

3E-LEARNING PROJECT - Report

Entrepreneurial training experience for training secondary school students



3E-LEARNING

ENTREPRENEURIAL E-LEARNING EXPERIENCE
FOR TRAINING SECONDARY SCHOOLS STUDENTS



Report on Requirements Analysis

Università degli Studi di Udine

Document Identification

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Abstract	This report is divided into 3 sections one describing the characteristics of digital entrepreneurship. The next one investigates high school students' knowledge of entrepreneurship and digitalisation. The last section gives an overview of business models and explores the business model canvas.
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1. Digital entrepreneurship

1.1 Digital transformation as business change

Digital transformation, driven by digital technologies, is revolutionizing industries and society by enhancing entities through information, computing, communication, and connectivity technologies. This process requires companies to innovate not just technologically, but also in culture, strategy, processes, and capabilities.

Key impacts in business include:

1. Customers: Digitalization has changed customer behavior and expectations, enabling personalized experiences and multi-channel interactions through extensive online information and data analysis.
2. Competition: Industry boundaries are blurring, with companies facing competition from different sectors and former partners.
3. Data: Big data provides vast amounts of unstructured information for valuable forecasts and models.
4. Innovation: Focus has shifted from product innovation to business model innovation.
5. Value: Companies can dynamically respond to changes, offering flexible value propositions.

Additionally, digital transformation lowers barriers to entrepreneurship by reducing start-up costs and simplifying business creation, a trend known as digital entrepreneurship.

1.2 Entrepreneurship

Entrepreneurship, from the French "entrepreneur" meaning "one who undertakes," has evolved significantly. Initially defined by Jean-Baptiste Say in 1803 as someone coordinating production factors to create market goods, it was later expanded by Joseph Schumpeter. Schumpeter emphasized the role of entrepreneurs as innovators driving economic growth through new products and business models.

Modern definitions view entrepreneurship as the process of creating and running new businesses, focusing on value creation. Recent decades introduced social entrepreneurship, aimed at societal impact, and digital entrepreneurship, leveraging digital technologies for new ventures. Digital entrepreneurship is rapidly growing due to the ease of starting online businesses.

A definition of digital entrepreneurship that encompasses the key concepts is the following "Digital entrepreneurship is the pursuit of opportunities through the use of digital media and information and communication technologies. Digital entrepreneurs transform the competitive landscape by seizing opportunities and fostering creativity."

1.3 Digital entrepreneurship characteristics

Distinctive features of digital entrepreneurship emerge from the literature. The European Commission identified five fundamental 'pillars' of digital entrepreneurship:

1. Digital Knowledge and ICT: Enhances digital innovation, commercialization, and the ICT sector.

2. Digital Business Environment: Strengthens digital infrastructure and simplifies business processes.
3. Access to Finance: Facilitates funding and digital investments.
4. Digital Skills and e-Leadership: Promotes e-Leadership skills through education and training.
5. Entrepreneurial Culture: Cultivates a supportive entrepreneurial culture.

In the context of the digital business environment, technology integrates three key elements to enhance product and service functionality:

1. Digital Artefacts
2. Digital Platforms
3. Digital Infrastructures

1.4 Digital Entrepreneurship Competencies

A successful digital entrepreneur requires a diverse set of competencies to effectively manage and grow their business in the dynamic digital landscape. They must leverage digital technologies to create customer value and generate profit.

Digital entrepreneur competencies fall into two main categories: management and entrepreneurial skills, and digital competencies. Additionally, there are transversal competencies relevant to all jobs.

Some important entrepreneurial competencies are:

- Creativity: Vital for startup success and sustainability, fostering innovation and originality, and encouraged through entrepreneurship education.
- Techno-creativity: Leveraging technology to enhance creative expression, innovation, and problem-solving, crucial for digital entrepreneurship
- Problem-Solving: Systematically identifying and addressing root causes to find optimal solutions.
- Proactivity: Anticipating changes, innovating, and staying competitive in the digital market.
- Communication and Collaboration: Building effective teamwork through open communication, constructive feedback, and clear role definitions.
- Leadership: Creating positive work environments, fostering collaboration, and motivating teams towards shared goals.

Some important digital competencies are:

- Generic ICT Competencies: Utilizing digital technologies for professional purposes.
- Specialized ICT Competencies: Required for developing information technology products and services.
- Complementary ICT Competencies: Supporting tasks associated with ICT usage.
- Basic Competencies: Including digital literacy and emotional and social skills facilitating digital technology utilization.

2. Entrepreneurial Knowledge

The project aims to introduce an online role-playing game for secondary school students to enhance strategic and transversal competencies, focusing on digital entrepreneurship and management. The objective of the report is to present findings from a questionnaire assessing the current level of entrepreneurial knowledge among students. This assessment will inform the development of the game to improve competencies. The questionnaire comprises three distinct sections tailored for students, teachers, and policymakers respectively. Its aim is to delve into the unique perspectives and expectations of each group concerning the integration of the game into the educational system.

The students' questionnaire comprises 44 statements, requiring students to assign a score ranging from 1 to 5 on the Likert scale. This score reflects the level of agreement with each statement, with options ranging from "Strongly Disagree" to "Strongly Agree."

