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Integrating PBL, Agile, and AI-Enhanced Storytelling for Entrepreneurial Teamwork in Saudi Higher Education

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Abstract

Demonstrating the power of innovative pedagogy, this study highlights how combining problem-based learning, agile project management, and technology-supported digital storytelling directly strengthens entrepreneurial and teamwork skills in higher education. Using a case study of the "Vision Team",an interdisciplinary group of Saudi students creating and monetizing digital stories for Saudi Vision 2030, the research found that collaborative platforms and AI-assisted content tools, applied within Agile sprints, led to measurable gains in creativity, leadership, and communication. Data from project logs, peer and self-evaluations, and supervisor feedback confirmed these outcomes, alongside strong audience engagement. The integrated approach provides a practical and replicable framework for preparing students for innovation-driven economies in business and media curricula.

Keywords: Problem-Based Learning, Agile Project Management, Entrepreneurship Education, Teamwork, Higher Education, Digital Storytelling

Introduction

Background

Changes in the way business ideas are taught in educational institutions are as significant as the rise of innovation in the digital arts and creative industries. Students are increasingly supported in experiential and problem-based learning (PBL) to help them actualize and enter technology-driven fields of work (Afonso and Costa, 2022; Balan and Metcalfe, 2022). This pedagogical transformation has led to the abandonment of established lecture-based styles in favor of conversations, student-centric approaches, and opportunities to solve real-world problems, fostering ingenuity, and collaboration (Bell & Koul, 2022).

The constructivist theory of learning states that knowledge is established and built by addressing meaningful, realistic problems. PBL aligns with this perception by placing students

in situations that compel them to collaborate, research, and act on real-world challenges using their knowledge. Kolb's experiential learning theory underscores the cyclical nature of this approach (concrete experience, reflective observation, abstract conceptualization, and active experimentation), forming the basis of entrepreneurial learning environments (Barrow & McKimm, 2022). Therefore, entrepreneurial learning focuses on these principles, which are core to operating in volatile and dynamic settings.

Another factor contributing to the rapid adoption of digital tools and agile methods in entrepreneurship programmes is the emergence of Generation Z students—digital natives who demand flexibility and technology use (Kożuch, Lenart-Gansiniec, & Sułkowski, 2023). Artificial intelligence (AI) and online collaboration tools have accelerated the development of digital storytelling, enhancing student motivation in multimodal creative projects that foster entrepreneurial skills and digital literacy (Kountouris & Kountouris, 2022; McKenna & Edwards, 2022).

Agile frameworks, such as Scrum and Kanban, are gaining traction in supporting iterative, feedback-rich group work in education. These methods are highly compatible with PBL, as they shorten the prototyping phases and engage students in cycles of reflection and learning, which are essential for developing entrepreneurial mindsets and team collaboration (Dinis-Carvalho & Fernandes, 2022; Krause & Scholl, 2022).

Recent research has demonstrated that experiential and project-based learning approaches are practical for developing competencies such as creativity, leadership, digital literacy, and collaborative problem-solving (Afonso & Costa, 2022; Bjønness & Kolmos, 2022). These strategies are crucial for equipping students to operate in a complex, innovation-driven, digital economy (Barrow & McKimm, 2022).

In summary, integrating PBL, Agile methodologies, and AI-enhanced digital storytelling forms a forward-thinking educational model that prepares students with the practical skills, adaptability, and collaborative mindsets necessary to thrive in today's entrepreneurial ecosystems (Balan & Metcalfe, 2022; Kożuch, Lenart-Gansiniec, & Sułkowski, 2023).

Problem Statement

While entrepreneurship education is increasingly recognized as vital for preparing students for the digital economy, conventional classroom practices often fall short of fostering key entrepreneurial competencies. This gap is particularly evident in the integration of AI, PBL, and Agile methodologies, which have not been sufficiently explored in non-Western educational contexts (Kożuch et al., 2023). Our study addresses this gap by demonstrating the effectiveness of combining these approaches to enhance creativity, leadership, and teamwork in Saudi higher education (Afonso and Costa 2022; Dinis-Carvalho and Fernandes 2022).

Recent studies underscore the effectiveness of experiential and problem-based learning (PBL) in fostering entrepreneurial mindsets by immersing students in collaborative, real-world challenges that reflect the ambiguity and complexity of professional environments (Bell & Koul, 2022; Barrow & McKimm, 2022). However, while PBL is gaining traction, its full potential remains underutilized, particularly in programs that have yet to incorporate agile project

management and emerging digital tools—elements that can significantly enhance adaptability, creative output, and learner engagement (Kożuch et al., 2023).

This gap between pedagogical innovation and actual classroom implementation highlights the pressing need for integrated educational models that simulate real-world entrepreneurial ecosystems. Such models should combine PBL, Agile methodologies, and AI-supported digital storytelling to develop transferable skills through iterative, technology-driven, team-based learning experiences. Addressing this gap is crucial for preparing graduates to thrive in fast-evolving, innovation-intensive sectors (Bjønness and Kolmos 2022; Dinis-Carvalho and Fernandes 2022).

This study presents the first integration of problem-based learning, agile project management, and AI-powered digital storytelling in Saudi higher education. The findings show that this model strengthens entrepreneurial initiative, creativity, adaptability, and teamwork, and supports collaborative communication and negotiation skills.

Purpose and Objectives

This study examines the impact of integrating problem-based learning (PBL) with agile project management or AI-aided digital storytelling on enhancing entrepreneurial and teamwork skills among students in higher education institutions. One of the aspects explicitly addressed in the research is the importance of cooperative digital tools in fostering creativity, interaction, and skill acquisition by combining interdisciplinary student groups (Afonso and Costa 2022; Balan and Metcalfe 2022).

The primary objectives are as follows:

- Evaluate the effectiveness of PBL in cultivating entrepreneurial mindsets and collaborative skills in higher education, particularly in digital and creative disciplines.
- Examine the adaptation of agile methodologies (e.g., Scrum, Kanban) in educational contexts to support iterative learning, rapid feedback, and continuous improvement.
- Assess the impact of AI-enhanced digital storytelling on student engagement, creativity and communication.
- Analyze the role of collaborative platforms (e.g., Trello, Miro, Canva, InVideo, ChatGPT/Merlin) in promoting transparency, task ownership and creativity.
- This study provides empirical evidence of the development of key competencies, including leadership, problem-solving, digital literacy, and initiative, through this integrated learning model.

