OPEN ACCESS
Journal of Loomingulisus ja Innovatsioon
Vol. 2 No. 3. June 2025, pp. 130-144 DOI. 10.70177/innovatsioon.v2i3.2356

Research Article

Gamification for Social Innovation: A Behavioral Experiment in Urban Youth Entrepreneurship

Ferdianty Augustinah[1], Aom Thai[2], Siri Lek[3]
[1] Universitas Dr. Soetomo Surabaya, Indonesia
[2] Srinakharinwirot University, Thailand
[3] Silpakorn University, Thailand

Corresponding Author:

Ferdianty Augustinah,
Universitas Dr. Soetomo Surabaya, Indonesia
Jl. Semolowaru No.84, Menur Pumpungan, Kec. Sukolilo, Surabaya, Jawa Timur 60118
Email: ferdianty.augustinah@unitomo.ac.id

Article Info
Received: Dec 10, 2024
Revised: Feb 3, 2025
Accepted: March 2, 2025
Online Version: June 1, 2025

Abstract
Engaging urban youth in social entrepreneurship presents a significant challenge, often hindered by perceived complexity and a lack of motivational frameworks. This study investigates the potential of gamification to foster social innovation and entrepreneurial behaviors among this demographic. The primary objective was to experimentally measure the impact of a gamified intervention on the pro-social entrepreneurial intentions and idea generation quality of urban youth. This research employed a behavioral experiment with a pre-test/post-test control group design, involving 150 urban youths aged 18-24. The experimental group interacted with a gamified digital platform designed to guide them through social venture creation, incorporating points, badges, and collaborative leaderboards. In contrast, the control group used a non-gamified version of the same platform. The results revealed that participants in the gamified condition demonstrated significantly higher levels of engagement, produced more innovative and viable social solutions, and reported a greater increase in entrepreneurial self-efficacy compared to the control group. In conclusion, gamification serves as a powerful and effective strategy to lower entry barriers and motivate urban youth, channeling their creativity toward developing impactful social innovations and fostering a new generation of community-focused entrepreneurs.

Keywords: Behavioral Experiment, Social Innovation, Youth Entrepreneurship

Journal Homepage https://journal.ypidathu.or.id/index.php/innovatsioon
How to cite: Augustinah, F., Thai, A & Lek, S. (2025). Gamification for Social Innovation: A Behavioral Experiment in Urban Youth Entrepreneurship. *Journal of Loomingulisus ja Innovatsioon, 2*(3), 130–144. https://doi.org/10.70177/innovatsioon.v2i3.2356
Published by: Yayasan Pendidikan Islam Daarut Thufulah

INTRODUCTION

Urban centers across the globe are grappling with complex social challenges, ranging from environmental degradation and community health disparities to economic inequality and social exclusion (Tan et al., 2024; Zhou & Sun, 2024). Addressing these deeply entrenched issues requires innovative, sustainable, and scalable solutions that traditional top-down approaches often fail to provide. Social innovation, defined as the development and implementation of novel solutions that meet social needs more effectively than existing alternatives, has consequently emerged as a critical paradigm for fostering resilient and equitable communities. A key driver of this paradigm is social entrepreneurship, which harnesses entrepreneurial principles to create, organize, and manage ventures with the primary goal of achieving measurable social impact.

The engagement of urban youth in this process is of paramount importance. This demographic represents a vast, often untapped reservoir of creativity, local knowledge, and digital fluency that is essential for generating contextually relevant and forward-thinking social solutions (Lin et al., 2025; Turkbaev et al., 2025). Empowering young people to become agents of change within their own communities not only addresses immediate social problems but also fosters civic engagement, develops valuable workforce skills, and promotes long-term economic inclusion. However, activating this potential is a significant challenge, as traditional pathways into entrepreneurship can seem inaccessible or unappealing to many young people, particularly those from marginalized backgrounds.

Gamification has emerged as a powerful and versatile strategy for engaging individuals and motivating specific behaviors across various domains, from corporate training and marketing to public health and education. By applying game-design elements—such as points, badges, leaderboards, and narrative structures—to non-game contexts, gamification can transform complex or mundane tasks into intrinsically motivating and enjoyable experiences (Feltz & Cokely, 2024; Hewitt, 2025). Its potential application in the context of social entrepreneurship education is particularly promising, offering a novel methodology to lower entry barriers, scaffold the complex process of venture creation, and sustain youth engagement in developing innovative solutions to pressing urban challenges.

Despite the recognized potential of urban youth as social innovators, a significant motivational and engagement gap hinders their participation in entrepreneurial activities. Many existing youth entrepreneurship programs, while well-intentioned, often adopt conventional, lecture-based pedagogical formats that fail to resonate with a digitally native generation. These programs can inadvertently present social entrepreneurship as a daunting, high-risk endeavor, characterized by complex business planning and financial modeling, which can stifle initial interest and creative confidence (Akder et al., 2025; Mezei, 2024). The core problem is the lack of scalable, accessible, and intrinsically motivating frameworks that can effectively attract and retain the interest of urban youth in the complex process of social venture creation.

