

## **ELEMENTS OF THE ECOSYSTEM IN INNOVATIVE PEDAGOGY IN ISRAEL**

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### ***Abstract***

*This article examines the innovative approaches implemented within Israel's education system to advance innovative pedagogy and their potential contributions to enhancing teaching and learning. The author emphasizes the growing recognition of the necessity for innovative educational methods that cultivate creativity, critical thinking, and problem-solving skills, preparing students for the contemporary challenges they will face. Israel has emerged as a global leader in education innovation, exemplifying a compelling case study for investigating the promotion of innovative pedagogy through an innovation ecosystem. The Israeli Ministry of Education has initiated various programs, including teacher professional development, funding for innovative projects, and the integration of digital technologies to support teaching and learning, with the aim of fostering innovative pedagogy in schools. Research has also indicated that establishing an innovation ecosystem can significantly impact the promotion of innovative pedagogy, leading to heightened student engagement, improved academic performance, and a stronger sense of ownership in the learning process.*

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**Keywords:** *ecosystem, innovative pedagogy, Israel, innovative approaches, education, future-oriented pedagogy*

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### **1. Introduction**

The dynamic changes happening in the world in all fields directly affect education. The more we adapt education to the changing future trends, the more we can prepare students to be flexible, adaptive to changes, make them independent learners, equip them with the necessary tools they need to succeed in the world of changing reality. The purpose of this article is to present initiatives aimed at promoting innovative pedagogy in Israel. Some of the initiatives were created within Israel's education system, some by external bodies, entrepreneurs, external companies.

In the educational field, since the 2000s, the concept of learning Learning Ecosystem [16] has been widely used. This concept is based on the premise that the modern world is characterized by new trends (speed of technological change, automation and digitalization, greening, network-centricity of society) that affect the existing education system. The university ecosystem as a flexible system with multiple connections is able to quickly respond to external and internal changes.

Such concepts as "ecosystem in innovative pedagogy", "ecosystem of innovative pedagogy", "innovative learning environment" are associated with the ecosystem of learning and innovation.

A Learning Ecosystem refers to a broader concept that encompasses all the elements, interactions, and environments involved in the process of learning. It includes various stakeholders such as learners, educators, families, communities, institutions, resources, technologies, and networks that collectively support and facilitate learning.

The term "Ecosystem in Innovative Pedagogy" specifically focuses on the ecosystem within the context of innovative pedagogy. It highlights the interconnected elements and components involved in the implementation and success of innovative teaching and learning methods. It emphasizes the integration of innovative approaches, technologies, curriculum design, teacher development, and collaboration among stakeholders within the educational system [9].

The term "Innovative Pedagogy Ecosystem" focuses specifically on the ecosystem created to support and promote innovative pedagogical practices. It involves the integration of innovative teaching methods, assessment approaches, curriculum design, teacher professional development, and collaboration among various educational stakeholders. It emphasizes the interplay and synergy between these elements to foster creativity, critical thinking, and student engagement in the learning process.

An Innovative Learning Environment (ILE) refers to the physical, virtual, and social settings in which learning takes place. An ILE is a comprehensive system comprising of students, teachers, families, communities, educational content, and resources. It is a holistic and all-encompassing concept that is designed to be future-oriented and flexible, capable of adapting to the evolving and changing educational practices [5]. It emphasizes the design and organization of spaces, resources, and technologies to facilitate and enhance innovative teaching and learning practices. It encompasses aspects such as flexible learning spaces, personalized learning approaches, technology integration, and learner-centered pedagogies.

In summary, while all of these concepts are interconnected and share common goals of promoting innovation in education, they differ in their specific focus and emphasis. The learning ecosystem encompasses the broadest scope, while the ecosystem in innovative pedagogy, innovative pedagogy and ecosystem innovative learning environment concentrates on different aspects related to innovation in teaching and learning.

