Ivory: The Decentralized Education Augmentation System

Abstract: It has become apparent with the rise of the internet bringing a wide spread availability of vast information, and with the advent of generative artificial intelligence(gAI) that soon what constitutes education about the world, and how to function within it will no longer be aligned with what it actually takes to thrive in said world. In order to remedy this disaster I propose a new system that will augment the preexisting system while also removing the barriers of lock step education, and will instead seek to usher in an era of rapid human development unencumbered, and introduce actualizable evaluations for the increasing per capita understanding via IVY token. Furthermore given the rise of what could be called the information age, the standards by which children have been up until now instructed, measured, and suggested to adhere to have reached a stage where these have become more often inhibitors to successful life outcomes than producers of them. The rise of extracurricular learning platforms such as Khan Academy, and to some extent YouTube are testaments to this being the case. In addition, many of the most successful individuals in society became such due to their maverick natures to not conform the standards of industrial education. Due to the plasticity of the brain during a humans younger years it is imperative for society to come together, and create stronger incentive structures than grades and compulsion for children to learn, and for parents to aid in this process. Note that rewards will be proportional to completion as well as the level of understanding so that one may min, max, or somewhere in-between their educational prospects without loss of continuity. Beyond this more free approach towards general education, the proposed system would enable the potential for lifelong learning, and proportional rewards for such endeavors since by many accounts the greatest among us never stop learning. Ultimately the aim of this project is to not to tear down, or chastise existing institutions, but simply to introduce iteratively immutable and transferable educational records, scalability as to incorporate a global platform, interoperability of digital and physical education platforms, enable new measures that incentivize understanding and progression, a restructuring of the existing student classifications, and grading systems to adhere to information age game theory principles, and lastly to allow for the education system to exist as more than a sandbox, but instead as a backbone for the global economy in real terms.

Table of Contents:\*subject to change up until the integration of web3 technologies