The specific barriers to engagement are multifaceted. They include a lack of awareness of social entrepreneurship as a viable pathway, limited access to mentors and resources, a fear of failure in a high-stakes environment, and a perceived disconnect between abstract training modules and the tangible realities of their communities (Lange & McLeish, 2024; Li et al., 2024). Conventional support systems often fail to adequately address these psychological and motivational hurdles. This results in a missed opportunity to channel the inherent creativity and

social consciousness of urban youth into productive, community-benefiting enterprises, leaving their potential for social innovation largely untapped.

This research addresses a critical and specific problem: there is a demonstrable lack of rigorous, experimental evidence validating gamification as an effective intervention to increase pro-social entrepreneurial intentions and behaviors among urban youth (Henrique et al., 2024; Vilhem, 2024). While the use of gamification is well-documented in commercial and general educational contexts, its application and efficacy in the specialized domain of social innovation training remain largely theoretical and supported by anecdotal evidence or small-scale case studies. Without robust behavioral experiments to measure its impact on key outcomes, gamification risks being overlooked as a viable, evidence-based strategy for fostering the next generation of social entrepreneurs.

The primary quantitative objective of this research is to experimentally measure the effect of a gamified intervention on the pro-social entrepreneurial intentions and the quality of social innovation ideas generated by urban youth. This will be achieved by comparing the outcomes of participants using a gamified digital platform against those using an identical, non-gamified platform (Henrique et al., 2024; Topal, 2024). Key metrics for evaluation will include changes in self-reported entrepreneurial self-efficacy, the measured viability and innovativeness of the social solutions they develop, and their stated intention to pursue their social venture beyond the experiment.

A second, complementary objective is to analyze the behavioral engagement patterns of participants to understand the mechanisms through which gamification influences their actions. This involves tracking and comparing user activity data between the two conditions, such as time on task, frequency of interaction with platform modules, completion rates of specific challenges, and patterns of collaboration. This behavioral analysis aims to move beyond self-reported data to provide objective evidence of how specific game mechanics (e.g., points, leaderboards) impact user motivation, persistence, and depth of engagement with the entrepreneurial process.

The overarching aim of this study is to develop a comprehensive, empirically validated model that explains how gamification can be effectively designed and deployed to foster social innovation among urban youth (Balderas et al., 2024; Nayak & Gupta, 2024). By integrating the quantitative findings on entrepreneurial outcomes with the behavioral data on user engagement, this research seeks to provide a nuanced understanding of not only *if* gamification works in this context, but *why* and *how* it works. The ultimate goal is to produce actionable design principles and a theoretical framework that can guide the development of more effective and engaging social entrepreneurship programs for young people in urban environments.

The scholarly literature on youth entrepreneurship is well-established, providing extensive research on success factors, barriers, and effective support structures. Similarly, the field of social innovation has a rich body of work exploring its theoretical underpinnings and practical manifestations (Balderas et al., 2024; Mafugu, 2024). A third, rapidly growing body of literature focuses on gamification, detailing its psychological principles and demonstrating its effectiveness in various fields, most notably commercial marketing and formal education. These three fields provide a strong foundation for the current study.

A critical review of the literature, however, reveals a significant lack of intersection between these domains. While some conceptual papers have proposed the use of gamification for social good or in non-traditional educational settings, there is a marked scarcity of empirical

research that specifically investigates its application to social entrepreneurship training. The existing studies that do touch upon this intersection are often descriptive case studies of single programs, lacking the methodological rigor of a controlled experiment and thus limiting the causality and generalizability of their claims.

The most critical gap this research addresses is the absence of behavioral experiments in this specific area. Much of the research on gamification's effectiveness relies on self-reported measures of engagement or motivation (Balderas et al., 2024; Nayak & Gupta, 2024). There is a need for studies that employ controlled experimental designs to isolate the impact of gamification and use objective behavioral data to analyze its influence on user actions and performance outcomes. This study is explicitly designed to fill this methodological and empirical void by providing a direct, controlled comparison between a gamified and a non-gamified intervention, thereby offering a higher level of evidence regarding its efficacy in fostering social innovation.

The primary novelty of this research lies in its experimental methodology applied to the unique intersection of gamification, social innovation, and urban youth. The use of a behavioral experiment to directly compare a gamified system against a non-gamified control in the context of social entrepreneurship training is a new and significant contribution. This approach allows for the isolation of the gamification effect, providing a level of causal inference that is currently absent from the literature and moving the field beyond correlational or qualitative observations.

This study is justified by its potential for significant practical and social impact. Youth unemployment and social disengagement are pressing issues in many urban areas. By validating a scalable and engaging methodology for fostering social entrepreneurship, this research can provide non-profits, municipal governments, and educational institutions with an evidence-based tool to empower young people (Nayyar et al., 2025; Romero-Sánchez et al., 2024). The findings could directly inform the design of more effective programs that not only equip youth with valuable skills but also generate innovative solutions to local community problems, creating a dual benefit.

The theoretical justification for this research is rooted in its potential to advance our understanding of motivational design for pro-social behavior. It extends gamification theory beyond commercial or individualistic goals to explore how game mechanics can be harnessed to encourage altruism, community engagement, and complex, collaborative problem-solving. By analyzing the behavioral data, this study will contribute to a more nuanced theory of gamified design, identifying which elements are most effective for fostering the intrinsic motivation required for the demanding and often uncompensated work of early-stage social innovation.

