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## **AN INTEGRATED DIGITAL SKILLS LEARNING APPROACH IN HIGHER EDUCATION INSTITUTIONS**

### **ABSTRACT**

The development of digital and entrepreneurial skills has become a central priority in higher education, particularly in regions undergoing socio-economic transformation. Universities must respond to rapidly changing labour-market demands by adopting innovative pedagogical approaches that strengthen students' ability to operate in technology-driven and entrepreneurial environments. This paper explores modern methods and institutional practices that support the acquisition of digital competencies and entrepreneurial mindsets, with a particular focus on the experience of the University FINRA Tuzla. Drawing on contemporary teaching methodologies, industry collaboration and applied learning models, the study identifies key strategies that enable students to build confidence, creativity and practical readiness for the future workforce. The findings highlight the importance of integrating digital tools into the curriculum, promoting experiential learning, fostering financial and digital literacy, and encouraging students to develop their own business ideas. The paper concludes that even smaller higher education institutions can achieve strong outcomes through targeted, well-structured and student-centred approaches.

**Keywords:** digital skills, entrepreneurship, innovation, pedagogy, higher education, Western Balkans.

### **INTRODUCTION**

In the 21st century economy, digital competence and entrepreneurial thinking represent essential skills for students entering the labour market. The rapid development of information technologies, automation, artificial intelligence and digital communication tools requires higher education institutions to rethink traditional teaching approaches. Simultaneously, global economic uncertainty

and increased competition call for the strengthening of entrepreneurial mindsets, creativity, adaptability and problem-solving capacities among young people. Higher education institutions therefore play a dual role: they must provide theoretical foundations while also equipping students with practical, future-oriented skills. This is especially relevant in countries experiencing post-transition economic restructuring, such as Bosnia and Herzegovina, where digitalisation, innovation and entrepreneurship represent key drivers of development. This paper analyses innovative pedagogical strategies for fostering digital and entrepreneurial skills, illustrated through the educational practices of the University FINRA Tuzla.

## 2. THEORETICAL BACKGROUND

### 2.1 Development of Digital Skills in Higher Education

Digital competence is a multidimensional construct encompassing information and data literacy, communication, digital content creation, safety and problem-solving (Vuorikari et al., 2022). These skills are fundamental for students' employability and participation in a digital society. International studies emphasise the necessity of integrating digital competencies across curricula rather than isolating them within ICT courses. For example, Redecker (2017) argues that digital transformation in education requires comprehensive pedagogical innovation across all disciplines. Bond et al. (2020), in a systematic review of digital learning research, found that blended and technology-enhanced learning models significantly improve student engagement, motivation and learning outcomes. Digital competence development is particularly important in non-ICT study fields. Van Laar et al. (2020) identify creativity, collaboration, critical thinking and problem-solving as essential "21st-century digital skills" that students must acquire regardless of discipline. Similarly, Siddiq et al. (2016) showed that university students often overestimate their digital abilities, underscoring the need for structured educational interventions. Research from the Western Balkans (Begicevic et al., 2019) highlights systemic challenges in digitalisation, but confirms that targeted pedagogical reforms can greatly improve student readiness and institutional digital maturity.

## 2.2 Entrepreneurial Skills and Mindset Development

Entrepreneurial skills encompass opportunity recognition, creativity, innovation, initiative-taking, financial literacy and the ability to turn ideas into action (Bacigalupo et al., 2016). Modern entrepreneurship education has shifted from traditional lecture formats toward experiential, action-based learning models (Neck & Greene, 2011). Empirical studies show that experiential learning—such as simulations, project-based learning, collaboration with industry and real-world problem solving—significantly increases entrepreneurial intention and confidence (Fayolle & Gailly, 2015). Entrepreneurial ecosystems further strengthen learning outcomes when universities collaborate with companies, mentors and community actors (Guerrero & Urbano, 2019). The growing field of digital entrepreneurship emphasises the merging of digital and entrepreneurial competences. Marques and Ferreira (2020) argue that digital technologies reshape entrepreneurial processes and require new educational models rooted in digital literacy, platform thinking and data-driven decision-making. In the Western Balkans, entrepreneurship education plays a crucial role in addressing youth unemployment and supporting innovation-driven growth. Studies confirm that entrepreneurship training increases initiative, resilience and career adaptability among students (Nikolić et al., 2022; Krasniqi, 2019).