By addressing these objectives, this study contributes to the ongoing evolution of entrepreneurship education by proposing a scalable, technology-enhanced framework for preparing students to navigate the demands of the digital economy (Balan & Metcalfe, 2023; Balan & Metcalfe, 2022).

Structure of the Paper

This study provides a comprehensive examination of how problem-based learning (PBL), agile project management, and AI-supported digital storytelling can be integrated to develop entrepreneurial and teamwork competencies in higher education. The remainder of this paper is organized as follows.

- Literature Review: Synthesizes recent research on PBL in entrepreneurship education, collaborative learning models, digital storytelling as a pedagogical tool, and the application of agile methodologies in academic settings. It also identifies key gaps in the literature that this study seeks to address (Afonso & Costa, 2022; Bell & Koul, 2022; Kountouris & Kountouris, 2022).
- Methodology: This section describes the case study design, outlining the data collection methods—including project logs, reflective journals, peer/self-evaluations, and supervisor feedback—as well as the digital tools and platforms used (Trello, Miro, Canva, InVideo, ChatGPT/Merlin). This section also details the evaluation criteria for key competencies (Krause & Scholl 2022; Kożuch et al. 2023).
- Project Description: This section presents the structure and workflow of the Vision Team, including team formation, assigned roles, and the problem-based challenge of producing digital stories aligned with Saudi Vision 2030. It highlights the agile sprint structure and the integration of AI-driven tools in the storytelling process.
- Results and Discussion: The quantitative and qualitative findings related to the development of entrepreneurial and teamwork competencies, including creativity, leadership, communication, and task ownership, are reported and interpreted. It also examines team collaboration dynamics, conflict resolution strategies, and entrepreneurial outcomes, discussing them in light of the existing literature.
- Conclusion: This study highlights the key contributions, practical insights, and theoretical understanding of the topic while thoughtfully addressing its limitations and encouraging exciting avenues for future research.

In the References section, we compiled a thorough list of all cited academic literature from 2020 to 2025, focusing on peer-reviewed sources with DOIs.

Additionally, the appendices include helpful supplementary materials such as sample Trello boards, competency rubrics, stunning visuals of AI-generated content, and captivating examples of final digital story outputs.

Literature Review

Problem-Based Learning (PBL) in Entrepreneurship Education

Problem-based learning (PBL) has proven effective in fostering critical entrepreneurial skills such as problem-solving and collaboration. However, few studies have examined the integration of PBL with AI and Agile methodologies to enhance these skills in a non-Western context. This study explores how these tools can be applied to entrepreneurship education in Saudi Arabia, contributing to a more culturally relevant and practical approach to fostering entrepreneurial mindsets (Afonso & Costa, 2022; Balan & Metcalfe, 2022).PBL places learning in real-life contexts and therefore requires students to provide, test, and develop value propositions. This incremental approach is similar to the uncertainty and repetition that entrepreneurs experience in practice (Bell & Koul, 2022). Empirical studies and meta-analyses have demonstrated that PBL yields a diverse range of outcomes, including enhanced opportunity recognition, increased resilience, and higher intention to venture. It further encourages the development of core transversal competencies, including adaptability, communication, and teamwork (Bjønness & Kolmos, 2022; Barrow & McKimm, 2022).

These advantages are further complemented by the introduction of digitally based platforms that enable interactive, dynamic, and socially constructed learning experiences (Kożuch et al., 2023). Nevertheless, when it comes to the hybrid of PBL and Agile project management, incorporating AI-based digital storytelling, there is a substantial gap in the literature regarding the quantitative measurement of competency development. This is particularly notable in these contexts, where culturally based technology-enhanced learning paths are the least explored, for example, non-Western or Middle Eastern educational systems (Dinis-Carvalho & Fernandes, 2022).

Teamwork, Collaborative Learning, and Digital Storytelling as Educational Tools

Teamwork is known as a significant 21st-century skill, particularly in entrepreneurship and online learning. Recent studies have shown that problem-based learning (PBL) and video-based instructional models have a significant positive impact on the development of collaboration and communication among students, particularly when the learning experience is shared through digital environments (Afonso and Costa 2022; Balan and Metcalfe 2022). Based on social constructivist theory, PBL emphasizes the co-construction of knowledge through peer interactions, cooperation, and reflection. This strategy leads to students collaborating, collectively solving problems, and forming a standard mental model, a set of circumstances that results in a context of psychological safety and effective collective behavior (Bell & Koul, 2022; Bjønness & Kolmos, 2022). Trust, accountability, and team cooperation are further strengthened through the iterative process of PBL, frequent feedback, and rotating leadership opportunities. Digital storytelling, incorporating artificial intelligence (AI), has become a game changer in nurturing creativity, engagement, and communication skills in institutions of higher learning. Personalized, interactive, and multimodal learning can be created with the help of AI-driven storytelling tools, which can bring greater clarity and relevance to even complex areas of learning and appeal to a broader student population (Kountouris and Kountouris, 2022; McKenna and Edwards, 2022). Digital storytelling offers the possibility of developing creative self-efficacy by incorporating narratives, visual media, and sound, thereby enhancing the creative power to make ideas appealing to the audience. These devices not only help convey knowledge but also foster reflection and critical thinking, which are essential in entrepreneurial and professional development (Soudien & Soudien, 2022).

Digital solutions facilitate these advantages through increased real-time communication, clarifying tasks and assignments, and driving innovation (Kożuch et al., 2023). Collaborative tools, project management software, and AI-driven communication tools ensure this. Such technologies enable student teams to manage complexity, respond to shifting objectives, and co-design innovative solutions to problems. It has been empirically proven that students involved in technology-powered collaborative learning environments demonstrate higher interest, effective communication, and a positive perception of their teamwork skills (Chua & Chua, 2022; Dinis-Carvalho & Fernandes, 2022). Digital storytelling projects primarily provide learners with opportunities to collaborate, iterate, and receive real-time feedback, aligning with the concepts of problem- and project-based learning. This method has been proven to motivate students, make them digitally literate, and achieve overall beneficial learning outcomes in the context of entrepreneurship and other specialties (KoŻuch et al., 2023).