1. Purpose
   1. First and foremost let’s explore why education is important for a functioning society.
   2. Why does the current system need to be improved? What isn’t working: stagnation, lack of incentive for excellence leading to demand for equity, rigidity, the effect of the internet?
   3. Why a decentralized education augmentation system? With respect to the work done prior to it is important to maintain and upgrade the current education system that was developed to aid humanity during the industrial age.
   4. How will this improve and expand the current system: Augmentation and potential full scale institutional implementation, introduction of incentive, introduction of scale, integration with the information age?
   5. How does this maintain existential flexibility?(unlimited school choice pan-globally)
   6. Upgrading K-12Education to a Level Education system in order to remove the barriers for fast or slow learners.
   7. Integration with Atala Prism(identity system on Cardano)/Or as Dapp on Midnight
   8. Story Boards of game theory, and initial website layout
2. Functionality
   1. Tokenomics(distribution; decentralized treasury; total supply; transaction fee parameters)
   2. Protocol: Side chain of Cardano the global economic system, using the peer reviewed Ouroboros Proof of stake protocol. Or as a native asset ISPO distributed token through the current Proof of Stake protocol. Or as native asset on midnight(option still being explored)
   3. Pseudo-code
   4. Pseudo-UBI level 1-13
   5. Peer to peer loans for higher education level 14+
   6. Rewards for going through the system in a directly transmutable financial instrument(De-fi yield aspect)
   7. Game theory of Grades into proportional IVY token outputs(\*mathstuff)
3. How to join, implement, and utilize
   1. How to create, utilize, and register a wallet to register as \*
   2. As a student
      1. How to use wallet as a student to advance through the levels
      2. How to use wallet to store IVY tokens and track progress
      3. How to Advance levels
   3. As a digital instructor
      1. How to use wallet as an instructor to *Mint* courses
      2. How to use wallet to stake and store IVY tokens and track progress
      3. How to Manage student level advancement requests
      4. How to Utilize the Platform and its tool to facilitate student learning/level progression
   4. As an in-person instructor
      1. How to use wallet as an instructor to *Mint* courses
      2. How to use wallet to stake and store IVY tokens and track progress
      3. How to Manage student level advancement requests
      4. How to Utilize the Platform and its tool to facilitate student learning/level progression
   5. As a fully online institution
      1. How to set up institution Initial stake or stakepool
         1. Reward for maintaining Ivory:Cardano sidechain as a stake pool
         2. Or Reward for institutional stake on either Cardano or on Midnight
         3. Distribution % based on students delegated in institutions courses
         4. Ouroboros: Peer Reviewed Proof of Stake Protocol
      2. How Tokens are distributed from the stake pool total to the delegation %s per course and from that % per student.
      3. How to use wallet to stake and store IVY tokens and track progress
         1. Seed Phrase
         2. Seed Phrase Redundancy to ensure Information Availability
      4. How to Implement Departments
         1. Fundamental Departments that are imperative for level progression
         2. Nonfundamental Departments that make up a section of level prog.
      5. How to Initiate Instructor Wallets
         1. Accept or Deny Requests to be a registered instructor for the institution
         2. Validate Request to mint courses in said Institution
      6. How to manage students
         1. Level Progression
         2. Accept or Deny Request to graduate
         3. Accept or Deny Request for admission
   6. As an Overlay of Physical Institution
      1. How to set up institution Initial stake or stakepool
         1. Reward for maintaining Ivory:Cardano sidechain as a stake pool
         2. Or Reward for institutional stake on either Cardano or on Midnight
         3. Distribution % based on students delegated in institutions courses
         4. Ouroboros: Peer Reviewed Proof of Stake Protocol
      2. How to use wallet to stake and store IVY tokens and track progress
         1. Seed Phrase
         2. Seed Phrase Redundancy to ensure Information Availability
      3. How to Implement Departments
         1. Fundamental Departments that are imperative for level progression
         2. Nonfundamental Departments that make up a section of level prog.
      4. How to Initiate Instructor Wallets
         1. Accept or Deny Requests to be a registered instructor for the institution
         2. Validate Request to mint courses in said Institution
      5. How to manage students
         1. Level Progression
         2. Accept or Deny Request to graduate
         3. Accept or Deny Request for admission
   7. As a hybrid online and physical institution
      1. How to set up institution Initial stake or stakepool
         1. Reward for maintaining Ivory:Cardano sidechain as a stake pool
         2. Or Reward for institutional stake on either Cardano or on Midnight
         3. Distribution % based on students delegated in institutions courses
         4. Ouroboros: Peer Reviewed Proof of Stake Protocol
      2. How to use wallet to stake and store IVY tokens and track progress
         1. Seed Phrase
         2. Seed Phrase Redundancy to ensure Information Availability
      3. How to Implement Departments
         1. Fundamental Departments that are imperative for level progression
         2. Nonfundamental Departments that make up a section of level prog.
      4. How to Initiate Instructor Wallets
         1. Accept or Deny Requests to be a registered instructor for the institution
         2. Validate Request to mint courses in said Institution
      5. How to manage students
         1. Level Progression
         2. Accept or Deny Request to graduate
         3. Accept or Deny Request for admission
   8. For K-12 Education and its corresponding level 1-13 setup
   9. For “Higher Education”(college undergraduate through pHD)level 14-20
   10. For “Mystic Education”(beyond mastery: pushing the boundaries of what we understand) level 21+
   11. How to utilize the Ivory DEX function to exchange IVY tokens for other token trading pairs
       1. How to set up new trading pair
          1. Beginning new trading pair: ex IVY/DUST, IVY/ADA, IVY/DJED(Algorithmic stable coin, IVY/AGIX , IVY/USDT(Asset-back stable coin)
       2. how to lock tokens in DEX contract
          1. Reward yield for locking tokens in trading pair
          2. How to unlock trading pair
       3. How to request peer to peer loan for level 14+ \*note completion of 1-13 without actualizing gains should be sufficient to continue to 14 but in the case of gap year/s this system insures individuals to reenter without unnecessary friction.
          1. Proof of level 1-13 completion(blockchain metadata)
          2. And if applicable collateral for loan agreement negotiation if one party does not complete predetermined requisite that will be locked until a given time frame is achieved or level 20 is hit(whichever comes first)
4. Road Map
   1. White Paper Draft 1 Release February 19th
   2. Build Core website prototype launch Summer 2024
   3. Integrate web3 technologies Before December 2024
   4. Apply for Catalyst funding to fund the defi protocol bootstrap between fund 11 and 14
   5. Iterate steps a-d during quarter1-quarter2 of 2025
   6. Explain to market and explore market interests in alpha/beta stages throughout 2025
   7. Implement with Test Pilot online courses by summer 2025
   8. Integrate interoperability of online system and physical system by TBD
   9. Iterate f-g with more complexity and grounding by undefined

1. Purpose: This section will cover the principles and philosophies contributing the Ivory Project.

1.a. First and foremost let’s explore why education is important for a functioning society.