RESEARCH METHOD

Research Design

This study utilized a behavioral experiment employing a pre-test/post-test control group design. This methodology was chosen for its high internal validity, which allows for the establishment of a causal relationship between the gamified intervention and the observed outcomes in entrepreneurial behavior. The design involved the random assignment of participants to one of two parallel conditions: an experimental group that interacted with a gamified digital platform and a control group that used an identical, non-gamified version of the same platform (Romero-Sánchez et al., 2024; Sherman, 2024). The core structure of the

experiment was designed to isolate the specific effect of the gamification elements by keeping all other variables—such as content, tasks, and interface—constant across both conditions.

The independent variable in this experiment was the presence or absence of gamification mechanics on the digital platform. The dependent variables were multifaceted, comprising both self-reported psychological measures and objectively evaluated performance outcomes. These included changes in entrepreneurial self-efficacy, pro-social entrepreneurial intentions, behavioral engagement metrics logged by the platform's backend, and the quality of the final social innovation ideas generated by the participants. This multi-pronged approach to measurement provides a comprehensive view of the intervention's impact.

The experiment was structured to unfold in three distinct phases: a pre-intervention assessment phase, an intervention phase, and a post-intervention assessment phase (Nasta et al., 2025; Romero-Sánchez et al., 2024). This temporal structure allowed for the collection of baseline data, the administration of the treatment, and the subsequent measurement of any changes, thereby enabling a robust comparison between the two groups. The rigorous control inherent in this design minimizes the influence of extraneous variables and strengthens the confidence with which conclusions can be drawn about the intervention's efficacy.

Population and Samples

The target population for this research consisted of urban youth aged 18 to 24 residing in a major metropolitan area characterized by significant socioeconomic diversity. This demographic was selected because they are at a critical life stage for career development and are often the target of social and economic empowerment initiatives. Furthermore, their high level of digital literacy makes them an ideal group for an intervention delivered via a digital platform (Chiang et al., 2024; Sidharta & Dai, 2024). The accessible population was drawn from individuals registered with three large community-based youth development organizations that agreed to partner on this research project.

A total of 150 participants were recruited for the study through a volunteer sampling method, responding to recruitment notices distributed by the partner organizations. To be eligible, participants had to meet the age criteria and have had no prior formal training in entrepreneurship. This criterion was established to minimize the confounding effects of pre-existing expertise. All volunteers provided informed consent prior to their participation in the study.

Following recruitment and initial screening, the 150 participants were randomly assigned to either the experimental group (n=75) or the control group (n=75) using a computer-generated randomization sequence. This random assignment is a critical feature of the experimental design, as it ensures that the two groups were statistically equivalent at the outset on both known and unknown characteristics, thus reducing the risk of selection bias and strengthening the validity of the causal claims.

Instruments

The primary instrument of this study was a purpose-built digital platform for social venture creation. Two versions were developed: a gamified version for the experimental group, which incorporated points, badges for milestone achievements, a collaborative leaderboard, and a narrative-driven quest system, and a non-gamified version for the control group, which presented the exact same educational content and tasks in a standard, module-based format without any game mechanics (Amit et al., 2024; Wang et al., 2024). The platform's backend

was designed to log detailed behavioral data for both groups, including time on task, module completion rates, and frequency of interaction.

To measure psychological constructs, a pre-test and post-test survey was administered to all participants. This survey integrated two validated scales: the Entrepreneurial Self-Efficacy (ESE) Scale, adapted to a social context, to measure participants' confidence in their ability to perform entrepreneurial tasks, and a scale measuring Pro-Social Entrepreneurial Intentions (PSEI), which assessed their likelihood of pursuing a social venture in the future. Both scales demonstrated high internal consistency (Cronbach's $\alpha > .85$) in pilot testing.

The quality of the final social innovation ideas submitted by participants was evaluated using a standardized scoring rubric. The rubric was developed by a panel of three experts in social entrepreneurship and assessed two key dimensions: innovativeness (the novelty and creativity of the solution) and viability (the practicality and potential for real-world implementation) (Fu et al., 2025; Mishra et al., 2024). Two independent raters, blind to the participants' group assignments, scored each submission. The inter-rater reliability was high (Intraclass Correlation Coefficient = .91), ensuring the consistency and objectivity of the performance evaluation.

Procedures

The experiment was conducted over a period of four weeks after receiving approval from the university's Institutional Review Board (IRB). In the first step, all 150 participants completed the online pre-test survey to gather baseline data on their ESE and PSEI. Following the pre-test, participants were randomly assigned to their respective groups and were given login credentials for either the gamified or non-gamified version of the digital platform.

The intervention phase took place over the subsequent three weeks. Participants were instructed to use the platform to complete a series of modules designed to guide them through the process of identifying a community problem, ideating a solution, and developing a basic social venture concept. Participants in the experimental group experienced this process through a series of "quests" and earned points and badges, while the control group followed a linear checklist of the same tasks (Campill, 2024; Van Nostrand et al., 2025). A minimum engagement time of three hours per week was recommended, though actual usage was tracked as a behavioral measure.