The role of the ecosystem in innovative pedagogy in Israel is significant and multifaceted. The ecosystem plays a crucial role in promoting and supporting the implementation of innovative pedagogical practices in the Israeli education system.

## **2. The degree of investigation of the problem at the present moment, the purpose of the research**

The degree of investigation of the problem of ecosystem elements in innovative pedagogy in Israel is still in its early stages. Researchers such as Quan S. J., Wang Yu. L. [15], Kleiner G. B. [6], and others analyzed the educational environment as an educational ecosystem. There is a growing body of research on this topic, but much more work is needed to fully understand the factors that contribute to the success of innovative pedagogy programs in

Israel. The purpose of the research on ecosystem elements in innovative pedagogy in Israel is to identify the factors that contribute to the success of these programs. This research will help to improve the design and implementation of innovative pedagogy programs, and to ensure that they are effective in meeting the needs of students and teachers.

The theme of this article is to explore how building innovative approaches taken by Israel's education system can promote innovative pedagogy. To investigate how a culture of innovation in education leads to significant advances in teaching and learning. The motivation for this theme is the increasing recognition of the need for innovative approaches to education that can meet the demands of a rapidly changing world. Traditional models of education are often ill-equipped to prepare students for the challenges of the modern world, and there is a growing need for new approaches that can foster creativity, critical thinking, and problem-solving skills. The rationale for this theme is that Israel has emerged as a global leader in education innovation through its robust ecosystem of innovation. By examining the Israeli experience, we can gain insights into how an ecosystem of innovation can promote innovative pedagogy and drive significant advances in education. The definition of the problem is the need for innovative approaches to education that can meet the challenges of the modern world. This article aims to explore the current state of innovation and innovative teaching strategies in Israel, highlighting some of the successful programs and approaches that have been implemented.

### **3. Methods and materials applied**

There are many materials and research methods that can be used to explore the elements of an innovative pedagogy ecosystem. The research methodology is based on the study of educational materials that give an idea of the content and structure of innovative pedagogical programs, methods and evaluation of the use of these programs. Various research methods (case studies, surveys, interviews, focus groups) provide an opportunity to gain a comprehensive understanding of the elements of the innovative pedagogy ecosystem in Israel. Numerous publications and reports served as support for the present research. The comparative method contributed to illustrating the peculiarities of the Israeli innovation work in higher education.

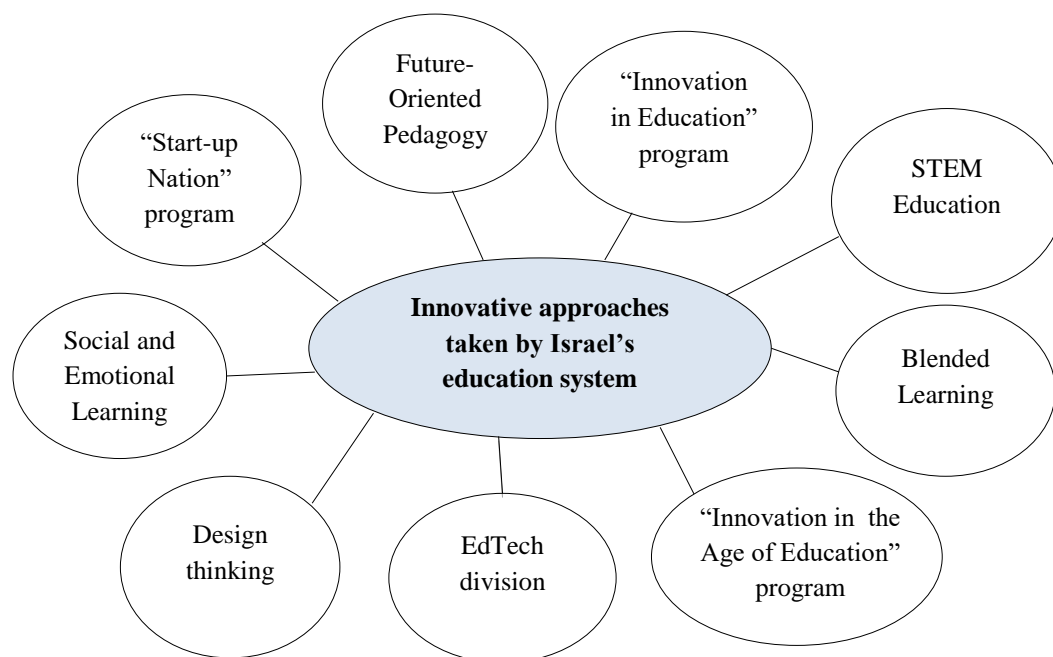
### **4. Results obtained and discussions**