Role of Agile Project Management in PBL

Scrum and Kanban, as Agile project management frameworks, are increasingly applied in education to facilitate iterative, feedback-based group work. Such frameworks are strongly aligned with problem-based learning (PBL) settings because they focus on quick prototyping, constant reflection, and dynamic learning loops (Krause & Scholl, 2022; Dinis-Carvalho & Fernandes, 2022). In the process of learning entrepreneurship, agile methodologies also provide a platform where student teams can respond to project needs and stakeholder feedback and adjust to changing requirements. Agile sprints promote breaking down complex issues into achievable steps, developing short-term objectives, and conducting continuous progress assessments, which are the three main principles of the PBL concept (Bell & Koul, 2022). According to empirical evidence, agile practice implementation in PBL settings can have a positive impact on project coordination and the timely delivery of projects, in addition to incorporating essential entrepreneurial competencies, including the ability to be adaptive, a leader, and a team player (Afonso & Costa, 2022; Balan & Metcalfe, 2022). Using digital tools, such as Trello to manage tasks and Miro to brainstorm ideas, also allows for transparency, effective workload distribution, and creativity among team members (Kożuch et al., 2023). In addition to workflow optimization, agile frameworks facilitate the development of a culture of psychological safety and shared ownership. They encourage students to be self-directed leaders, learn from failure, and refine their approaches, training them in the ambiguity and speed of entrepreneurial efforts in the world. In this regard, agile project management can be defined as a valuable pedagogical addition to PBL-based curricula in higher education (Bjønness & Kolmos, 2022).

Gaps in Existing Research

While the connection between problem-based learning (PBL), agile project management, and digital storytelling is on the rise in entrepreneurship and higher education, critical gaps remain in the current state of research. It is worth noting that limited research has been conducted using reliable rubrics to measure the development of competency skills, whether leadership, creativity, collaboration, or digital literacy, especially in education systems in the Middle East or other non-Western education systems quantitatively (Afonso & Costa, 2022; Dinis-Carvalho & Fernandes, 2022). Much of the literature on the use of PBL and digital storytelling revolves around the academic contexts of the Western world, inferring insufficient empirical studies of the integrated use of Agile techniques and AI-based tools in more diverse ways, culturally and institutionally (Balan & Metcalfe, 2022; Kożuch et al., 2023). Moreover, longitudinal studies have monitored long-term increases in entrepreneurial and collaborative learning skills over time, as well as comparative studies that compare alternative models of technology-enhanced, project-based learning. Such gaps underscore the importance of context-sensitive and methodologically sound research that examines the effects of a combined approach to PBL, Agile, and digital storytelling in underrepresented territories. Filling this gap will produce meaningful knowledge to inform the behavior of educators, researchers, and policymakers who intend to model culturally innovative, innovation-driven entrepreneurship education programs.

Methodology

Research Design

The single-case study design used in this research provides detailed insights into how PBL, Agile methodologies, and AI-enhanced digital storytelling can be combined to foster

entrepreneurial competencies in higher education. This case study is particularly relevant to Saudi Arabia, where there is a growing demand for educational models that align with national initiatives, such as Saudi Vision 2030 (Kożuch et al., 2023; Balan & Metcalfe, 2022). The case study methodology was selected to analyze how these connected approaches work together in the evolution of entrepreneurial and teamwork skills in a practical learning setting (Afonso & Costa, 2022; Dinis-Carvalho & Fernandes, 2022). The targeted case, referred to as the Vision Team, consisted of eight interdisciplinary student members who were tasked with conceptualizing, creating, and commercializing digital stories based on the subjects of the Saudi Vision 2030. Such an environment enabled the collection of both qualitative and quantitative data, providing detailed insights into team dynamics, skill development and project outcomes (Balan & Metcalfe, 2022). Case studies. The case study methodology is particularly well-suited for studying complex educational interventions, where multiple elements of the intervention, such as collaborative practices, digital tool adoption, and iterative development cycles, interact dynamically. It provides the possibility of examining processes and outcomes globally, making it a suitable framework for this study (Bell & Koul, 2022; Kożuch et al., 2023). 3.2 Methods of Data Collection To adequately evaluate the effects of the integration of problem-based learning (PBL), agile project management, and digital storytelling within the Vision Team project, the research used a multi-method data collection approach. This method allowed triangulating evidence and provided evidence-based, substantiated information on both quantitative and qualitative levels to Team Dynamics, Skill Development, and Project Outcomes (Afonso & Costa, 2022; Balan & Metcalfe, 2022).

- Project Logs and Activity Records: Ongoing documentation was maintained using digital platforms, including Trello and Miro. These tools capture task assignments, sprint outcomes, workflow adjustments, and progress updates, creating a chronological record of team activities and agile iterations (Krause & Scholl, 2022; Kożuch et al., 2023).
- Weekly Reflection Journals: Team members submitted weekly reflections detailing their learning experiences, personal challenges, and perceived skill development. These journals provided rich qualitative data on both individual and collective growth while also offering insights into the functionality of agile practices and digital tools (Afonso & Costa, 2022).
- Peer and Self-Evaluation Surveys: After each sprint, the participants completed structured surveys that assessed their contributions and those of their peers in key areas, including leadership, communication, creativity, and task ownership. These surveys employed rubrics adapted from validated educational frameworks to ensure consistency and reliability (Bjønness and Kolmos 2022; Chua and Chua 2022).
- Supervisor Feedback: The project supervisor provided continuous observational input and formal feedback after each sprint review. This external perspective helped validate the self-reported data and supported iterative team development, in line with best practices in Agile and PBL assessment (Dinis-Carvalho & Fernandes, 2022).
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Together, these complementary data sources enabled a robust and credible analysis of the integrated educational model's influence on both the learning process and its outcomes, reinforcing the validity of the study's findings.

Tools and Platforms Used

A diverse set of digital tools and platforms was strategically integrated into the Vision Team Project to support task management, ideation, content creation, and storytelling. These technologies played a critical role in facilitating the project's iterative, collaborative, and creative processes, aligning with the principles of agile and problem-based learning.

Trello and Miro: Employed for project coordination and brainstorming sessions. Trello enabled the team to manage workflows, assign responsibilities, and track task completion using agile-inspired boards, while Miro served as a collaborative space for visual mapping and ideation. Together, these tools enhance transparency, promote accountability, and support real-time collaboration, which are key elements of effective team-based learning (Krause & Scholl, 2022; Kożuch et al., 2023).