## 3. CASE STUDY: UNIVERSITY FINRA TUZLA

### 3.1 Aim of the Study

The purpose of this study was to introduce and evaluate an innovative IT-based teaching approach designed to enhance digital competences and digital-entrepreneurial readiness among students at the University FINRA Tuzla. The study aimed to determine how students perceive the usefulness, clarity, relevance and effectiveness of the newly introduced digital learning method.

More specifically, the study examined:

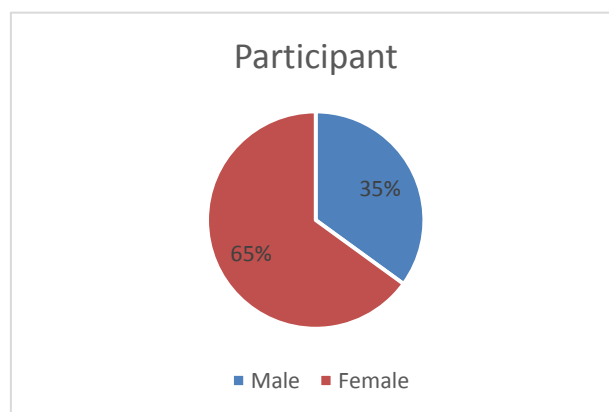
1. whether the new IT-based approach enhances students' confidence in using digital tools,
2. how students evaluate the learning experience,
3. which digital skills students believe improved the most, and
4. how suitable the method is for integrating digital and entrepreneurial components.

### 3.2 Research Methodology and Design

The research followed a **teaching innovation evaluation design**, commonly used in applied higher-education research. This design includes:

- introduction of a new instructional approach,
- implementation in a real classroom context,
- post-implementation measurement using a structured questionnaire.

A total of **150 students** participated after completing the new learning activity.



*Graph 1 Participant*

The research sample consisted of 65% female and 35% male participants from all years of study (1–4).

		Freque ncy	Percent	Valid Percent	Cumulative Percent
Field of study	Finance and accounting	75	50	50	50
	Management/business	15	10	10	60
	IT/digital business	48	32	32	92
	Tourism/gastronomy/hospitality	12	8	8	100,0
Total		150	100,0	100,0	

Study fields represented in the sample include: 50% finance/accounting, 10% management/business, 32% IT/digital programmes, and 8% tourism/gastronomy/hospitality.

### 3.3. Data Collection Instrument

A post-activity questionnaire measured:

1. perceived improvement of digital skills,

2. perceived usefulness of the new approach,
3. satisfaction with the learning process,
4. comfort level when using digital tools,
5. preference for similar digital activities in future courses.

Likert scale (1–5) and multiple-choice items were used. Data were analysed using descriptive statistics (means and percentages).

### 3.4 Description of the Digital Skills Learning Approach

The innovative teaching approach introduced in this study is a comprehensive Digital Skills Learning Approach, designed to strengthen students' practical digital competencies by integrating data literacy, digital content creation and digital communication into a single, coherent learning process. The intention behind this approach was to move beyond traditional lecture-based learning and provide students with an authentic digital task that mirrors the types of activities they are likely to encounter in modern, data-driven work environments. The approach is grounded in experiential learning principles, as students actively work with digital tools, interpret information, and produce meaningful digital outputs. At the core of this approach is the development of data literacy, a fundamental competence in the digital age. Students were provided with a structured dataset relevant to finance, business or societal trends and were instructed to explore, analyse and interpret its contents. This included tasks such as sorting and filtering data, generating basic statistical summaries, identifying patterns and anomalies, and creating visual representations such as bar charts or trend lines. These activities were performed using widely accessible digital tools — primarily Microsoft Excel and Google Sheets — enabling students to strengthen essential analytical skills that are transferable across disciplines. The second key component of the approach was digital content creation, aimed at developing students' ability to communicate information visually and creatively. After completing the data analysis, students were required to synthesise their findings into a digital artefact. They could choose among several digital platforms, including Canva for infographics and visual posters, or Figma and Miro for prototyping and layout design. This task encouraged students to combine technical and creative skills by transforming raw data into visually appealing and easily understandable digital content. Through this process, students not only deepened their