To begin to understand the value proposition of augmenting the current centralized education model with a decentralized system we must first come to agree upon the value of education. In order to do this let’s explore a juxtaposition of examples. Example 1 is a world in which few people are educated. In example 1 there is little to do other than trial and error for each individual and therein each person comes to their own conclusions about the nature of life in order to survive. This instinct may yield survival but does not necessarily lead to the long term thriving of a society. This example is the world during the Industrial revolution up until the implementation of the “factory model school”. This transition from an agricultural society to an urban society ultimately lead to better living conditions, but initially the separation from the haves and the have-nots was disastrous, and there was not a clear long term iterable path for society to take the have-nots and turn them into haves. This eventually resulted in the events outlined in, “The Jungle” by Upton Sinclair in 1905, which shed light on the unsanitary conditions, and products of the meat industry, and by extension the industrial complex as a whole. This was then followed by the introduction of the 1920s, “factory model school”, among other things, and our current education system is largely the same roughly 100 years later. Therefore by its staying power we know there is value in it, but to explain the value more in depth let’s explore the relational effects of the systems introduction. So then, with the introduction of this education system students from a young age were taught to listen to people in positions of authority, to work via learning + extracurricular activities for between 4-8 hours a day, to operate in accordance with bell schedules, and many other social skills not available to people simply trying to survive. This gave confidence to industry leaders that their workers would be more likely prepared for operating within the given work conditions. Furthermore this gave the government an avenue to help equalize the availability of opportunities of success by increasing the confidence of the leader class in the general citizenry, which enabled new levels of trust to be intrinsically established between generations, and classes, and therein create a stable society that was by the people and for the people instead of devolving into a corporate oligarchy of industrial titans who had knowledge without a way to transfer it to individuals outside of kin. In brief, we created a pipeline for base survival instinct living to transform and be nurtured into productive work life, and with sufficient merit to evolve into an overseer of others transformation, and maturation. This therefore was a profound invention in terms of social mobility, and the stability of the American society, which has thereby spread to every corner of the globe. As a meta-commentary one could say, that by strengthening the individual, the society cooperated at a higher level. Therein lies the true value proposition of education within example 1, which is fundamentally axiomatic in ensuring the proper growth and acquisition of humanities current understanding within the individual which leads to better distributions and allocations of resources as scarcity becomes less of an intrinsic state toward the human condition.

Now then in Example 2 the world is made up of more educated people. In example 2 there is a never ending list of things to do in a world that has been systematized into a parallelization of finite and infinite games. In example 2 the game is largely the same as example 1 however the complexity has increased, and the types of players involved has increased. In example one the only players were the instinctual individuals, the industry leaders, the government, and eventually the educators. This mostly remains the same for kindergarten-12th grade (k-12) schooling in this example, but now that we have established the fundamental value of education humanity has begun to consider and facilitate “higher education”. In higher education the topics to be taught are both more complex, more specific, and require preliminary understandings. This enables the societies understanding to branch out in novel and beneficial ways. So then this expresses an educated player and a higher level educator. In addition to this, new costs have been implemented since higher educations were initially private ventures, and thus required tuition payments that were outside of the purview of the k-12 education allocations. This therefore has introduced a lending class player in the case that the educated player cannot pay to become a higher educated player by his/her own means. This new lender player and the way this class of player plays has resulted in $1.77 trillion in education debt at present, and many of the owners of this debt at present do not have the requisite finical education, or resource to repay. If equal value opportunities were established by ensuring similar value information per educated player this problem likely would not have occurred to this level, but since there is a greater variance in the specifications of the higher educated players the separation that the education system initial solved has been reintroduced. So then in this example a regression through unchecked or unforeseen progression has occurred and must be addressed if society wishes to continue to see the fruits of the initially established value of an educational model.

1.b. Why does the current system need to be improved? What isn’t working: stagnation, lack of incentive for excellence leading to demand for equity, rigidity, the effect of the internet?

As stated in the previous section the introduction of higher education, and the incorporation of lender players into it has resulted in a regression of society back towards an era of haves, and have nots. This will likely lead to stagnation since the ever rising costs for higher education in many people’s eyes will seem too steep, and in many ways, unless ones path is chosen with the understandings end value in mind, which often comes at the sacrifice of personal interest, the cost is too steep. Simply, those who have already taken the steps leading to a higher education with considerations of knowledge value will thereby have a significant advantage over those who do not, and eventually this will lead to less higher educated players, which by precedent will likely result in less educated players henceforth, since general labor, and the trades will seem like more of a clear path for survival, but in the end the cycle will repeat and society will return to, “The Jungle” exacerbated by gAI, and an internet run primarily by government and corporations.