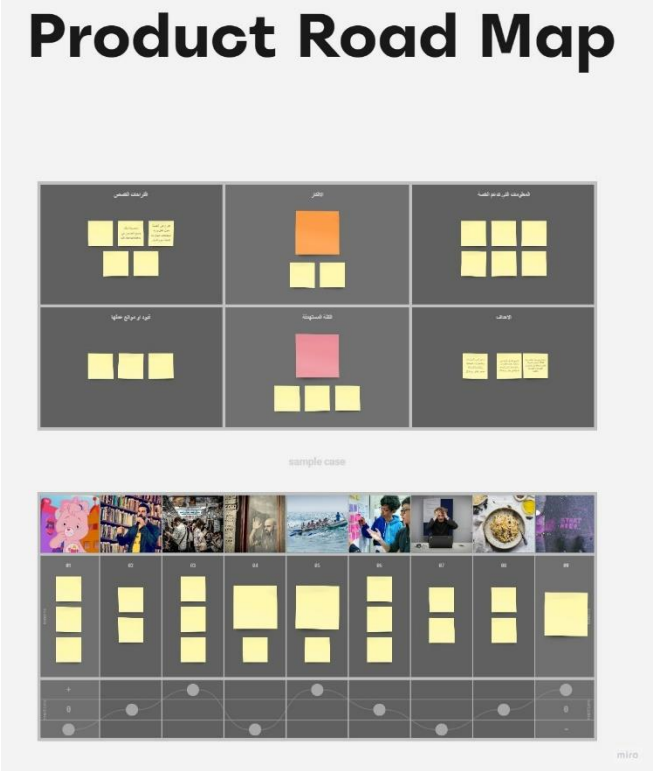


Figure 1. Product Road Map Visualization (translated from Arabic) Source : Authors' own work Top row (left to right):
Personal development Tools Challenges in user experience Bottom row (from left to right):
New program ideas Marketing strategy

Objectives

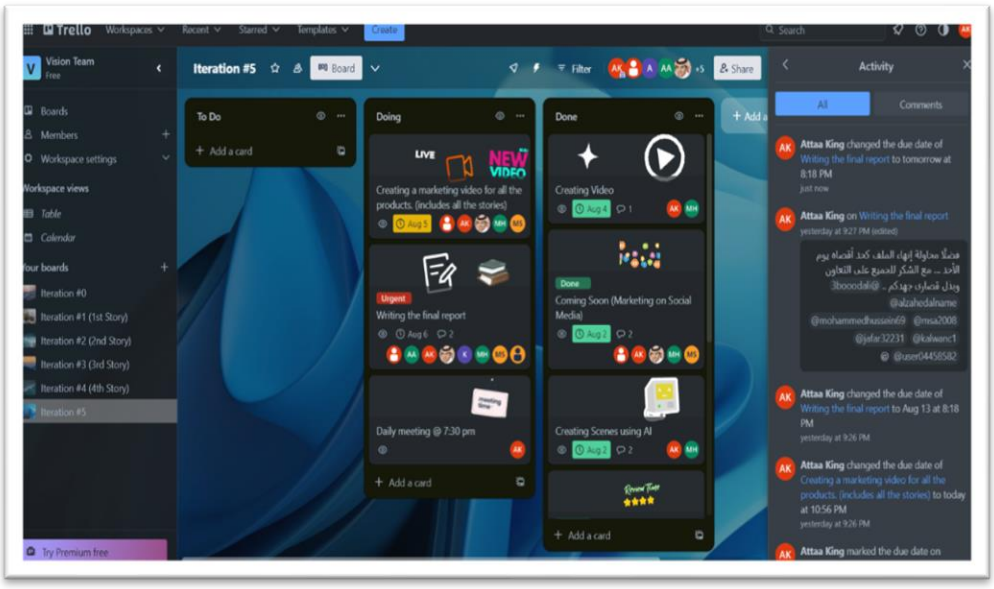
The sticky notes reflect the team input gathered during the design sprint activity. Students used visual ideation techniques to plan product features, marketing strategies, and learning goals.

Figure 2. Story Mapping and Sprint Organization Board (translated from Arabic)
Source : Authors' own work

This board illustrates the stages of a user journey with team-assigned tasks mapped by week and activity.

Top row (green/blue): Story phases: Introduction, Greeting, Problem, Exploration, Idea, Feedback, and Closure.

Middle rows (yellow/pink/blue): Student work breakdown, deliverables and reflection notes.
Bottom row (teal): Supporting media assets and technical resources used in each phase.
The dates (April 2022) indicate the timeline for each sprint. The board was created using Miro and reflects collaborative planning for the storytelling projects.



igure 3. Trello Agile Sprint Board (with translated activity feed)
Source : Authors' own work

This screenshot shows a Trello board used by the students to organize sprint tasks during Iteration #5.
The columns represent task stages: To Do, Doing, and Done.
The cards include team assignments, such as marketing video creation, social media posts, and final report submission.

The activity feed (right) contains team member comments in Arabic, documenting changes to deadlines and the completion status. These include:
• Updating the final report deadline to August 13
• Notifying teammates about group chat activity
• Assigning tags to task owners by name and student ID

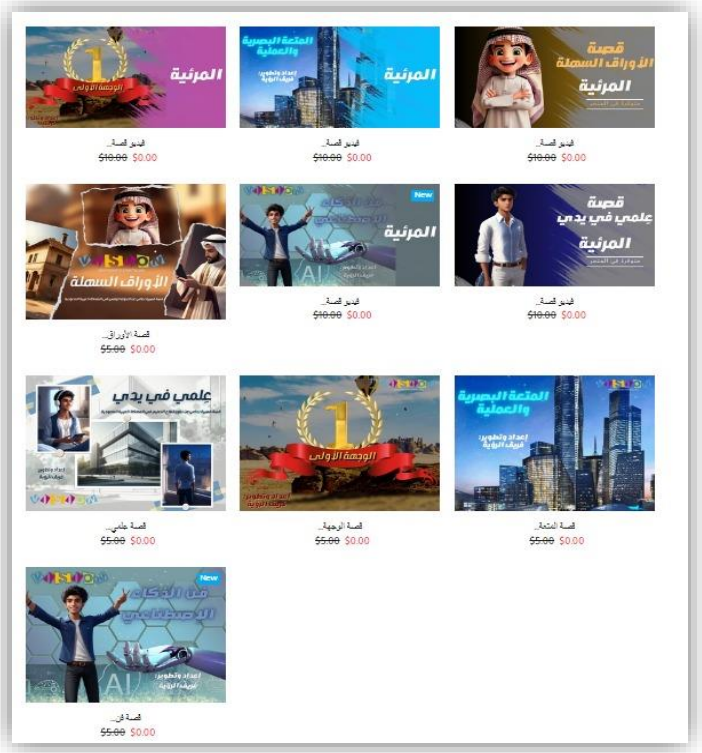


Figure 4. Digital Story Product Gallery (translated from Arabic)
Source : Authors' own work

This gallery presents student-created digital storytelling products displayed in a mock e-commerce format that the students created.
Each card showed a title, visual cover, and simulated price (e.g., "0.00 SAR").
Examples of translated titles include the following:
• "The First Story – The Feather Ministry"
• "My Science in My Hand"
• "The First Award"
• "The Easy Mission"
The gallery simulates a marketplace to present students work and promote peer feedback.

