

INTEGRATING ENTREPRENEURIAL EDUCATION AND ACTIVE LEARNING FOR SUSTAINABLE DEVELOPMENT

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Abstract

This article investigates the role of entrepreneurial education and active learning in promoting sustainable development, highlighting how these educational approaches can foster responsible and capable future leaders. As sustainable development becomes a necessity rather than a choice, education must adapt to equip students with the mindset and skills needed to tackle global environmental and economic challenges. The study focuses on the impact of the Junior Achievement (JA) program, implemented in high schools in Romania and the Republic of Moldova, showcasing how it helps cultivate an entrepreneurial consciousness and essential competencies for sustainability. Through a mixed-methods approach, combining literature analysis, surveys, and case studies, the study examines how entrepreneurial education and active learning influence students' understanding and engagement with sustainability issues. Findings indicate that JA promotes innovative thinking, critical awareness, and practical skills, preparing students to address the environmental and social impacts of their future professional choices. The article concludes with recommendations for expanding sustainable-focused entrepreneurial education in the school systems of both countries, supporting an integrative approach to developing a responsible and resilient generation.

Keywords: Entrepreneurial education, Active learning, Sustainable development, Critical thinking skills

Introduction

Sustainable development is a key goal for contemporary societies, integrating ecological, economic, and social dimensions to find sustainable solutions to global issues, such as climate change, resource management, and reducing inequalities (Brundtland, 1987; UNESCO, 2017). Education is recognized as a central pillar of sustainable development, capable of fostering skills and mindsets oriented toward

change and responsibility for the environment and society (UNESCO, 2020). Entrepreneurial education, although initially focused on developing business skills such as strategic planning and resource management, has expanded to include elements of social and environmental responsibility. In this sense, entrepreneurship is seen as a driver for innovation and adaptability, essential aspects for a resilient and sustainable economy (Gibb, 2002; European Commission, 2012). Thus, entrepreneurial education is not only a path to fostering an entrepreneurial spirit but also a means of cultivating responsible citizens who can actively contribute to a circular and sustainable economy (European Commission, 2020).

Active learning complements entrepreneurial education, providing students with a practical and interactive framework. This approach emphasizes a student-centered approach, where methods such as project-based learning, simulations, and case studies allow them to apply knowledge concretely (Bonwell & Eison, 1991; Prince, 2004). Active learning methods offer students the opportunity to develop critical thinking, collaboration skills, and a sense of responsibility, which are fundamental for building a generation aware of the social and ecological implications of their decisions (Kolb, 1984). In Romania and the Republic of Moldova, the Junior Achievement (JA) program is a remarkable example of integrating entrepreneurial education and active learning in high schools. JA is an international initiative promoting the development of entrepreneurial and financial skills, equipping young people with relevant economic knowledge and skills (Junior Achievement, 2022). The JA program allows students to develop and implement real business ideas, encouraging them to think critically about the ecological and social impact of their entrepreneurial activities (Rae, 2010; JA Romania, 2018). Through this program, students gain access to resources and support from local entrepreneurs, exposing them to practical experiences that promote not only economic success but also commitment to sustainable values.

This study aims to examine how entrepreneurial education and active learning contribute to the development of sustainability competencies. By analyzing the impact of the JA program on high school students in Romania and the Republic of Moldova, this research highlights how these educational practices shape students into young

people prepared to contribute to a sustainable economy. Through a mixed-method approach, including literature analysis, questionnaires, and semi-structured interviews with students and teachers, the study will explore students' perceptions of the role of entrepreneurial education in sustainable development, focusing on innovation and responsible thinking skills (Creswell, 2014). This integrative approach to entrepreneurial education and active learning aligns with UNESCO's Sustainable Development Goals and provides a solid basis for educational policy recommendations. The goal is to provide an educational framework that not only supports young people's professional development but also systematically and coherently promotes social and environmental responsibility.