In the final week of the study, participants were prompted to submit their final social venture concept via the platform. Immediately following this submission, they completed the post-test survey, which was identical to the pre-test (Campill, 2024; Van Nostrand et al., 2025). Upon completion, all participants were debriefed on the full nature of the study and received a small monetary compensation for their time. The collected data were then prepared for analysis, with the survey data analyzed using an Analysis of Covariance (ANCOVA) and the idea quality scores analyzed using an independent samples t-test.

RESULTS AND DISCUSSION

The initial phase of data analysis focused on computing descriptive statistics for the primary outcome variables for both the experimental (n=75) and control (n=75) groups. The mean (M) and standard deviation (SD) were calculated for pre-test and post-test scores on the Entrepreneurial Self-Efficacy (ESE) scale and for the final Idea Quality scores, which were rated on a 50-point scale. These statistics provide a summary of group performance before and after the intervention.

The descriptive statistics, presented in Table 1, show that the two groups were well-matched at the beginning of the experiment. The pre-test ESE scores were nearly identical, indicating no significant pre-existing differences in entrepreneurial confidence. Following the three-week intervention, the experimental group exhibited a substantial increase in both their mean ESE score and their mean Idea Quality score, whereas the control group showed only minimal changes from their baseline.

Table 1: Descriptive Statistics for Outcome Variables by Group

Variable	Group	Pre-Test M (SD)	Post-Test M (SD)	Idea Quality M (SD)
ESE	Experimental	28.5 (5.1)	41.2 (4.8)	
		28.9 (5.3)	30.1 (5.5)	
Idea Quality	Experimental	-	38.7 (6.2)	
	Control	-	25.4 (7.1)	

The baseline data confirm the effectiveness of the random assignment procedure, with the experimental group's pre-test ESE score (M = 28.5) and the control group's score (M = 28.9) being statistically indistinguishable. This baseline equivalence is crucial as it allows for the confident attribution of any subsequent differences to the experimental manipulation rather than to pre-existing group disparities.

A clear divergence between the groups is evident in the post-intervention data. The experimental group's mean ESE score increased by nearly 13 points, indicating a significant boost in their perceived ability to undertake entrepreneurial tasks. More importantly, their final social innovation ideas were rated, on average, over 13 points higher in quality than those produced by the control group, suggesting the intervention impacted not just confidence but also tangible performance.

Behavioral data were continuously logged by the backend of the digital platform for all 150 participants throughout the three-week intervention period. The dataset captured several key engagement metrics, including total time on task (measured in minutes), number of modules completed, frequency of logins, and interaction with optional resource links. This provided a rich, objective record of user engagement patterns, distinct from self-reported measures.

The overall volume of behavioral data was substantial, comprising over 10,000 unique data points. A preliminary review revealed significant variation in engagement both within and between the two groups. The data from the experimental (gamified) group were characterized by higher average session durations and a more consistent pattern of interaction across the three-week period, whereas the control group's data showed more sporadic engagement, with activity often clustered immediately before deadlines.

To assess the statistical significance of the differences in self-efficacy, a one-way Analysis of Covariance (ANCOVA) was performed on the post-test ESE scores, with the pre-test ESE scores serving as the covariate. The analysis revealed a significant, large main effect for the group condition, $F(1, 147) = 88.42$, $p < .001$, $\eta^2 = .375$. This confirms that the increase in entrepreneurial self-efficacy for the experimental group was statistically significant after controlling for initial confidence levels.

An independent-samples t-test was conducted to compare the Idea Quality scores between the experimental and control groups. The results indicated a significant difference between the two conditions, $t(148) = 12.18$, $p < .001$, with the experimental group ($M = 38.7$) scoring significantly higher than the control group ($M = 25.4$). The effect size was large (Cohen's $d = 1.99$), indicating that the gamified intervention had a substantial positive impact on the quality of social innovations produced.

A clear and positive correlation was found between the behavioral engagement metrics and the quantitative performance outcomes. Participants in the experimental group, who had significantly higher Idea Quality scores, also spent, on average, 45% more time on the platform than participants in the control group. This suggests that the enhanced performance was not an artifact but was linked to a deeper level of engagement with the learning material.

The connection between behavior and outcomes was further clarified by module-specific analysis. The higher ESE scores reported by the experimental group were strongly correlated with their higher completion rates of the platform's optional "skill-building" quests. This indicates that the gamified structure not only encouraged general engagement but also specifically motivated users to undertake activities directly linked to building entrepreneurial confidence, which then translated into higher self-efficacy scores.

A notable pattern that emerged from the behavioral data was the difference in user pathways through the content. Participants in the non-gamified control group tended to follow a linear path, completing modules in the prescribed order. In contrast, 68% of participants in the gamified experimental group exhibited non-linear patterns, frequently returning to earlier "quests" to improve their performance or unlock new badges after learning a new concept in a later module.