understanding of the data but also practiced essential digital-design competencies increasingly demanded by employers. A third dimension of the approach was digital communication competence. Students presented their digital artefacts using visual templates, structured explanations of their charts, and clear interpretations of their findings. This element was included to ensure that students do not merely manipulate digital tools but also learn to articulate insights, justify their choices, and communicate results effectively in digital form. By integrating communication into the workflow, the approach simulated real-world professional practices where digital content must be both accurate and comprehensible. Although the primary focus of the approach is IT-based, it naturally supports an entrepreneurial mindset. Students were encouraged to reflect on how digital tools assist in solving practical problems, making informed decisions, and supporting various aspects of business development. This reflection helped students recognise the relevance of digital competencies beyond technical work, particularly in contexts involving financial planning, marketing strategies, or product development. Overall, the Digital Skills Learning Approach represents a structured, purposeful and student-centred method that unifies analysis, creativity and digital communication. It provides students with an applied learning experience that strengthens multiple dimensions of digital competence and encourages active engagement, independent problem-solving and creative use of technology. As such, it offers a meaningful framework for advancing both digital and entrepreneurial skills within higher education. Importantly, the innovative character of this approach does not lie in the novelty of the digital tools themselves – which are widely available and commonly used – but in the way they are pedagogically integrated into a single, coherent learning process. By deliberately combining data analysis, digital content creation and digital communication within one structured activity, the approach moves beyond isolated tool use and offers a practice-oriented workflow that mirrors real digital work environments.

### 3.5. Practical Example of Applying the Digital Skills Learning Approach

To illustrate how this approach functioned in practice, students were assigned a small dataset containing monthly revenues of a hypothetical company, accompanied by variables such as customer categories, number of transactions and marketing expenses. The goal of the task was to help students

understand how digital tools can support basic business analysis, a competence valuable both in IT and business-oriented fields.

Students first used Excel or Google Sheets to:

- calculate monthly growth rates,
- identify the month with the highest customer activity,
- examine correlations between marketing spending and revenue,
- generate at least one chart (line or bar chart) showing revenue trends.

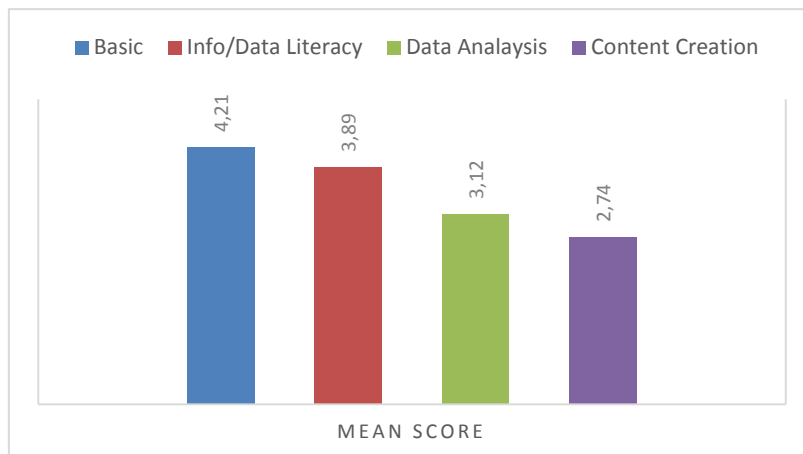
During this stage, some students independently applied formulas such as AVERAGE, COUNTIF, SUMIF and basic statistical tools—demonstrating initiative and digital problem-solving. In the next step, students transformed their analysis into a digital visual summary. For instance, using Canva, several groups produced clean, modern infographics showing:

- “Top 3 Insights from the Data”,
- a simplified dashboard combining charts and numeric indicators,
- a visual explanation of how customer behaviour changed over time.

One group used Figma to create a mock-up of a mobile app screen displaying the company's KPIs, explaining how such a digital product could help managers make quick decisions. Finally, each student or pair presented their work using a digital presentation. The emphasis was not on artistic design, but on:

- clarity of digital communication,
- accuracy of data interpretation,
- ability to justify digital choices (chart types, layout, colours).