Research methodology

To investigate the impact of entrepreneurial education and active learning on sustainable development among students, this study uses a mixed methodology, combining qualitative and quantitative research methods. This combined approach allows for a deeper understanding of how these educational methods influence students' attitudes, skills, and behaviors toward sustainability. The primary objective of the research is to assess the contribution of the Junior Achievement (JA) program, implemented in high schools in Romania and the Republic of Moldova, to the development of students' entrepreneurial and responsible thinking skills. The research was conducted in three main stages:

Documentary analysis

We began with a review of the specialized literature to identify current approaches and relevant theories in entrepreneurial education and sustainability, as well as the effectiveness of active learning in developing these skills. The primary sources were academic research in the fields of education for sustainable development, entrepreneurial education, and active learning methods. The literature provided a theoretical framework for interpreting the results obtained. This documentary analysis forms the theoretical foundation of the research, providing the context and conceptual framework necessary for understanding the role of entrepreneurial education and active learning in promoting sustainable development. This analysis is structured along three

main axes: (1) the concept and importance of sustainable development in education, (2) the contribution of entrepreneurial education to sustainability competencies, and (3) the value of active learning in the context of sustainable development.

The Concept and Importance of Sustainable Development in Education

Sustainable development, first defined in the Brundtland Report (1987), is an approach that combines environmental protection, social equity, and economic growth in a sustainable way. This concept was later integrated into educational goals by UNESCO, which emphasized the need to develop education for sustainability (ESD) that prepares young people to address global challenges (UNESCO, 2017). In this context, education plays a critical role as it can contribute to the formation of environmental awareness and the development of complex problem-solving skills. UNESCO (2020) underscores that education for sustainable development (ESD) should be integrated into the curriculum to promote critical thinking, collaboration, and innovation skills necessary for a responsible society. Through ESD, young people can become active agents of change, gaining knowledge about resource use, environmental protection, and social inclusion (UNESCO, 2017).

The Contribution of Entrepreneurial Education to Sustainability Competencies

Entrepreneurial education initially focused on developing economic skills and specific abilities necessary to launch and manage a business. However, in recent years, this concept has evolved to include elements of social responsibility and sustainability. Gibb (2002) argues that entrepreneurial education should promote not only profitability but also responsible innovation and business ethics. Thus, today, entrepreneurial education has a broader purpose, aiming to form individuals who can respond to economic, social, and environmental challenges. Entrepreneurial education provides a platform for developing essential sustainability skills, such as critical thinking, creativity, and adaptability. Additionally, through business projects and simulations, entrepreneurial education enables students to develop an understanding of the economic impact on the environment and community. The Junior Achievement (JA) program, for example, supports these principles and integrates sustainability values through its courses and activities, thus promoting responsible business and green innovation (JA

Romania, 2018). Another essential aspect is the contribution of entrepreneurial education to fostering an action-oriented mindset and calculated risk-taking, which are crucial in a circular and sustainable economy. For this reason, the European Commission (2012) recommends the inclusion of entrepreneurial education in school curricula to develop transversal skills necessary for future economies.

The Value of Active Learning in the Context of Sustainable Development

Active learning is defined as an educational method that places the student at the center of the learning process, engaging them actively in exploring and applying knowledge (Bonwell & Eison, 1991). This method is recognized for its ability to develop critical thinking, collaboration, and problem-solving skills, all essential for supporting sustainable development goals. Specifically, active learning provides students with the opportunity to understand the complexity of environmental and social issues through methods such as projects and case studies. Through the "learning by doing" approach, students gain a practical understanding of the impact of their decisions on the environment and society, as well as the ability to generate innovative solutions to real challenges (Kolb, 1984). This type of practical learning contributes to the formation of citizens who not only know the theory but are also prepared to act responsibly. Active learning methods are also an effective tool for entrepreneurial education, as they allow students to develop a miniature business or simulate real economic processes, thus understanding the ethical and sustainable implications of economic decisions (Prince, 2004). For instance, within the JA program, students are encouraged to develop businesses that have a positive impact on the community and adhere to sustainability principles, helping them build responsible entrepreneurial thinking (JA Romania, 2018).

The documentary analysis reveals that integrating entrepreneurial education and active learning in the context of sustainable development is essential for preparing a generation ready to face future challenges. The JA program serves as a concrete example of an initiative that combines entrepreneurship with sustainability values and provides students with the tools needed to become responsible citizens and ethical entrepreneurs. The results of this documentary analysis form the basis of the hypothesis that entrepreneurial education, supported by active learning methods, can significantly contribute to the formation of critical thinking, adaptability, and social responsibility

competencies—all essential for sustainable development.