This iterative behavior was particularly evident in the idea generation phase. Log data showed that experimental group participants were three times more likely to revisit the "Community Problem Analysis" module after beginning the "Solution Brainstorming" quest. This pattern suggests a reflective loop, where the process of ideation prompted a deeper investigation of the problem space, a behavior that was significantly less common in the control group.

The iterative engagement patterns observed in the experimental group are a direct reflection of the gamified design. Mechanics such as points and badges for improving upon previous work created an incentive structure that rewarded mastery and refinement over simple linear completion. The platform did not just present content; it created a system where revisiting and improving one's work was an explicit and rewarding goal, thereby fostering a more robust learning process.

The tendency of the gamified group to revisit the problem analysis module signifies a deeper cognitive engagement with the core tenets of social innovation. The "quests" framed problem-solving not as a linear sequence but as an interconnected system. This structure encouraged participants to dynamically integrate new information, leading to a more nuanced understanding of the problem and, consequently, to the development of more thoughtful and higher-quality solutions, as reflected in their final scores.

The combined findings of this experiment provide strong evidence that gamification is an effective intervention for fostering social innovation among urban youth. The quantitative results show unequivocally that the gamified platform led to significantly higher

entrepreneurial self-efficacy and superior idea quality. The intervention did not just make participants feel more confident; it enabled them to produce demonstrably better work.

The behavioral data explain the mechanism behind these results. The gamified elements drove a deeper, more sustained, and more iterative form of engagement compared to a standard educational format. Participants in the experimental group worked longer, explored more content, and engaged in more reflective learning loops. The study, therefore, concludes that the superior outcomes were a direct result of the superior engagement process motivated by the gamified design.

This behavioral experiment was designed to assess the impact of a gamified digital platform on the entrepreneurial capabilities of urban youth. The quantitative findings unequivocally demonstrate the intervention's success. Participants in the experimental group, who engaged with the gamified system, showed a statistically significant and substantial increase in their Entrepreneurial Self-Efficacy (ESE) compared to the control group. This indicates that the gamified experience directly contributed to a heightened sense of confidence in their ability to perform complex entrepreneurial tasks.

The study's results extended beyond psychological metrics to tangible performance outcomes. The social innovation ideas produced by the experimental group were judged to be of significantly higher quality in terms of both innovativeness and viability. The large effect size associated with this finding suggests that the gamified intervention was not merely a superficial motivational tool but a powerful pedagogical framework that enabled participants to generate superior, more practical, and more creative solutions to social problems.

These quantitative outcomes are strongly supported and explained by the objective behavioral data logged by the platform. Participants in the gamified condition demonstrated profoundly different engagement patterns, spending significantly more time on task and exhibiting more consistent interaction with the learning materials. This heightened level of engagement provides a direct behavioral link to their superior performance, suggesting that the quality of their output was a function of the depth of their learning process.

The most compelling behavioral evidence was the prevalence of iterative, non-linear learning pathways among the gamified group. Their tendency to revisit earlier modules to refine their understanding, a pattern largely absent in the control group, points to a deeper and more reflective cognitive process. This integration of findings—linking superior outcomes in confidence and performance directly to superior engagement behaviors—forms the core conclusion of this research: the gamified design was the clear catalyst for these positive changes.

The findings of this study are highly consistent with the foundational principles of Self-Determination Theory (SDT), which posits that motivation is enhanced when the needs for competence, autonomy, and relatedness are met. The gamified platform directly addressed these needs: badges and points fostered a sense of competence; non-linear "quests" provided autonomy in the learning path; and collaborative leaderboards encouraged relatedness. Our results provide strong empirical support for the application of SDT-based gamification in the specific, under-researched context of social entrepreneurship education.

This research significantly extends the existing literature on youth entrepreneurship. Much of the prior work in this area focuses on traditional support mechanisms like mentorship or financial literacy training. Our study introduces and validates a novel, digitally-native intervention that is specifically tailored to the motivational drivers of a younger demographic.

It aligns with calls from scholars like Pittaway and Cope (2007) for more process-oriented research in entrepreneurship education, shifting the focus from simply teaching business principles to fostering an entrepreneurial mindset through practice and engagement.

The study directly addresses a critical gap in the gamification literature by providing rigorous, experimental evidence in a pro-social context. While the efficacy of gamification in commercial and corporate settings is well-documented, its application for social good has been largely theoretical or explored through qualitative case studies. By employing a controlled experimental design with both psychological and behavioral measures, this research provides a higher tier of evidence, establishing a causal link between gamified design and enhanced social innovation outcomes.

Furthermore, the results challenge the efficacy of conventional, linear e-learning formats for complex skill development. The control group, which used a standard module-based platform, showed minimal improvement, reflecting a common limitation of passive digital learning. The success of the gamified group suggests that for complex, creative tasks like venture creation, the structure of the learning environment itself is a critical variable. This supports the argument that effective digital pedagogy requires more than simply digitizing content; it demands the intentional design of engaging and motivating user experiences.

These findings signify that gamification can serve as a powerful democratizing force in the field of social entrepreneurship. It effectively lowers the psychological barriers to entry—fear of failure, perceived complexity, lack of confidence—that often prevent young people, particularly those from non-traditional backgrounds, from engaging with entrepreneurship. The results indicate that a well-designed gamified system can reframe the daunting task of venture creation into an accessible, engaging, and even enjoyable journey, thereby broadening participation.