Students commented that seeing how data “comes alive” after visualisation helped them better understand its business relevance and improved their confidence in using IT tools for analytical tasks. To facilitate interpretation of the descriptive statistics, the mean values of students' digital competences are presented graphically in Graph 2. The results show a clear downward trend across the four dimensions: students report the highest scores for basic digital skills ( $M = 4.21$ ,  $SD = 0.58$ ), slightly lower levels for information and data literacy ( $M = 3.89$ ,  $SD = 0.63$ ), and substantially lower confidence in data analysis skills ( $M = 3.12$ ,  $SD = 0.71$ ) and especially digital content creation ( $M = 2.74$ ,  $SD = 0.76$ ).

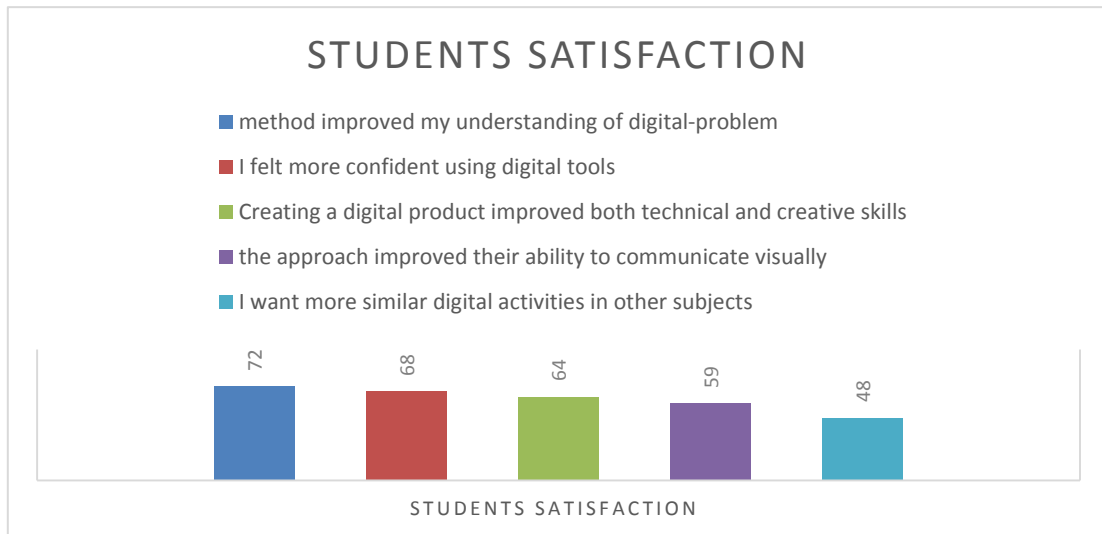


*Graph 2 students' digital competences*

This pattern is typical for students in post-transition higher education systems and clearly indicates that the most demanding areas of digital autonomy—working with data and creating original digital content—are also the weakest. These findings provide a strong justification for the Digital Skills Learning Approach introduced in this study, which specifically targets the development of data analysis and digital content creation competences.

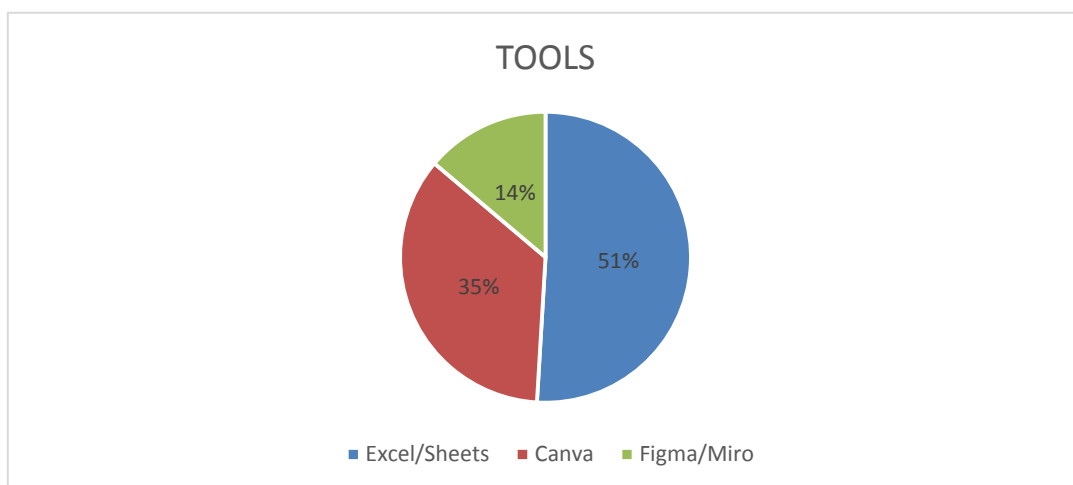
### 3.6 Results: Student Satisfaction with the New Approach