Quantitative questionnaires

In the second phase, a survey was conducted through questionnaires targeting a sample of 100 high school students participating in the JA program, with 50 students from Romania and 50 from the Republic of Moldova. The questionnaires included questions on a Likert scale (1-5) regarding: students' awareness of the importance of sustainable development, skills acquired through the JA program, students' perception of the impact of entrepreneurial education on their responsibility toward the environment and community. The questionnaires were administered electronically and were anonymous to ensure confidentiality of responses. The responses were statistically analyzed, calculating averages and variances to evaluate general trends and differences between the responses of students from the two countries.

Students' awareness of the importance of sustainable development

Students were asked to rate their understanding of the importance of sustainable development on a Likert scale from 1 (very low) to 5 (very high). The results indicated a significant difference between students from Romania and the Republic of Moldova. In Romania, the average response was 4.3, suggesting a relatively high level of awareness regarding the importance of sustainable development. In the Republic of Moldova, the average response was 3.8, indicating a moderate to high level of awareness, but slightly below the average in Romania. Students in Romania seem to have a higher awareness of the importance of sustainable development, which may be influenced by the educational resources available or the emphasis placed on this subject in participating schools.

Skills acquired through the JA Program

Students evaluated the skills they developed through participating in the JA program, such as critical thinking, collaboration, and leadership skills. In Romania, the average reported skill level was 4.1, with the most frequently mentioned competencies being collaboration and critical thinking. In Republic of Moldova, the average skill level was 4.0, with the most developed competencies reported as responsibility and problem-solving. The difference of only 0.1 points suggests that the JA program is effective in developing entrepreneurial skills in both countries.

Students' perception of the impact of Entrepreneurial Education on their responsibility toward the environment and community

In this section, students were asked to what extent the JA program helped them become more responsible toward the environment and community. In Romania, the average response was 4.2, indicating a positive perception of the impact of entrepreneurial education on environmental responsibility. In Republic of Moldova the average response was 4.0, showing that students in Moldova are also positively influenced, though slightly less convinced of the connection between entrepreneurial education and environmental responsibility. Both groups of students consider that entrepreneurial education has increased their sense of responsibility toward the environment and community. However, the results in Romania suggest a slight preference for linking entrepreneurial education with sustainability goals, which may reflect a more specific approach within the JA program. The analysis of this data shows that the Junior Achievement program has a positive impact on sustainability awareness and the development of entrepreneurial competencies in both Romania and the Republic of Moldova. The observations highlight that the levels of awareness and perceptions of social and environmental responsibility are slightly higher in Romania, suggesting contextual and cultural differences that merit further exploration.

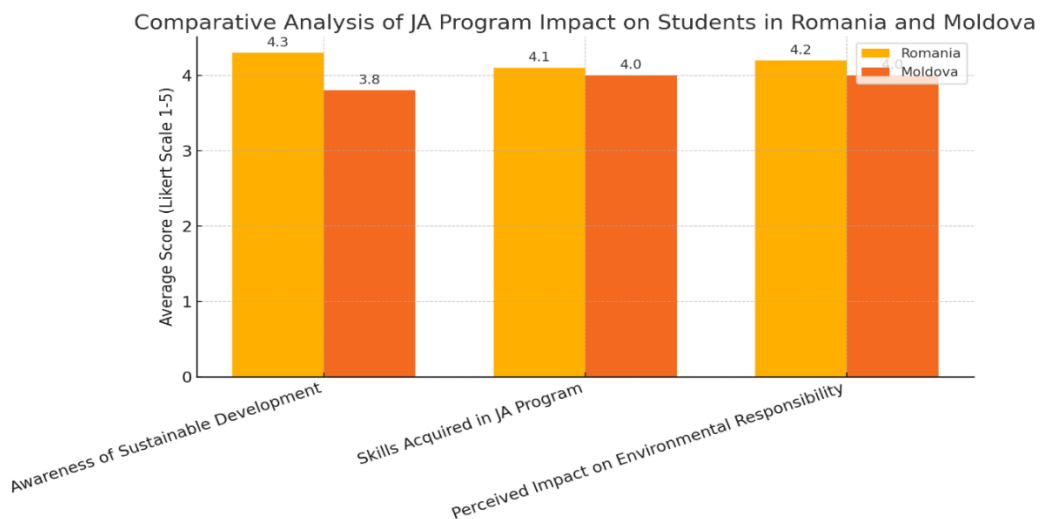


Figure 1

Correlation between variables	Romania	Republic of Moldova
Awareness of sustainability and JA skills	0.255	-0.119
Awareness of sustainability and environmental responsibility	0.739	0.610
JA Skills and Environmental Responsibility	0.056	-0.383

Table 1. Correlation between variables

Comparative Interpretation:

Awareness of Sustainability and JA Skills: In Romania, there is a moderate positive correlation (0.255), suggesting a slight association between sustainability awareness and the entrepreneurial skills acquired in the JA program. In Moldova, the correlation is negative (-0.119), indicating a slightly inverse relationship, which may imply that students do not perceive a direct connection between these skills.