InVideo, Leonardo, and Canva are the primary platforms used for creating digital content. InVideo facilitated the transformation of written narratives into dynamic videos, Leonardo

provided AI-generated illustrations and visual assets, and Canva supported the design of promotional and educational materials. This toolset enables the creation of multimodal, professional-quality learning resources that engage diverse audiences (Kountouris & Kountouris, 2022; McKenna & Edwards, 2022).

ChatGPT and Merlin: Leveraged for content ideation and refinement. These AI-powered language models assist in brainstorming concepts, drafting scripts, and refining narrative elements, thereby streamlining the creative process and enhancing the team's capacity to generate high-quality educational content efficiently (Kożuch et al., 2023).

The strategic integration of these platforms not only enhanced the team's workflow and creativity but also served as a practical demonstration of how digital tools can enrich collaborative learning environments in entrepreneurship education.

Evaluation Criteria

Skill development was evaluated in five key domains: communication, leadership, problem-solving, creativity, and task ownership. A structured rubric, adapted from established educational frameworks, was used to ensure the consistent and reliable assessment of both individual and team-based competencies (Afonso & Costa, 2022; Bjønness & Kolmos, 2022).

- Communication: Evaluated through peer and self-assessments, focusing on message clarity, responsiveness, and the ability to convey ideas effectively within the team and to external stakeholders.
- Leadership: Measured by a participant's ability to coordinate team efforts, delegate responsibilities, and cultivate a supportive, goal-oriented working environment.
- Problem Solving: Assessed based on the capacity to identify project-related challenges, formulate viable solutions, and iteratively adapt strategies throughout each sprint cycle.
- Creativity: Judged by the originality, innovation, and artistic expression demonstrated in story development, visual design, and multimedia production.
- Task Ownership: Determined by the level of initiative, accountability, and consistency in completing assigned tasks and contributing to overall team objectives.

This comprehensive and formative evaluation framework provided actionable feedback to participants, reinforcing the alignment between the project's instructional design and its learning goals, particularly those grounded in Agile, PBL, and digital collaboration principles (Chua & Chua, 2022; Dinis-Carvalho & Fernandes, 2022).

Qualitative data were analyzed using thematic coding. The themes were validated by peer review and cross-checked with raw transcripts to ensure consistency. This study was conducted as part of a routine educational practice. No identifiable personal information was collected. According to institutional guidelines, ethical approval was not required, and verbal informed consent was obtained from all the participants.

Case Study: Vision Team Project

Team Formation and the Problem-Based Challenge

The Vision Team was established as an interdisciplinary group of eight students, each selected for their diverse academic backgrounds and complementary skill sets. The team was

formed under university supervision and guided by a faculty advisor to ensure alignment with both academic learning goals and practical project objectives of the course. Roles were clearly defined to support efficiency, ownership, and collaborative learning within the agile sprint framework. These included:

- Team Leader (Product Owner): Oversaw project coordination, quality control, daily stand-up meetings, and maintained a flexible and collaborative workflow.
- Scrum Master: Led Agile practices, managed sprint planning and retrospectives, and addressed process-related obstacles to maintain team momentum.
- Writers: Conceived story concepts, drafted scripts, and refined narrative elements to align with the project's cultural themes and educational goals.
- Illustrators: Designed visual storyboards and digital assets, often using AI tools for concept art, character design, and multimedia enhancement.
- Marketers: Promoted digital stories across social media platforms, managed Shopify launch, and analyzed audience engagement using real-time analytics.

This distributed structure allowed team members to take ownership of their respective domains while contributing to collective decision making and iterative content development. The integration of agile roles within a PBL context encourages accountability, cross-functional collaboration, and continuous improvement throughout the project lifecycle (Afonso & Costa, 2022; Krause & Scholl, 2022; Kożuch, Lenart-Gansiniec, & Sułkowski, 2023).

The core challenge assigned to the Vision Team was to conceptualize, produce, and distribute five engaging digital stories for children, each thematically aligned with the pillars of the Saudi Vision 2030. The stories were designed to showcase national achievements, reinforce cultural values, and promote digital literacy among the young audience. This multifaceted project required the team to apply problem-solving, creativity, and entrepreneurial skills within a real-world context.

- Develop written and multimedia (video/audio) formats for each story to support multimodal engagement and inclusive learning.
- AI tools (e.g., ChatGPT, Leonardo, Merlin) can be used for ideation, script generation, and visual content creation.
- The stories are marketed and distributed via an online Shopify store and through targeted social media campaigns.
- Incorporate feedback from supervisors and intended audiences to refine narrative content, visual appeal, and delivery methods.

This authentic challenge exemplifies the principles of problem-based learning by requiring students to manage uncertainty, solve complex tasks, and produce tangible outcomes under time constraints. It also provides an ideal environment for integrating agile sprints, reflective learning, and iterative development cycles, fostering both individual growth and team (Balan & Metcalfe, 2022; Kountouris & Kountouris, 2022).

Figure 1 : Organizational Structure of the Vision Team: Roles and responsibilities for digital story project , Source : Authors' own work

Agile Sprints and Deliverables

The project was organized into five two-week agile sprints, with each sprint culminating in the development and release of a new digital story. This iterative structure enabled the team to maintain momentum, apply feedback continuously, and refine both the process and product over time. The key components of each sprint cycle included the following:

- Sprint Planning: Establishing clear objectives, assigning tasks based on team roles, and defining deliverables for the upcoming cycle.
- Daily Stand-Ups: Conducting brief check-ins to review progress, identify blockers, and make real-time adjustments to team workflows.
- Backlog Grooming: Maintaining and reprioritizing the task backlog using Trello and Miro to ensure alignment with evolving goals.
- Sprint Reviews: Presenting completed stories to the project supervisor, receiving formative feedback, and identifying areas for iteration and improvement.