Israel has a thriving innovative ecosystem in education, with a focus on technology and entrepreneurship. This ecosystem includes a variety of stakeholders, including startups, investors, government agencies, and academic institutions, working together to promote innovation in education. One of the key elements of this ecosystem is the strong support for startups and entrepreneurs in the education space. Israel is home to a large number of EdTech startups, which are supported by a range of incubators and accelerators. These organizations provide mentoring, funding, and other resources to help entrepreneurs bring their ideas to market.

Another important aspect of the innovative ecosystem in Israel is the close collaboration between industry and academia. Israeli universities have strong ties with the private sector,

which has helped to create a culture of innovation and entrepreneurship. Many universities also have dedicated research centers and programs focused on EdTech and other innovative approaches to education. The Israeli government has played an important role in fostering the innovative ecosystem in education. The Ministry of Education's Experimental R&D and Initiatives Division, for example, supports a range of programs and initiatives aimed at promoting innovation in education, including the Future-Oriented Pedagogy program.

In the following diagram, the author has summarized the initiatives that shows innovative approaches taken by Israel's education system.



**Figure 1. The initiatives that show innovative approaches taken by Israel's education system**

Source: developed by the author based on 9

The author examined what processes and initiatives exist in Israel to promote study programs and initiatives aimed at responding to the challenges of the future. Below are the various projects that were created in Israel in order to develop an innovative pedagogy:

1. The Israeli Ministry of Education has launched a program called "Education in the Age of Innovation" aimed at promoting innovative pedagogy in schools. The program includes initiatives such as professional development for teachers, funding for innovative projects, and the use of digital technologies to support teaching and learning. "Education in the Age of Innovation" is a program in Israel that aims to transform the education system by integrating innovative technologies and pedagogies. The program is designed to equip students with the skills and knowledge needed to thrive in a rapidly changing world. The program was initiated by Israel's Ministry of Education in collaboration with the National Digital Israel Initiative. The program is based on the principles of "future-oriented pedagogy," which emphasizes critical thinking, creativity, collaboration, and communication skills. The program aims to develop students' digital literacy, promote innovation and entrepreneurship, and foster a culture of lifelong learning. One of the key components of the program is the use of innovative technologies such as virtual and

augmented reality, coding, and robotics. These technologies are integrated into the curriculum to enhance learning outcomes and promote student engagement. The program has been implemented in schools across Israel, and there have been several studies and reports on its effectiveness. The study found that the program had a positive impact on teachers' attitudes towards technology integration and helped to develop their pedagogical skills [2]. Overall, the "Education in the Age of Innovation" program represents a significant shift towards a more innovative and future-oriented education system in Israel.