Awareness of Sustainability and Environmental Responsibility: In Romania, the correlation is strong (0.739), indicating that students who are aware of the importance of sustainable development also feel more responsible toward the environment. In Moldova, the correlation is also positive but weaker (0.610), suggesting a moderate association between these two variables.

JA Skills and Environmental Responsibility: In Romania, this correlation is low (0.056), indicating that students do not directly associate entrepreneurial skills with environmental responsibility. In Moldova, the correlation is negative (-0.383), indicating a possible perception that skills acquired through JA are not necessarily linked to environmental responsibility.

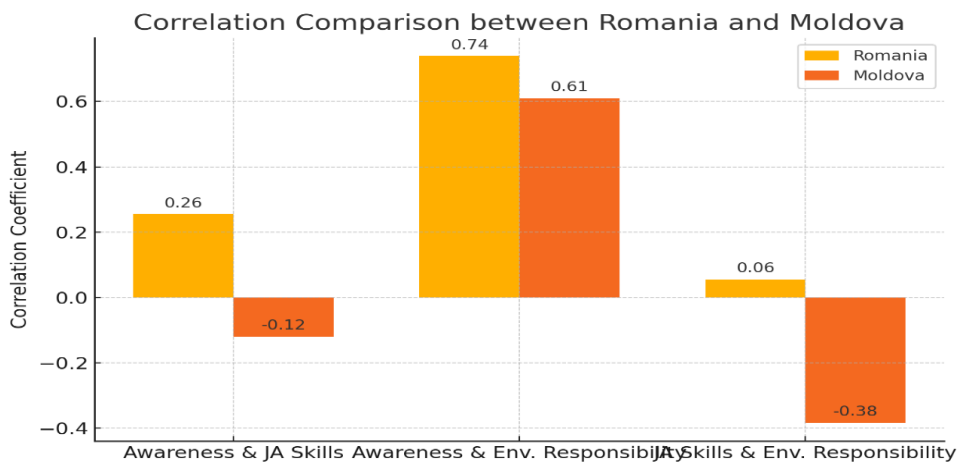


Figure 2

This model highlights cultural and contextual differences in the perceptions of students from Romania and Moldova. Romanian students tend to link sustainability awareness more closely with environmental responsibility, while in Moldova, this connection is perceived more weakly, with even an inverse relationship between entrepreneurial skills and environmental responsibility. These differences may suggest the need for adjustments to the JA program to better suit the specific context of each region.

Semi-structured interviews

For a more detailed perspective, semi-structured interviews were conducted with 10 teachers and 20 students participating in the JA program from each country. The interviews covered topics related to the personal experiences of students and teachers in using active learning methods, as well as the observed effects of entrepreneurial education on social and ecological skills. For a detailed perspective on the impact of the JA program, the semi-structured interviews allowed for the exploration of key themes from the personal experiences of participants: **experience with active learning methods, effects of entrepreneurial education on social and ecological competencies, teachers' perception of the effectiveness of the JA program, obstacles in teaching sustainability principles, suggestions for improving program implementation**. Students and teachers discussed using projects and case studies and described how these methods motivate students to engage actively, collaborate, and

develop critical thinking skills. Teachers noted that active methods support student engagement with the topics discussed and contribute to a better understanding of real-world issues. Both groups identified positive effects on students' sense of responsibility toward the environment and community. Students reported increased sensitivity to the environmental impact of economic decisions, while teachers observed improved collaboration and communication among students, contributing to the development of a sustainable mindset. Teachers described the JA program as effective in developing sustainable awareness and the skills needed for a sustainable economy. However, they noted that the program's impact largely depends on adaptation to the national context and the resources available in each school. Teachers mentioned challenges such as the lack of specific educational resources and the time needed for complex active learning activities. They also pointed out difficulties in integrating sustainability topics in a way that is relevant to all students. Participants suggested better adaptation of JA materials to local needs, more training sessions for teachers, and increased collaboration with environmental organizations and private sector partners.