Student feedback demonstrated strong acceptance of the new digital method. The results presented in Graph 3 indicate a high level of student satisfaction with the new digital approach. The majority of participants (72%) reported that the method improved their understanding of digital problem-solving, while 68% felt more confident using digital tools. Furthermore, 64% agreed that creating a digital product helped them develop both technical and creative skills, and 59% stated that the activity enhanced their ability to communicate information visually. Nearly half of the students (48%) expressed interest in participating in similar digital activities in other courses. These findings demonstrate that the integrated digital skills learning approach was well-received and supported students' engagement, motivation, and perceived competence.



*Graph 3 Students Satisfaction*

Graph 4 shows the distribution of digital tools used by students during the activity. Excel/Google Sheets were the most frequently used tools (51%), reflecting students' familiarity with spreadsheet-based data analysis. Canva was used by 35% of students, confirming its popularity for creating visually appealing digital artefacts. Tools such as Figma or Miro were used by 14% of students, mostly by those from IT-oriented programmes who are more comfortable with design-oriented environments. This distribution suggests that the innovative approach allowed students to choose tools that matched their skill level, thereby supporting digital autonomy and personalised learning pathways.



*Graph 4 Tools*

Open-responses highlighted themes such as:

- “practical digital skills I will need at work”
- “better understanding of data”
- “confidence with digital tools”
- “learning through example, not theory”

### 3.7 Entrepreneurial Skills and Readiness

Although the primary focus of the innovative approach was the development of digital competences, several elements of the activity naturally activated components of an entrepreneurial mindset. Students were asked to evaluate whether the digital task helped them develop skills commonly associated with entrepreneurial thinking such as creativity, opportunity recognition, problem-solving and decision-making.

The results indicate a moderate but noticeable entrepreneurial effect:

- 58% of students agreed that analysing real data helped them understand how information supports business decision-making.
- 52% stated that creating a digital product (infographic, dashboard, or prototype) encouraged them to think creatively about how information can be communicated to potential users or clients.
- 47% felt that working with digital tools increased their confidence in solving open-ended problems — a core component of entrepreneurial behaviour.
- 41% reported that the activity helped them see how digital skills can support business planning, marketing, or product development.

Qualitative comments also reflected entrepreneurial thinking. Students noted that the task resembled “real work tasks in companies,” required them to “interpret data like a business analyst,” and helped them “see how digital outputs could be used in marketing or management contexts.” Although the activity was not explicitly designed as an entrepreneurship exercise, the results suggest that digital tasks which require analysis, synthesis and creative presentation also implicitly strengthen entrepreneurial-related competences, especially creative thinking, opportunity recognition and the ability to communicate ideas clearly.

## **CONCLUSION**

The findings of this study demonstrate that the integrated digital skills learning approach implemented at the University FINRA Tuzla represents a meaningful and effective method for enhancing students' practical digital competences. By combining data analysis, digital content creation and digital communication within a single structured task, the approach provided students with an experience that closely reflects contemporary digital work practices. The results showed high levels of student satisfaction, with most participants reporting improved understanding of digital problem-solving, increased confidence in using digital tools and greater ability to communicate information visually. Although the primary purpose of the activity was to develop digital competences, several elements of entrepreneurial thinking—such as creativity, opportunity recognition and problem-solving—also emerged naturally through the task. This indicates that integrated digital learning models can support both digital and entrepreneurial readiness, even when entrepreneurial skills are not the main instructional focus. Overall, the study highlights the value of pedagogical approaches that emphasise active engagement, authentic tasks and the meaningful use of digital tools. Such approaches are particularly relevant in higher education institutions operating in post-transition contexts, where students often display uneven digital skill profiles and require structured opportunities for applied digital learning. Future work may explore combining this model with additional advanced tools or extending the approach across other courses and study fields to further strengthen students' digital autonomy and workplace readiness.

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