1.c. Why a decentralized education augmentation system? With respect to the work done prior to it is important to maintain and upgrade the current education system that was developed to aid humanity during the industrial age.

First to explain the value of a decentralized overlay to let us explore the evidence, reason and outcomes of capitalism being a successful system as a whole, one begins to wonder why this is the case. To answer this let us consider business first and foremost as an infinite game; a game with infinitely unknown numbers of player and no definite end to the game being played, which only ends when the players drop out through lack of ability to continue playing, but keep in mind the game still subsists regardless of players playing. Now with this assumption we can surmise that capitalism functions productively by not setting a limit to the number of players or goal of the game being played, and it allows for anyone to join or leave, which may also be considered a form of decentralized, and decentralizing power. This then allows the game to be infinitely iterable, and existentially flexible. Conversely, Education, while although it retains some scope of decentralization, due to its closeness to the human endeavor is treated with a higher degree of scrutiny, and thereby has seceded much of its power to central planning. This is most evident in the introduction of a common core curriculum, which seems to produce less creative thinkers by stifling the ability for younger human to express unique, and interesting opinions, and ideas. This is ultimately degenerative to the initial standpoint of what education was about. If we agree that education is about moving people through a strata of unspecified social classes through challenge of the intellect, and ones ability to wield it then a watered down curriculum will keep those without unsatiable curiosity, and ambition stagnant. This therefore will create a higher amount of stagnation in society, which will likely be entropic, and regress civilization back decades if not centuries or more. Therefore, in order to preserve the trajectory of the last hundred years of perceived progress since the introduction of an education we must seek to push power back towards the edges of society and grant truly equal opportunity to achieve merit, and its benefits within a existentially flexible game. This ultimately is an acceptance of the natural order expressed, and a augmentation with regards toward intellectual capability rather than a degeneration towards prideful misallocation through rampant insistence of equitably centralizable distribution without consideration of the consequences.

1.d. How will this improve and expand the current system: Augmentation and potential full scale institutional implementation, introduction of incentive, introduction of scale, integration with the information age?

1.e. How does this maintain existential flexibility?(unlimited school choice pan-globally)

1.f. Upgrading K-12Education to a Level Education system in order to remove the barriers for fast or slow learners.

1.g. Integration with Atala Prism(identity system on Cardano)

1.h. Story Boards of game theory, and initial website layout

2. Functionality

2.a. Tokenomics(distribution; decentralized treasury; total supply; transaction fee parameters)

2.b. Protocol: Side chain of Cardano the global economic system, using the peer reviewed Ouroboros Proof of stake protocol. Or as a native asset ISPO distributed token through the current Proof of Stake protocol.

2.c. Pseudo-code

2.d. Pseudo-UBI level 1-13

2.e. Peer to peer loans for higher education level 14+

2.f. Rewards for going through the system in a directly transmutable financial instrument(De-fi yield aspect)

2.g. Game theory of Grades into proportional IVY token outputs(\*mathstuff)

3.How to join, implement, and utilize

3.a. How to create, utilize, and register a wallet to register as \*

3.b. As a student

3.b.1. How to use wallet as a student to advance through the levels

3.b.2. How to use wallet to store IVY tokens and track progress

3.b.3. How to Advance levels

3.c. As a digital instructor

3.c.1. How to use wallet as an instructor to *Mint* courses

3.c.2. How to use wallet to stake and store IVY tokens and track progress

3.c.3. How to Manage student level advancement requests

3.c.4. How to Utilize the Platform and its tool to facilitate student learning/level progression

3.d. As an in-person instructor

3.d.1. How to use wallet as an instructor to *Mint* courses

3.d.2. How to use wallet to stake and store IVY tokens and track progress

3.d.3. How to Manage student level advancement requests

3.d.4 How to Utilize the Platform and its tool to facilitate student learning/level progression

3.e.1 As a fully online institution

3.e.1.0 How to set up institution Initial stake or stakepool

3.e.1.1. Reward for maintaining Ivory:Cardano sidechain as a stake pool

3.e.1.2. Or Reward for institutional stake on either Cardano or on Midnight

3.e.1.3. Distribution % based on students delegated in institutions courses

3.e.1.4. Ouroboros: Peer Reviewed Proof of Stake Protocol

3.e.2 How Tokens are distributed from the stake pool total to the delegation %s per course and from that % per student.

3.e.3. How to use wallet to stake and store IVY tokens and track progress

3.e.3.1. Seed Phrase

3.e.3.2. Seed Phrase Redundancy to ensure Information Availability

3.e.4. How to Implement Departments

3.e.4.1. Fundamental Departments that are imperative for level progression

3.e.4.2. Nonfundamental Departments that make up a section of level prog.