Data was collected from March to June 2024. The surveys were distributed online to selected high schools in Romania and the Republic of Moldova that implement the JA program, while the interviews were conducted via video platforms to facilitate participant access. The survey results were analyzed using descriptive and inferential statistical methods. The data was processed in SPSS software to calculate frequencies, means, standard deviations, and to compare the results between the student groups in Romania and Moldova. The interviews were transcribed and thematically analyzed to identify key categories and patterns in students' and teachers' perceptions of the role of the JA program in sustainable development. Thematic coding focused on identifying relevant responses regarding the effectiveness of active learning methods, the impact on students' environmental awareness, and the challenges encountered.

Limitations of the research

This study presents several limitations that should be considered when interpreting the results: sample size, variability in program implementation, subjectivity in qualitative data, limited scope of environmental and social indicators, cross-cultural differences,

time constraints for data collection.

Although the sample was selected to be representative, the relatively small sample size of students and teachers from each country limits the generalizability of the findings to a broader population. The impact of the JA program may differ between schools, depending on how the program is implemented locally. This variability can influence students' and teachers' perceptions of the program's effectiveness in promoting sustainability. While thematic coding was used to minimize bias, qualitative data from interviews inherently involves subjective interpretations from participants. Personal experiences and perspectives may vary, potentially affecting the consistency of responses. The study primarily focused on students' self-reported awareness and perception of sustainability rather than direct behavioral outcomes or specific environmental and social indicators. This limits the ability to measure long-term impact. The study did not account for potential cultural differences between Romania and the Republic of Moldova that might affect perceptions and attitudes towards entrepreneurial education and sustainability. Given the short data collection period, there was limited opportunity to capture longer-term effects of the JA program on students' sustainable development competencies. Addressing these limitations in future research could provide a more comprehensive understanding of the JA program's impact and contribute to refining educational practices for sustainability.

Results and Discussion

The analysis of survey and interview data provides valuable insights into the impact of the Junior Achievement (JA) program on students' sustainability awareness and entrepreneurial skills in Romania and the Republic of Moldova. These results are discussed below, organized by the key research dimensions. The survey results indicate that students in both countries have a relatively high level of awareness of sustainable development, though with a notable difference between the two countries. The average awareness score was 4.3 in Romania and 3.8 in Moldova, suggesting a higher level of sustainability awareness among Romanian students. This difference may be attributed to various factors, such as educational resources, national policies on environmental education, or school-level emphasis on sustainability topics. Romanian schools may

have integrated sustainability more extensively into their curricula, or students may have more exposure to sustainability-related content. This higher awareness level could contribute positively to students' future roles as responsible citizens and entrepreneurs.

In both countries, students reported that participation in the JA program helped them develop critical skills. The most frequently mentioned skills in Romania were collaboration and critical thinking, with an average score of 4.1. In Moldova, students highlighted responsibility and problem-solving as the most improved skills, with an average score of 4.0. The similar scores suggest that the JA program effectively develops essential entrepreneurial skills across both countries. However, the variation in dominant skills could be due to local adaptations of the program or differences in students' educational priorities. The emphasis on collaboration in Romania may indicate a stronger focus on teamwork, while the emphasis on responsibility and problem-solving in Moldova could reflect a need for self-sufficiency and practical solutions in entrepreneurial settings.

In assessing the perceived impact of entrepreneurial education on students' sense of responsibility toward the environment and community, students in both countries reported positive effects. In Romania, the average score was 4.2, while in Moldova, it was slightly lower at 4.0. These findings suggest that the JA program positively influences students' sense of responsibility toward the environment and community in both countries, reinforcing the program's role in fostering socially responsible mindsets. The slightly higher score in Romania may reflect a more direct approach to linking entrepreneurship with sustainability, possibly due to specific program materials or teacher emphasis on environmental and social issues within entrepreneurial contexts.

Conclusion

The findings suggest that the JA program positively impacts students' sustainability awareness, entrepreneurial skills, and social responsibility, though there are variations based on contextual factors in each country. Students in Romania show slightly higher levels of awareness and responsibility, which could be due to contextual and educational factors. Both qualitative and quantitative data underscore the effectiveness of the JA program in enhancing key competencies for sustainable

development but highlight areas for potential improvement, such as integrating more locally relevant content and addressing resource limitations. These results reinforce the importance of incorporating sustainability into entrepreneurial education and suggest that targeted adjustments to the JA program could enhance its effectiveness in different cultural and educational contexts.

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