The success of the intervention also marks an important validation of youth as capable and creative agents of social change. The study demonstrates that when provided with the right tools and a supportive, motivating environment, urban youth can produce high-quality, innovative solutions to complex community problems. It suggests that the perceived apathy or disengagement of this demographic may not be a lack of will, but rather a lack of appealing and effective pathways to channel their energy and creativity.

On a deeper level, the research highlights a fundamental truth about learning and innovation: process matters. The superior outcomes of the experimental group were not accidental; they were the product of a superior process characterized by sustained engagement, iteration, and reflection. This signifies that for education aimed at fostering higher-order skills like creativity and problem-solving, focusing on designing an engaging process is as, if not more, important than focusing solely on delivering content.

Ultimately, the results represent a hopeful signal for the future of civic technology and community development. They show that principles from game design, often associated with entertainment or commercial applications, can be purposefully harnessed to address serious social challenges. This finding suggests a pathway for creating scalable, cost-effective digital tools that can empower communities from the bottom up, fostering a culture of innovation and proactive problem-solving at the grassroots level.

The most direct implication of this research is for practitioners—non-profit organizations, community centers, and educational institutions working in youth development. This study provides them with an evidence-based model for designing more effective social

entrepreneurship programs. Instead of relying on traditional workshop formats, these organizations can now confidently invest in developing and implementing gamified digital platforms to increase the reach, engagement, and impact of their initiatives.

For policymakers and funding bodies, these findings justify a strategic shift in investment toward innovative, technology-driven youth empowerment programs. The research provides a strong rationale for funding the development and scaling of gamified platforms as a cost-effective means of fostering both workforce skills and civic engagement. It suggests that allocating resources to such programs can yield a dual return: developing human capital and generating novel solutions to local urban problems.

The study also has significant implications for the field of instructional design and educational technology. It provides a clear set of design principles for creating learning environments that foster creativity and complex problem-solving. The success of the non-linear, quest-based approach challenges the dominance of linear, module-based e-learning, urging instructional designers to think more like game designers when tackling complex educational goals.

Theoretically, this research contributes to a more nuanced understanding of motivational design for pro-social behavior. It demonstrates that extrinsic motivators like points and badges can be effectively used to scaffold engagement and build intrinsic motivation for complex, altruistic tasks. This finding has implications beyond entrepreneurship, suggesting that similar gamified systems could be developed to encourage other pro-social behaviors, such as environmental conservation, community volunteering, or public health adherence.

The question of *why* the gamified intervention was so effective can be answered by examining its influence on cognitive and behavioral processes. The significant increase in Idea Quality was not a random occurrence; it was the direct result of the iterative engagement fostered by the game mechanics. The platform's design, which rewarded revisiting and improving upon previous work, encouraged a cycle of reflection and refinement that is central to creative problem-solving but absent in linear learning models.

The boost in Entrepreneurial Self-Efficacy can be attributed to the psychological principle of scaffolding. The complex process of venture creation was broken down into a series of small, manageable "quests." Successfully completing each quest and earning a badge provided a tangible sense of accomplishment and mastery. This series of small wins built momentum and confidence, progressively empowering participants to tackle more difficult tasks and believe in their overall capability.

The sustained engagement observed in the experimental group, in contrast to the sporadic activity of the control group, was driven by a clear and compelling feedback loop. The constant provision of points, progress bars, and leaderboard positions made user progress visible and rewarding, creating a continuous cycle of action and reward that maintained motivation over the three-week period. The non-gamified platform lacked this feedback system, making the learning process feel more like a chore than an engaging challenge.

Ultimately, the gamified system succeeded because it transformed the user's relationship with failure. In a traditional academic context, a wrong answer is an endpoint. In the gamified system, a suboptimal submission was simply a lower score that could be improved, encouraging users to try again without penalty. This "safe-to-fail" environment is precisely the condition required for the kind of risk-taking and experimentation that leads to both skill development and genuine innovation.

The compelling results of this study lay the groundwork for several critical avenues of future research. A primary next step is to conduct a longitudinal study to track participants over a longer period. This would allow researchers to determine if the observed increases in self-efficacy and entrepreneurial intention translate into actual venture creation and whether the skills learned are retained and applied in other areas of their lives.

Replication and adaptation of this experiment are essential to test the generalizability of the findings. Future studies should implement similar interventions in different urban contexts, with diverse youth populations (e.g., varying socioeconomic backgrounds, educational levels), and across different cultures. Research could also explore adapting the platform to other pro-social domains, such as environmental activism or community health initiatives, to test the broader applicability of the model.

Further research is needed to deconstruct the "black box" of gamification and identify which specific game elements are most impactful. Future experiments could be designed to isolate the effects of different mechanics—for example, comparing a points-only system to a badge-only system or a collaborative leaderboard to an individual progress bar. This would lead to a more refined set of design principles and allow practitioners to create more efficient and targeted interventions.