3.e.5 How to Initiate Instructor Wallets

3.e.5.1. Accept or Deny Requests to be a registered instructor for the institution

3.e.5.2. Validate Request to mint courses in said Institution

3.e.6. How to manage students

3.e.6.1. Level Progression

3.e.6.2. Accept or Deny Request to graduate

3.e.6.3. Accept or Deny Request for admission

3.f.1 As a physical institution

3.f.1.0 How to set up institution Initial stake or stakepool

3.f.1.1. Reward for maintaining Ivory:Cardano sidechain as a stake pool

3.f.1.2. Or Reward for institutional stake on either Cardano or on Midnight

3.f.1.3. Distribution % based on students delegated in institutions courses

3.f.1.4. Ouroboros: Peer Reviewed Proof of Stake Protocol

3.f.2 How Tokens are distributed from the stake pool total to the delegation %s per course and from that % per student.

3.f.3. How to use wallet to stake and store IVY tokens and track progress

3.f.3.1. Seed Phrase

3.f.3.2. Seed Phrase Redundancy to ensure Information Availability

3.f.4. How to Implement Departments

3.f.4.1. Fundamental Departments that are imperative for level progression

3.f.4.2. Nonfundamental Departments that make up a section of level prog.

3.f.5 How to Initiate Instructor Wallets

3.f.5.1. Accept or Deny Requests to be a registered instructor for the institution

3.f.5.2. Validate Request to mint courses in said Institution

3.f.6. How to manage students

3.f.6.1. Level Progression

3.f.6.2. Accept or Deny Request to graduate

3.f.6.3. Accept or Deny Request for admission

3.g.1 As hybrid online and physical institution

3.g.1.0 How to set up institution Initial stake or stakepool

3.g.1.1. Reward for maintaining Ivory:Cardano sidechain as a stake pool

3.g.1.2. Or Reward for institutional stake on either Cardano or on Midnight

3.g.1.3. Distribution % based on students delegated in institutions courses

3.g.1.4. Ouroboros: Peer Reviewed Proof of Stake Protocol

3.g.2 How Tokens are distributed from the stake pool total to the delegation %s per course and from that % per student.

3.g.3. How to use wallet to stake and store IVY tokens and track progress

3.g.3.1. Seed Phrase

3.g.3.2. Seed Phrase Redundancy to ensure Information Availability

3.g.4. How to Implement Departments

3.g.4.1. Fundamental Departments that are imperative for level progression

3.g.4.2. Nonfundamental Departments that make up a section of level prog.

3.g.5 How to Initiate Instructor Wallets

3.g.5.1. Accept or Deny Requests to be a registered instructor for the institution

3.g.5.2. Validate Request to mint courses in said Institution

3.g.6. How to manage students

3.g.6.1. Level Progression

3.g.6.2. Accept or Deny Request to graduate

3.g.6.3. Accept or Deny Request for admission

3.h. For K-12 Education and its corresponding level 1-13 setup

3.i. For “Higher Education”(college undergraduate through pHD)level 14-20

3.j. For “Mystic Education”(beyond mastery: pushing the boundaries of what we understand) level 21+

3.k How to utilize the Ivory DEX function to exchange IVY tokens for other token trading pairs

3.k.1. How to set up new trading pair

3.k.1.1. Beginning new trading pair: ex IVY/ADA, IVY/DJED(Algorithmic stable coin, IVY/AGIX , IVY/USDT(Asset-back stable coin)

3.k.2. How to lock tokens in DEX contract

3.k.2.1. Reward yield for locking tokens in trading pair

3.k.2.2. How to unlock trading pair

3.k.3. How to request peer to peer loan for level 14+

3.k.3.1. Proof of level 1-13 completion

3.k.3.2. And if applicable collateral for loan agreement negotiation if one party does not complete predetermined requisite that will be locked until a given time frame is achieved or level 20 is hit(whichever comes first)

4. Road Map

4.a. White Paper Draft 1 Release February 19th

4.b. Build Core website prototype launch Summer 2024

4.c. Integrate web3 technologies Before December 2024

4.d. Apply for Catalyst funding to fund the defi protocol bootstrap between fund 11 and 14

4.e. Iterate steps a-d during quarter1-quarter2 of 2025

4.f. Explain to market and explore market interests in alpha/beta stages throughout 2025

4.g. Implement with Test Pilot online courses by summer 2025

4.h. Integrate interoperability of online system and physical system