2. Another project was created with the support of the education system named EdTech division [4]. The EdTech division in Israel education refers to the incorporation of technology into the learning process to enhance the quality of education. It focuses on developing and implementing digital tools and solutions to improve teaching and learning outcomes, increase access to education, and enhance the overall educational experience. The division works closely with educational institutions, teachers, and students to identify their needs and develop innovative solutions that address their challenges. The EdTech division in Israel is led by the Ministry of Education, which has established various initiatives and programs to support the integration of technology in education [14, p. 127]. These initiatives include the Digital Israel program, which aims to provide every student with a digital device and access to the internet, and the Digital Leaders program, which trains teachers to become experts in educational technology and provides them with ongoing professional development.
3. The other initiative that is used in education in Israel both among the educational staff and in the classroom is Design Thinking. Design thinking is a human-centered problem-solving methodology that has been increasingly applied to education in recent years. In the Israeli context, design thinking has been used as an innovative approach to promote creativity and innovation in education. Design thinking in education has been applied to a range of different areas, such as curriculum development, teacher training, and the design of physical learning environments. For example, in Israel, design thinking has been used to develop new teaching methods, create innovative learning spaces, and foster collaboration and teamwork among students [13].
4. One of the most successful initiatives in Israel's education system is the "Education for Excellence" program [2]. This program aims to improve academic achievement and develop leadership skills among students from underprivileged backgrounds. The program provides students with additional support and resources, including tutoring, mentoring, and summer camps, to help them succeed academically.
5. In addition, Israel has developed several programs to promote innovation and entrepreneurship among students. For example, the "Start-Up Nation" program provides funding and resources to high school students interested in developing their own tech start-ups [12]. The program aims to foster an entrepreneurial mindset among students, teaching them valuable skills in business and technology.
6. Israel has a strong emphasis on science, technology, engineering, and math (STEM) education, which has been a key driver of its innovative teaching strategies. STEM education has been shown to prepare students for the demands of the 21st century workforce, and Israel has recognized the importance of this [7].

7. Another educational approach that combines traditional face-to-face classroom instruction with online learning activities is Blended learning. Blended Learning is seen as a way to enhance the learning experience for students and improve learning outcomes [10]. By combining traditional in-person teaching with online resources and tools, students are able to have a more personalized and flexible learning experience that meets their individual needs [11, p. 2]. One of the key benefits of Blended Learning in Israel is that it allows educational institutions to overcome some of the limitations of traditional classroom teaching, such as limited class sizes and scheduling conflicts. With online learning, students can access course materials at their own pace and on their own schedule, while still having the opportunity to engage in discussions and interact with their peers and instructors during in-person class sessions.

Some examples of Blended Learning in Israel include the Open University of Israel, which offers a variety of online courses and degree programs, and the Israeli Ministry of Education's virtual school, which provides online learning opportunities for K-12 students.

However, there is still a need for teachers to be trained in the use of technology and for schools to provide adequate resources to support this approach. The integration of technology in the classroom is a challenge that many schools around the world are facing.

8. In order to respond to the challenges in the emotional field of the students, a program based on social-emotional learning is used. In recent years, Israel has also focused on developing social and emotional learning (SEL) programs to support student well-being and mental health [8]. SEL programs aim to teach students skills such as self-awareness, self-regulation, and empathy, which can help them to manage their emotions and build positive relationships with others.

The potential benefits of SEL programs are significant, as they can improve academic achievement, reduce behavior problems, and promote positive social behavior. However, implementing SEL programs can be a challenge, as they require significant resources and training for teachers.

9. Israel has also developed several programs to promote innovation and entrepreneurship among students. For example, the "Start-Up Nation" program provides funding and resources to high school students interested in developing their own tech start-ups. The program aims to foster an entrepreneurial mindset among students, teaching them valuable skills in business and technology. Building Innovation and entrepreneurship is a crucial component of promoting innovative pedagogy in Israel. By creating networks of organizations and individuals that work together to promote innovation and entrepreneurship, Israeli educators can help to ensure that their students are well-equipped to succeed in the rapidly changing world of the 21st century.

One of the important components of innovative pedagogy is understanding and using the principles of future-oriented pedagogy. Future-oriented pedagogy is an approach to education that has been developed by the Experiments and Initiatives R&D Division of the Israeli Ministry of Education. This approach is based on the idea that education should prepare students for the future, rather than simply teaching them about the past. It is a forward-looking approach that emphasizes creativity, innovation, and problem-solving skills.