This structured, cyclical approach facilitated efficient workload management, encouraged adaptability, and fostered continuous learning—all core elements of both the agile methodology and problem-based learning (Krause & Scholl, 2022; Dinis-Carvalho & Fernandes, 2022). The sprint format also reinforced collaborative accountability, helping the team to sustain a steady rhythm of creative production throughout the project lifecycle.

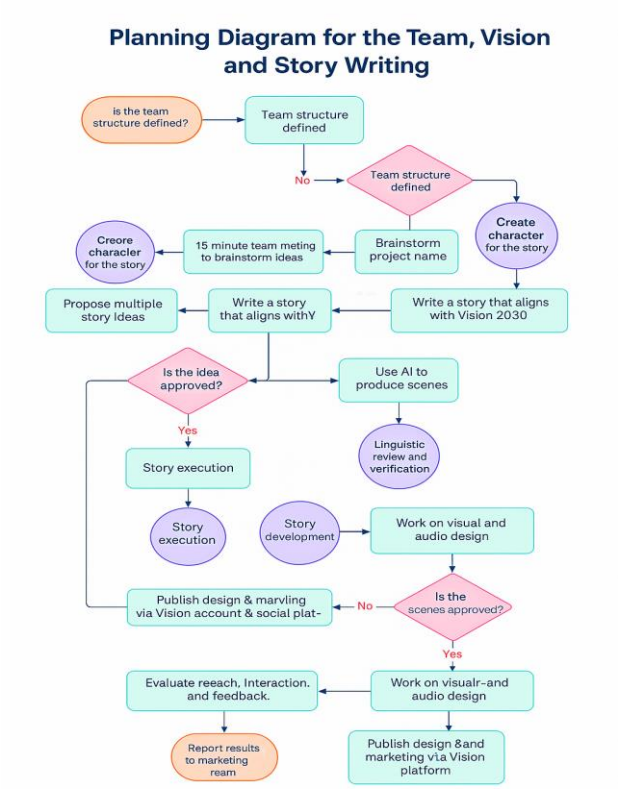


Figure 6: Team Planning Chart for Story Vision and Story Writing: Agile flow diagram used by the team , Source : Authors' own work

Integration of AI and Digital Tools

Artificial intelligence and digital platforms played a central role in facilitating both the creative and organizational processes of the Vision Team. These tools supported ideation, content development, team coordination, and public distribution, aligning seamlessly with the agile and problem-based learning (PBL) framework of the project.

- AI Tools (ChatGPT, Merlin, Leonardo): Used for brainstorming, drafting scripts, refining narratives, and generating custom visual assets, thereby accelerating the creative process and enhancing the story quality.
- Trello and Miro: Enabled transparent task management, collaborative planning, and real-time workflow visualization, supporting agile sprint execution and team accountability.
- InVideo and Canva provide accessible platforms for producing high-quality multimedia content, including animated videos, digital posters, and story-related promotional materials.
- Shopify Store: Served as a launch and monetization platform for digital stories while offering built-in analytics for monitoring user engagement and sales performance.

The seamless integration of these technologies empowers teams to collaborate efficiently, iterate creatively, and produce professional-grade deliverables. More broadly, this demonstrates the pedagogical value of combining AI-enhanced tools with agile methodologies in entrepreneurship education, fostering innovation, adaptability, and digital fluency among students (Kożuch et al., 2023; McKenna & Edwards, 2022).

Results and Discussion

This section presents the key outcomes and findings of the Vision Team project, integrating the results with a comprehensive analysis and discussion in light of the existing literature. The project successfully produced five original digital stories for children, presented in both written and multimedia (audio-visual) formats, each aligned with the core themes of Saudi Vision 2030. These outcomes demonstrate the effective integration of problem-based learning (PBL), agile project management, and AI-supported digital storytelling in higher education.

Development of Key Competencies

Both quantitative and qualitative data collected from the Vision Team Project revealed significant improvements in core entrepreneurial and teamwork competencies. Peer and self-assessments, weekly reflection journals, and supervisor feedback consistently indicate marked growth in creativity, leadership, communication, and task ownership.

The study found significant improvements in creativity, leadership, and teamwork, with the students demonstrating enhanced problem-solving abilities and adaptability. These gains were facilitated by the integration of AI tools, such as ChatGPT, and Agile methodologies, which helped students navigate real-world entrepreneurial challenges in a dynamic learning environment (Afonso & Costa, 2022; Balan & Metcalfe, 2022).

- Creativity: The students reported increased confidence in generating original concepts and transforming them into engaging, multimedia-rich stories. The use of AI tools such as ChatGPT and Leonardo has facilitated ideation, visual storytelling, and innovation in content development (Kountouris & Kountouris, 2022).
- Leadership: The Agile framework fosters shared responsibility and rotating leadership roles. Team members took the initiative in sprint planning, delegated tasks effectively, and managed quality assurance across project iterations (Krause & Scholl, 2022).
- Communication: Frequent stand-up meetings, the use of collaborative platforms (e.g., Trello, Miro), and iterative feedback loops enhanced clarity, responsiveness, and the articulation of ideas both within the team and to external stakeholders (Kożuch et al., 2023).
- Task Ownership: The structured sprint system, combined with clearly defined deliverables and personal accountability, contributed to a strong sense of ownership among participants. Team members demonstrated commitment to their roles and consistently met deadlines (Bjønness and Kolmos, 2022).

These findings underscore the effectiveness of integrating PBL, Agile methodologies, and digital storytelling as a cohesive instructional approach. The competencies developed align closely with those required in innovation-driven, collaborative work environments, highlighting the pedagogical relevance of this model in entrepreneurship education for the future.

Team Collaboration and Conflict Resolution

This study highlights the importance of integrating AI and Agile frameworks into entrepreneurial education. While Agile practices have been widely studied in Western contexts, this research demonstrates their effectiveness in a Middle Eastern setting,

particularly in fostering collaboration and entrepreneurial skills among students in alignment with national priorities such as Saudi Vision 2030 (Kożuch et al., 2023; Krause & Scholl, 2022). Participants consistently cited daily meetings, transparent task management, and open communication channels as key factors contributing to project success. The structured nature of Agile practices—particularly feedback loops and regular sprint reviews— enhances the team's ability to adapt to changing requirements, address challenges proactively, and maintain cohesion throughout the project cycle (Dinis-Carvalho & Fernandes, 2022; Chua & Chua, 2022).