Finally, there is a significant opportunity to integrate emerging technologies into this research paradigm. Future iterations of the platform could incorporate artificial intelligence to provide personalized feedback and adaptive challenges, or virtual and augmented reality to create more immersive problem-solving simulations. Investigating how these advanced technologies can be integrated into a gamified framework for social innovation represents a rich and exciting frontier for future inquiry.

CONCLUSION

The most critical finding of this research is that the pedagogical method of civic education is a more significant determinant of its success in shaping democratic values than the curricular content alone. This study demonstrates that adolescents participating in interactive, participatory civic education—characterized by debate, simulations, and community-based projects—exhibited statistically significant gains in tolerance for dissenting opinions and political efficacy. This outcome was markedly different from their peers in traditional, textbook-based programs, who showed minimal change, indicating that active engagement in democratic processes is the key mechanism for internalizing democratic values.

This research offers a distinct conceptual contribution by refining the theoretical model of political socialization among adolescents. It moves beyond the simplistic assumption that exposure to civic information leads to democratic attitudes, proposing instead a more nuanced framework where pedagogical practice acts as a crucial mediating variable. The study's added value is also methodological; by employing a mixed-methods approach that combined longitudinal survey data with qualitative classroom observations, it provides a replicable and holistic model for assessing the real-world impact of educational programs on complex value systems, capturing both the "what" and the "how" of value formation.

The conclusions of this study are constrained by several limitations which, in turn, illuminate pathways for future inquiry. The research was conducted within a single educational system with a culturally homogeneous sample, which limits the generalizability of the findings to more diverse contexts. Furthermore, the study's duration did not allow for an assessment of

the long-term persistence of these democratic values into adulthood. Future research should therefore prioritize cross-cultural comparative studies to test the model's validity in different political systems and longitudinal studies to track the developmental trajectory of civic attitudes over time.

AUTHOR CONTRIBUTIONS

Look this example below:

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

REFERENCES

Akder, R. N., Çağındı, Ö., & Çakıroğlu, F. P. (2025). Do sugar substitutes affect quality characteristics and HMF levels of cakes? *Journal of the Science of Food and Agriculture*. Scopus. https://doi.org/10.1002/jsfa.14228

Amit, K., Assam, A., & Raj, A. (2024). Heat transfer characteristics of pulsatile flow through microchannel with heat-spots: Mimicking heat generation in the blood vessels. *International Communications in Heat and Mass Transfer*, *159*. Scopus. https://doi.org/10.1016/j.icheatmasstransfer.2024.108296

Balderas, L. I., Tiwari, S., Verdugo, E., Maestre-Gongora, G. P., & Ortiz-Rodriguez, F. (2024). Exploring intersectionality and women in STEM. In *Explor. Intersect. And Women in STEM* (p. 268). IGI Global; Scopus. https://doi.org/10.4018/979-8-3693-1119-6

Campill, M. A. (2024). Introducing Cultural Psychology: An open Approach of Thinking. *Integrative Psychological and Behavioral Science*, *58*(1), 78–97. Scopus. https://doi.org/10.1007/s12124-023-09773-0

Chiang, Y.-Y., Liao, Y.-C., & Chang, H.-Y. (2024). Influence of Internet Addiction on the Sleep Quality and Physical and Mental Health of College Students. *Bulletin of Educational Psychology*, *55*(3), 557–576. Scopus. https://doi.org/10.6251/BEP.202403_55(3).0006

Feltz, A., & Cokely, E. T. (2024). Diversity and disagreement: From fundamental biases to ethical interactions. In *Divers. And disagreement: From fundam. Biases to ethical interactions* (p. 289). Springer Nature; Scopus. https://doi.org/10.1007/978-3-031-61935-9

Fu, Y., Song, J., Zhang, X., & Bi, J. (2025). Innovative practice of archival data development workflow in the AGI era: A case study of scientist archives project. *Information Research*, *30*(iConf (2025)), 349–360. Scopus. https://doi.org/10.47989/ir30iConf47335

Henrique, R. B. L., Santos, A. L. F., Pereira, M. I. A., Santos, N. R. M., Pereira, G., Cabral Filho, P. E., & Fontes, A. (2024). Emerging trends on the uptake of fluorescent probes based on glucose analogs by cancer cells: From basic studies to therapeutics. *Life Sciences*, *355*. Scopus. https://doi.org/10.1016/j.lfs.2024.122978

Hewitt, S. (2025). Disrupting the Norm: Looking for Magical Spaces in Science. *New Directions for Teaching and Learning*. Scopus. https://doi.org/10.1002/tl.20653

Lange, H. C., & McLeish, T. (2024). Eclipse and revelation: Total solar eclipses in science, history, literature, and the arts. In *Eclipse and Revel.: Total Sol. Eclipses in Sci., Hist., Lit., and the Arts* (p. 385). Oxford University Press; Scopus. https://doi.org/10.1093/oso/9780192857996.001.0001

Li, Q., Ma, C., Huang, Y., & Qi, E. (2024). Dynamics of blockchain empowerment supply chain research: Perspectives, context, arguments, and blind spots. *Xitong Gongcheng Lilun yu Shijian/System Engineering Theory and Practice*, *44*(6), 1965–1986. Scopus. https://doi.org/10.12011/SETP2023-1461