The principles of future-oriented pedagogy include: personalization, collaboration, informalization, glocalization, adaptivity and self-integration.

Personalization refers to the adaptation of educational resources to the learner's unique needs, aspirations, and situation.

Collaboration is a process where individuals work together to achieve a shared goal, improving learning effectiveness and helping individuals understand the complex and changing reality better.

Informalization relates to the phenomenon of human activity performed outside of formal organizational and institutional frameworks, which creates new opportunities for learning and action. However, the challenge is having society recognize the knowledge, experience, skills, and accomplishments gained through informal activities.

Glocalization is the combination of global and local skills, identity, and consciousness within the learner, providing a harmonious balance to act and succeed in both spheres simultaneously. Integrative, balanced, and exploitive local strategies can mitigate the contradictions between global and local dimensions. Applying the principle of glocalization in education can help learners act and succeed in both global and local spheres, motivating them to choose the best balance point suited to changing reality. It also exposes learners to wider geographical and cultural circles, encouraging them to deal with conflicting challenges. The modern era is characterized by rapid and complex changes that create an unprecedented challenge for individuals, organizations, and nations to adapt to.

The added value of the principle of adaptivity lies in the ability to shape and apply the desired future in the changing reality to preserve organizational or personal relevance. Adaptivity in education enhances the ability of learners and systems to adapt, act and succeed in a changing reality. The ability to learn and teach for a vague and unknown future is a challenge that requires coping with two levels of uncertainty stemming from the complexity of modern reality and its changeability.

The principle of self-integration, which refers to complete self-formation, helps the learner navigate the changing reality by having a personal compass and identity. Focusing on acquiring relevant personal attitudes and characteristics that support effective adaptation, such as self-confidence, personal motivation, and authenticity, is more effective than focusing on the acquisition of generic skills.

These principles of future-oriented pedagogy fit well with innovative pedagogical approaches in Israel, which also emphasize the importance of personalized learning, collaboration, project-based learning, and technology-enhanced learning. By incorporating these principles into their teaching practices, educators in Israel can provide students with the skills and knowledge they need to succeed in the rapidly changing world of the 21st century.

The ecosystem of innovation in Israel has been instrumental in promoting innovative pedagogy in education. An ecosystem of innovation refers to a network of organizations and individuals that work together to promote innovation and entrepreneurship. In the context of education, an ecosystem of innovation includes schools, universities, technology companies, and other organizations that work together to promote innovative pedagogy.

Despite the success of many innovative teaching strategies in Israel, there are still challenges to be addressed. One of the main challenges is the achievement gap between students from different socio-economic backgrounds. While programs like "Education for Excellence" have been successful in closing this gap, more work needs to be done to ensure that all students have access to high-quality education.

Another challenge is the integration of technology in the classroom. While many schools have adopted blended learning models, there is still a need for teachers to be trained in the use of technology and for schools to provide adequate resources to support this approach.

Looking to the future, there is much potential for further innovation in Israeli education. As the country continues to invest in STEM education and social and emotional learning, there will likely be new programs and approaches developed to support these areas [3]. Additionally, as the COVID-19 pandemic has highlighted the importance of remote learning, there may be further opportunities to develop and refine online learning tools and resources [1, p. 586].

Innovation and innovative teaching strategies are crucial for the development of modern educational systems. Israel has been a leader in this area, with successful programs and approaches that have improved student learning outcomes. While there are challenges to be addressed, there is much potential for further innovation in Israeli education. As the country continues to invest in STEM education, social and emotional learning, and technology in the classroom, there will likely be new programs and approaches developed to support these areas, benefiting students and the wider community.

As described earlier - there are important principles found in future-oriented pedagogy to promote innovative pedagogy. One of the prominent principles is the principle of collaboration. This principle is also the most important component in the ecosystem of innovation.