- Conflict Reduction: Instances of miscommunication, role ambiguity, and task overlap were significantly reduced through the implementation of daily stand-ups, backlog grooming sessions, and clearly defined responsibilities. This proactive approach allowed the team to surface and resolve issues early in each of the sprints.
- Team Cohesion: Data from peer evaluations and reflection journals revealed increased trust, mutual support, and collective accountability. Team members reported a growing sense of psychological safety and shared ownership of outcomes, which are hallmarks of effective collaborative learning environments.

These outcomes underscore the importance of integrating agile frameworks into problem-based learning environments, where iterative reflection, clear roles, and transparent processes are crucial for fostering productive collaboration and conflict resilience.

Entrepreneurial Mindset Outcomes

Participation in the Vision Team project fostered key elements of an entrepreneurial mindset, including increased risk-taking, initiative, and digital monetization capabilities. The real-world implementation of a Shopify store, combined with targeted social media marketing campaigns, provided students with hands-on experience in digital entrepreneurship and market engagement (Kożuch and Kuczynski, 2023).

- Monetization**:** The team successfully launched and marketed their digital stories through a branded shopfront. Students utilized analytics tools to track visitor behavior, conversion rates, and user engagement, and then adjusted content and promotional strategies accordingly.
- Initiative**:** Reflection journals and supervisor feedback indicated that several team members independently launched side projects or freelance ventures, applying digital storytelling, marketing, and AI tools introduced during the project.
- Risk-taking**:** The iterative nature of agile sprints encourages experimentation and resilience. Students reported feeling more comfortable taking creative and strategic risks and viewed feedback and failure as integral to their learning process—hallmarks of entrepreneurial learning (Afonso & Costa, 2022).
- These outcomes highlight the potential of integrating technology-enhanced project-based learning with agile methodologies to cultivate not only the competencies but also the mindsets essential for entrepreneurial success in the digital economy.

Figure 7 : Vision Team Digital Storytelling Storefront (Homepage View, translated from Arabic)
Source : Authors' own work

This is the homepage of the student-created digital storytelling platform titled *Vision: A New Vision for Storytelling*.

The Arabic text in the book reads as follows:

- "A new vision for stories"
- "Written stories"
- "Visual stories"

The site allows viewers to browse student-produced narratives by type, with links at the top to Home, All Stories, Written Stories, and Visual Stories.'

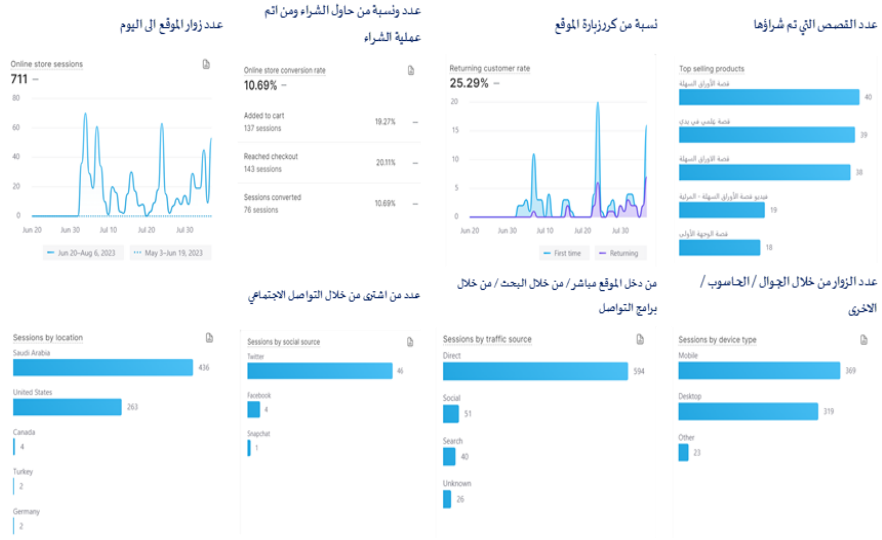


Figure 8**:** Shopify Store and Social Media Analytics Summary (translated from Arabic)
Source : Authors' own work

This dashboard summarizes the user activity data from the student storytelling store. Metrics include:

- Total online store sessions: 711
- Conversion rate: 10.69%
- Returning customers: 25.29%
- Top-selling products: “The Easy Mission,” “My Science in My Hand,” “The Feather Ministry”
- Traffic sources: 594 direct, 51 from social media, 40 from search
- Sessions by country: Saudi Arabia (436), United States (263), others
- Devices: 369 mobile, 319 desktop
- Social referrals: Twitter (46), Facebook (4), Snapchat (1)

Country/Region	Region	City	Visitors	Sessions
Summary			494	578
United States	Iowa	Council Bluffs	191	191
Saudi Arabia	Riyadh Region	Riyadh	57	105
Saudi Arabia	Eastern Province	Dammam	50	100
Saudi Arabia	Mecca Region	Jeddah	21	48
Saudi Arabia	Mecca Region	Ta'if	14	14
Saudi Arabia	Mecca Region	Makkah	10	13
United States	N/A	N/A	12	12
Saudi Arabia	Eastern Province	Dhahran	2	9
Saudi Arabia	Tabuk Region	Tabuk	8	8
Saudi Arabia	Eastern Province	Al Qatif	8	8
Saudi Arabia	N/A	N/A	7	8
Saudi Arabia	Medina Region	Medina	3	7
Saudi Arabia	Mecca Region	N/A	6	6
Saudi Arabia	Eastern Province	Jubail	6	6
United States	South Carolina	North Charleston	5	5
Saudi Arabia	Ash Sharqiyah	Dammam	3	4
Saudi Arabia	'Asir Region	Abha	3	4
Saudi Arabia	Eastern Province	Khobar	3	4
Saudi Arabia	Eastern Province	Eastern Province	4	4
Saudi Arabia	Makkah	Jeddah	1	4
Canada	Ontario	Toronto	1	2
Saudi Arabia	Jazan Region	Jizan	1	1
United States	Georgia	Atlanta	1	1
Jordan	Amman Governorate	Amman	1	1
United States	New York	N/A	1	1
France	Normandy	Le Havre	1	1
Russia	N/A	N/A	1	1

Figure 9 : Shopify Analytics: Visitor Locations and Session Volume (translated from Arabic)
Source : Authors’ own work

This table lists the countries, regions, and cities that generated visitor sessions in the digital storytelling store.
The Arabic label on the right translates to
“Countries, regions, and cities through which the store was accessed.