The questionnaire designed for teachers encompasses 8 questions. Like the student questionnaire, 4 questions utilize a Likert scale ranging from 1 to 5 for responses, while the remaining 4 questions are binary, requiring a "yes" or "no" response.

For policymakers, a qualitative questionnaire featuring three open-ended questions was selected. This format and method of response were chosen to accommodate policymakers, who may be more challenging to engage compared to students and teachers, and may have limited time to dedicate to extensive questionnaire responses.

2.1 Responses to the questionnaires

The responses to the questionnaire reveal varying levels of proficiency and confidence among secondary school students. While they demonstrate strengths in areas like communication and collaboration, digital content creation, and entrepreneurial attitudes, there are notable gaps in skills related to information literacy, cybersecurity awareness, and decision-making under uncertainty. These findings underscore the importance of enhancing digital competencies and fostering critical thinking and problem-solving skills to better prepare students for future challenges in both academic and professional contexts.

The questionnaire responses highlight teachers' attitudes towards entrepreneurship education and the potential use of a business game in the classroom. Overall, teachers recognize the relevance of entrepreneurship for students' education and show interest in implementing innovative teaching tools like business games. While they acknowledge students' limited entrepreneurial skills, there's a belief in the potential to nurture these qualities. However, opinions on the feasibility of such activities in the classroom vary, possibly influenced by factors like curriculum alignment and institutional focus.

Policy makers express positive views on learning through play, particularly with digital games, acknowledging its effectiveness and stimulation for learning. While they recognize the potential of business games for education, they suggest a cautious approach to compulsory adoption, emphasizing the need for suitability to various educational paths. Overall, they believe that integrating play-based learning into schools could enhance the education system

by making it more interactive and engaging, leading to improved understanding and learning outcomes.

3. Identifying Digital Business Model Elements

In the era of Industry 4.0, characterized by rapid technological advancements, business models have undergone significant transformations.

Smart Factory business models leverage digital technologies like IoT, robotics, and AI to create intelligent production facilities. This model integrates automation and real-time data processing for enhanced operational efficiency and flexibility, catering to increasingly personalized customer requirements.

Servitization business models are on the rise, offering supplementary services alongside physical products to bolster customer retention and generate new revenue streams. This approach, known as 'everything-as-a-service,' utilizes advanced technologies to provide flexible pay-per-use models, aligning with principles of sustainability and circular economy.

Data-driven business models focus on effective management of vast data volumes to enhance operational processes, products, and customer interactions. Leveraging digital technologies, companies offer personalized experiences and predictive analytics to anticipate customer needs, thereby optimizing production processes and opening new market opportunities.

Platform business models leverage IoT technologies to create extended ecosystems involving consumers, businesses, and resources. Through open platforms, companies facilitate exchange of services and ideas among stakeholders, enabling consumers to become active co-designers and co-producers, ultimately reducing costs and leveraging the collective resources of the ecosystem.

3.1 Digital business models for entrepreneurship

Digital business models have undergone a significant transformation due to technological advancements and changing consumer behavior, opening new opportunities for entrepreneurship. Several models have emerged, each with its own characteristics and benefits for aspiring entrepreneurs.

- The freemium model offers users free access to a service with the option to upgrade to a premium package for additional features. It aims to attract a large user base through a valuable free experience while generating revenue from premium subscriptions and other sources like advertising.
- The open-source model fosters collaboration and transparency by sharing software source code within a community. Companies monetize related services while benefiting from shared innovation and reduced development costs.

- Subscription-based models involve customers paying recurring fees for ongoing access to products or services, providing steady revenue streams, fostering loyalty, and supporting business growth.
- On-demand models focus on delivering goods and services instantly, catering to immediate needs through technology-driven platforms. They offer convenience, broad choice, and income opportunities for independent service providers.
- E-commerce models facilitate online buying and selling, transforming shopping experiences and enabling global market access. Different types include B2C, B2B, C2C, and C2B transactions, each serving distinct buyer-seller relationships.
- The ad-supported model relies on offering free services in exchange for user data, generating revenue through targeted advertising. Companies like Facebook and Google leverage data collection and algorithms to deliver personalized ads while balancing user experience and advertising effectiveness.

These digital business models offer diverse pathways for entrepreneurship, leveraging technology and innovation to create value and generate revenue in the digital age.

3.2 The Business Model Canvas (BMC)

The Business Model Canvas (BMC) is a strategic framework for designing, analyzing, and communicating business models. Introduced by Alexander Osterwalder and Yves Pigneur, it outlines nine key elements to describe an organization's business model:

- 1) Customer Segments: Identifying the different groups of customers the organization serves.
- 2) Value Proposition: Describing the value offered to each customer segment through products or services.
- 3) Channels: Outlining the channels used to reach and interact with customers.
- 4) Customer Relationships: Detailing the types of relationships established with customers.
- 5) Revenue Streams: Describing how the organization generates revenue from each customer segment.
- 6) Key Resources: Identifying the critical resources necessary for the business model's success.
- 7) Key Activities: Listing the key activities required to execute the business model effectively.
- 8) Key Partners: Identifying strategic partners crucial for creating value for customers.
- 9) Cost Structure: Detailing the costs associated with resources, activities, and key partnerships.

The BMC provides a comprehensive overview of a business model, aiding in strategic planning, analysis, and communication of key aspects to stakeholders.