Lin, H., Zhang, Y., Wu, L., & Li, C. (2025). Diagnostic accuracy of digital breast tomosynthesis and digital mammography in women with dense or non-dense breast tissue: A systematic review and meta-analysis. *Advances in Clinical and Experimental Medicine*, *34*(3), 315–326. Scopus. https://doi.org/10.17219/acem/185522

Mafugu, T. (2024). Examining the Science Design Skills Competency among Science Preservice Teachers in the Post-COVID-19 Pandemic Period. *Education Sciences*, *14*(4). Scopus. https://doi.org/10.3390/educsci14040387

Mezei, B. M. (2024). Divine Revelation and the Sciences: Essays in the History and Philosophy of Revelation. In *Divine Revelation and the Sciences: Essays in the History and Philosophy of Revelation* (p. 250). Taylor and Francis; Scopus. https://doi.org/10.4324/9781003485889

Mishra, R., Gupta, S., & Kumar, D. (2024). Integrative Approaches: Combining Metagenomics and Network Science. In *Genomic Intelligence: Metagenomics and Artificial Intelligence* (pp. 220–238). CRC Press; Scopus. https://doi.org/10.1201/9781003570233-14

Nasta, P., Blöschl, G., Bogena, H. R., Zacharias, S., Baatz, R., De Lannoy, G., Jensen, K. H., Manfreda, S., Pfister, L., Tarquis, A. M., Van Meerveld, I., Voltz, M., Zeng, Y., Kustas, W., Li, X., Vereecken, H., & Romano, N. (2025). HESS Opinions: Towards a common vision for the future of hydrological observatories. *Hydrology and Earth System Sciences*, *29*(2), 465–483. Scopus. https://doi.org/10.5194/hess-29-465-2025

Nayak, P., & Gupta, D. C. (2024). Exploring novel filled skutterudites: A comprehensive DFT Modeling study on electronic, magnetic, curie temperature, elastic, thermal, and thermoelectric properties. *Solid State Sciences*, *154*. Scopus. https://doi.org/10.1016/j.solidstatesciences.2024.107626

Nayyar, J. M., Stapleton, A. V., Guerin, S., & O'Connor, C. (2025). Exploring Lived Experiences of Receiving a Diagnosis of Autism in Adulthood: A Systematic Review. *Autism in Adulthood*, *7*(1), 1–12. Scopus. https://doi.org/10.1089/aut.2023.0152

Romero-Sánchez, A., Perdomo-Charry, G., & Burbano-Vallejo, E. L. (2024). Exploring the entrepreneurial landscape of university-industry collaboration on public university spin-off creation: A systematic literature review. *Heliyon*, *10*(19). Scopus. https://doi.org/10.1016/j.heliyon.2024.e27258

Sherman, W. (2024). FINDING THE QUR'AN IN IMITATION: CRITICAL MIMESIS FROM MUSAYLIMA TO FINNEGANS WAKE. *ReOrient*, *9*(1), 50–69. Scopus. https://doi.org/10.13169/reorient.9.1.0050

Sidharta, L., & Dai, Y. (2024). "In Your Light Do We See Light": On Bavinck's Organic View of Revelation and Its Use in Interdisciplinary Dialogue. *Sino-Christian Studies*, *2024*(38), 65–91. Scopus.

Tan, C., Wu, H., Yang, L., & Wang, Z. (2024). Cutting Edge High-Throughput Synthesis and Characterization Techniques in Combinatorial Materials Science. *Advanced Materials Technologies*, *9*(10). Scopus. https://doi.org/10.1002/admt.202302038

Topal, H. (2024). Evaluation of Narratives Concerning the Verses Read in the Presence of Najashi in the Context of Ḳur'ān History. *Hitit Theology Journal*, *23*(1), 168–194. Scopus. https://doi.org/10.14395/1426620

Turkbaev, A. B., Melisova, S. A., Esenalieva, B. B., & Karpushova, S. E. (2025). Decision-Making on Economic Crisis Management of Business Based on Big Data and AI. In *Stud. Big. Data.* (Vol. 168, pp. 53–60). Springer Science and Business Media Deutschland GmbH; Scopus. https://doi.org/10.1007/978-3-031-78686-0_6

Van Nostrand, R., Braithwaite, A., & Solomon, D. (2025). Introducing the Concentration Camps (CCamps v1.0) dataset. *Journal of Peace Research*. Scopus. https://doi.org/10.1177/00223433241288339

Vilhem, S. (2024). Envelopes and symptoms: Challenging the clinical gaze. *Information Psychiatrique*, *100*(6), 428–434. Scopus. https://doi.org/10.1684/ipe.2024.2743

Wang, K., Yin, J., Chen, J., Ma, J., Si, H., & Xia, D. (2024). Inhibition of inflammation by berberine: Molecular mechanism and network pharmacology analysis. *Phytomedicine*, *128*. Scopus. https://doi.org/10.1016/j.phymed.2023.155258

Zhou, X., & Sun, B. (2024). CPR-Induced Consciousness during Ventricular Fibrillation: Case Report and Literature Review. *Emergency Medicine International*, *2024*. Scopus. https://doi.org/10.1155/2024/2834376