## 5. Conclusions

Innovative pedagogy is essential for preparing students for the challenges of the 21st century. By building an ecosystem of innovation in education, we can provide a supportive framework for teachers and students to explore new ideas and experiment with new approaches to teaching and learning. This, in turn, can help improve student engagement, motivation, and academic achievement, and create a culture of innovation that will benefit our schools and communities for years to come.

The Israeli Ministry of Education, the Israel Innovation Authority, and non-profit organizations have all played a significant role in fostering a culture of innovation in education. Through the development of new technologies, the use of design thinking frameworks, and the provision of resources and support for teachers, Israel has become a global leader in education innovation. The success of the ecosystem of innovation in Israel serves as a valuable model for other countries seeking to promote innovative pedagogy in education. By investing in innovation and providing support for teachers and organizations working to develop new approaches to teaching and learning, countries can create an ecosystem of innovation that drives significant advances in education.



There are still challenges on the way to building an optimal innovative pedagogy. But many efforts are being made in cooperation with the education system, government bodies, entrepreneurs, and external companies in order to equip the students with the tools that will help them function for the better and succeed in functioning in a changing reality.

In conclusion of the article, it can be noted that many efforts are being made to create innovative pedagogy based on critical thinking tools, innovative technologies, many programs, collaborations, and entrepreneurship. Israel is still in the process of development, the field of innovative pedagogy needs to be explored and developed, but it seems that there is a desire and willingness to move in the direction and provide the best response in line with future trends - through future-oriented pedagogy.

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**Rezumat**

În articolul dat se examinează abordările inovatoare implementate în sistemul educațional israelian cu scopul promovării pedagogiei inovatoare și contribuția lor potențială la îmbunătățirea calității predării și învățării. Autorul subliniază recunoașterea tot mai mare a necesității implementării unor metode inovatoare de predare care să dezvolte creativitatea, gândirea critică și abilitățile de rezolvare a problemelor, pregătind studenții pentru provocările moderne cu care se vor confrunta. Israelul a devenit lider mondial în inovarea educațională, un exemplu convingător de cercetare în promovarea pedagogiei inovatoare printr-un ecosistem de inovare. Ministerul israelian al Educației a inițiat diverse programe, inclusiv dezvoltarea profesională a profesorilor, finanțarea proiectelor inovatoare și integrarea tehnologiilor digitale pentru a sprijini predarea și învățarea pentru a dezvolta pedagogii inovatoare în școli. Cercetările au demonstrat, de asemenea, că crearea unui ecosistem de inovare poate avea un impact semnificativ asupra promovării pedagogiei inovatoare, ceea ce va duce la creșterea angajamentului studenților, la îmbunătățirea reușitei academice și la creșterea gradului de responsabilitate pentru procesul de învățare.

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**Cuvinte-cheie:** ecosistem, pedagogie inovatoare, Israel, abordări inovatoare, educație, pedagogie orientată spre viitor

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**Аннотация**

В этой статье рассматриваются инновационные подходы, реализованные в системе образования Израиля для продвижения инновационной педагогики, и их потенциальный вклад в повышение качества преподавания и обучения. Автор подчеркивает растущее признание необходимости инновационных методов обучения, которые развивают креативность, критическое мышление и навыки решения проблем, готовя учащихся к современным вызовам, с которыми они столкнутся. Израиль стал мировым лидером в области инноваций в сфере образования, что является убедительным примером исследования продвижения инновационной педагогики через инновационную экосистему. Министерство образования Израиля инициировало различные программы, включая профессиональное развитие учителей, финансирование инновационных проектов и интеграцию цифровых технологий для поддержки преподавания и обучения с целью развития инновационной педагогики в школах. Исследования также показали, что создание инновационной экосистемы может существенно повлиять на продвижение инновационной педагогики, что приведет к повышению вовлеченности учащихся, повышению академической успеваемости и усилению чувства ответственности за процесс обучения.

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**Ключевые слова:** экосистема, инновационная педагогика, Израиль, инновационные подходы, образование, ориентированная на будущее педагогика

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