Table 1
Shopify Store Engagement and Key Performance Metrics , Source : Authors' own work

Metric	Value	Notes
Total site visitors	588	The majority accessed via mobile devices
Returning visitors	243 (41.3%)	Indicates strong repeat interest
Highest audience location	Saudi Arabia	High alignment with Vision 2030 target
Top devices	Mobile	Supports a mobile-first storytelling approach
Conversion rate	3.4%	Higher than average for educational products
Product purchases	20+	Monetized story downloads (free and paid)
Top-performing platform	Instagram	Highest engagement and traffic referral
Shopify store engagement	Steady over a 4-week sprint	Weekly content drops drove consistent traffic
Email opt-ins / newsletter signups	35+	Captured for ongoing community building

Reflections from Participants

Participant reflections emphasized the effectiveness of integrating AI tools, agile methodologies, and collaborative digital platforms to enhance both the learning experience and project outcomes. Students value the opportunity to work toward real-world deliverables in a supportive, technology-enhanced environment that encourages experimentation, iteration, and creative growth (McKenna & Edwards, 2022).

- Workload Management: Students reported that AI-supported automation and transparent task distribution—facilitated through tools such as Trello and ChatGPT—helped them manage their time and responsibilities more effectively.
- Creative Inspiration: The introduction of advanced digital tools and collaborative brainstorming processes stimulated new storytelling techniques and encouraged creative risk-taking.
- Iterative Learning: The Agile emphasis on reflection and continuous improvement is widely viewed as instrumental to personal and team development. Students reported higher motivation, adaptability, and confidence in applying feedback.

Overall, participant feedback affirmed the pedagogical value of combining PBL, Agile methods, and AI-enhanced storytelling—not only for developing technical skills but also for fostering creativity, autonomy, and collaborative problem-solving in authentic learning environments.

Implications for Educational Program Design

The findings of this study offer practical recommendations for business, media, and entrepreneurship educators seeking to modernize their curricula.

- Integrate short, revenue-oriented digital storytelling sprints into coursework, leveraging AI tools and collaborative platforms to foster creativity, engagement and digital fluency.
- Faculty development on agile methodologies should be provided to support iterative project cycles, formative assessment, and a culture of continuous improvement.
- Adopt validated rubrics and mixed-method assessment frameworks to measure competency growth and reliably inform instructional design decisions.

- Encouraging the formation of interdisciplinary teams and real-world problem scenarios that reflect the complexity of professional environments enhances the transferability of skills and knowledge.

By embedding these strategies, higher education institutions can better prepare students for the demands of a technology-driven workforce while promoting the development of entrepreneurial mindsets, adaptive learning habits, and effective team collaboration (Dinis-Carvalho & Fernandes, 2023; Dinis-Carvalho & Fernandes, 2022).

Conclusion

Summary of Key Findings

This study demonstrates that integrating agile-managed digital storytelling into a problem-based learning (PBL) classroom is an effective method for enhancing students' entrepreneurial and interpersonal skills. The example of the Vision Team presented measurable improvements in creativity, leadership, communication processes, and task ownership, particularly through the use of artificial intelligence (AI) and digital team interactions. The experience with an iterative, real-life, project-based orientation, along with pre-planned feedback loops and digital teamwork, allowed students to develop the applicable skills required to succeed in the digital and creative sectors (Afonso & Costa, 2022; Kożuch et al., 2023).

Contribution to Practice and Research

This study contributes to both theory and practice by demonstrating how PBL, Agile methodologies, and AI-driven digital storytelling can be integrated to develop entrepreneurial competencies. It provides a practical framework for educators in Saudi Arabia and other non-Western contexts, showcasing how these tools can be used to align education with national development goals, such as Saudi Vision 2030 (Balan & Metcalfe, 2022; Kożuch et al., 2023). It highlights the pedagogical importance of utilizing iterative project phases, collaborative learning techniques, and digital content production to foster entrepreneurial attitudes and cooperative skills in students. The present study offers a portable and scalable solution that can be applied by teachers and curricular designers to both domains, aiming to address the issue of academic learning misalignment with the challenges of real-world innovation (Balan & Metcalfe, 2022; Kountouris & Kountouris, 2022).

Limitations

The present study has several limitations. Its unit of design (a single case) is a barrier to generalizability, and the measurement of temperament development is hindered by the use of self-reported data, which may introduce a possible bias. Additionally, the project was too brief to conclude the long-term retention of skills. Future studies should adopt multi-case, longitudinal, and mixed-methods designs to measure broader and longer-lasting effects (Bjones & Kolmos, 2022; Dinis-Carvalho & Fernandes, 2022).

Future Research Directions

Future studies should pursue the following directions.

- Conduct multi-case comparisons to validate findings across teams, institutions, and cultural contexts.

- Implement longitudinal tracking to assess the sustainability of entrepreneurial and teamwork competencies over time.
- Partnerships with startup incubators and industry stakeholders should be explored to enhance the real-world relevance and impact of initiatives.

Investigate the pedagogical potential of emerging AI and digital tools for enhancing creativity, collaboration, and project management in education (Kożuch et al., 2023; K **Purpose:** This study examines how integrating problem-based learning (PBL), agile project management, and AI-enhanced digital storytelling can develop entrepreneurial and teamwork competencies among higher education students.

Design/methodology/approach: A qualitative case study was conducted with an interdisciplinary group of students creating and monetizing digital stories in alignment with Saudi Vision 2030. The data sources included project logs, evaluations, and supervisor feedback.

Findings: The integration of PBL, Agile, and AI tools enhances creativity, leadership, communication, and task ownership. Strong engagement metrics confirmed the effectiveness of this approach.

Research limitations/implications: The single-case design limits generalizability, and self-reported data may be biased. Future research should test this model across different contexts.

Practical implications: Educators can adopt this framework to foster entrepreneurial mindsets and collaborative skills in innovation-driven curricula.

Social implications: This study promotes student readiness for digital economy roles through authentic, technology-enabled learning.

Originality/value: This study demonstrates a replicable, culturally contextualized model integrating PBL, Agile, and AI storytelling.

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