used to fund their own startup or just to start their life as a new graduate.

4.3 Step by step

When considering the implementation of this project, it is possible to phase it in before scaling it up more broadly. For example, it could be started by only one teacher. If the results turn out to be positive, it could be expanded to multiple teachers at the same university, perhaps just in the same faculty or school. If the effect continues to be positive, it can be further expanded to the entire university and, eventually to other universities and even to other countries.

The legal implications of this project cannot go unaddressed. Various countries, including Vietnam, have laws limiting, or banning outright, the use of cryptocurrencies. Vietnamese law shows that the government is concerned that cryptocurrencies could damage their ability to regulate the economy. This is a natural concern and a coin as described herein would need to be designed with the government having full consultation. If the government's concern is the anonymous nature of such coins, we can tie the coin to the national ID of each student. Indeed, this could help prevent students from circumventing rules around the use of the coin. This could also be used to track any taxable benefits that individuals are receiving.

As mentioned above, respondents were quick to offer both warnings of what could go wrong and also solutions to solve at least some of those problems. The fact that they thought so deeply about this concept is taken as an indicator of greater engagement with this idea.

The problems students identified were mostly around using the coin for improper purposes (hiring ghost writers, buying higher grades, etc.). As this idea of a new coin is developed, great care needs to be taken. Limits must be imposed on all stakeholders.

The fact that this kind of coin is, in essence, programmable money gives us a much greater ability to add such limitations.

5 Conclusions and future directions

The idea of using a new educationally-focused cryptocurrency to increase student motivation shows promise. Current and former students report high levels of motivation from such a coin. The coin can be funded by allowing parents to purchase an initial allotment of coins for their child upon enrollment at university. We can avoid this perpetuating existing levels of inequality by means-testing students and giving free allotments of coins to those students from disadvantaged backgrounds.

This is not to say the coin is a panacea. There are still major issues to resolve, including how to make the coin compliant with local laws regarding cryptocurrencies. The intention is not to cause more problems. Rather the intention is create a new tool that educators can use to solve two pressing problems with Vietnamese HE students today: Motivation and agency. Future steps on this project include working with the relevant government ministries to ensure that all stakeholders are represented in discussions.

While it is indicated, from this very limited sample, that students would be motivated to use a coin like the one described herein, there is a question on how we get teachers motivated to use it. Teachers would be the ones distributing the coins by defining what behavior earns how many coins. However, if the coins have real-world value, we must ensure that we avoid the temptation for teachers to hoard any allotment they are given, perhaps through a rule that they must distribute at least 95% of the coins each semester. Luckily, existing technology allows this level of control.

Beyond teachers, how to get school administrators and managers to support this kind of a coin must be determined. They would have to deal with the administrative realities such as selling initial allotments, allocating some to disadvantaged students and even, potentially, collecting coins in trade for school fees. This would create additional work for them and so we need to see how such a coin can be designed to also make their other work easier so as to balance things and not increase the overall effort required from them.

After resolving the issues with the government, teachers, and management, then it may be clear enough to define the parameters and operating guidelines for this new educationally-focused coin in which students have expressed such an interest.

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7 Author

John Andre is an American entrepreneur and educator with a strong track record of success in both fields. He founded several companies, including Montgomery Software, which made its name in training and consulting for corporate clients around the world. He is currently a senior lecturer for National Economics University in Hanoi, Vietnam and teaches business management and finance subjects. Mr. Andre's current research areas include how technology can be leveraged to improve student learning. He can be reached at john.andre@isneu.org.

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