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RESULTS OF TWO WORKSHOPS ON FINANCIAL EDUCATION FOR SECONDARY SCHOOL STUDENTS

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Abstract: This article summarizes and analyzes the results of two financial education workshops given to secondary school students in the municipality of El Marqués, Querétaro, during 2023 and 2024. The first workshop was aimed at 40 students from two public secondary schools, while the second was implemented with 33 students from a technological high school in the same municipality. Both workshops were held at the facilities of the Polytechnic University of Querétaro (UPQ), as part of a comprehensive financial education program for residents of different communities in the municipality of El Marqués, Querétaro. The content covered fundamental concepts of saving and investing. In 2024, the syllabus was expanded to include financial instruments such as CETES, cryptocurrencies, metals, savings for entrepreneurship, and the stock market, also incorporating a stock market simulator adapted by one of the teachers in the area. Through pre- and post-workshop diagnostic questionnaires, significant improvements were observed in the performance of both groups, attributable to both the expansion of the subject matter and the use of active methodologies. Based on previous experiences documented in Mexico and Latin America, the scope, limitations, and educational implications of early financial education are discussed.

Keywords: Financial Education, High School, Savings.

Introduction

In recent decades, financial education has become established as an indispensable skill for life in society, especially in contexts where markets, financial instruments, and personal economic decisions are increasingly complex. In Mexico, despite the growing availability of financial products and digital services, levels of financial literacy remain low among the general population and, in particular, among children, adolescents, and young people. This situation has been documented by national and international organizations, which agree that limited financial education represents an obstacle to individual well-being, financial inclusion, and sustainable economic development (OECD, 2018; CONDUSEF, 2023).

Empirical evidence for Mexico shows a significant lag in the mastery of basic financial concepts. According to the National Survey on Financial Inclusion (ENIF), a considerable proportion of young people do not understand basic concepts such as interest calculation, inflation, or risk diversification, even though many of them already use formal or digital financial products (INEGI & CONDUSEF, 2022). In particular, the ENIF results indicate that less than 40% of young people between the ages of 18 and 29 have basic financial knowledge, which limits their ability to make informed decisions about savings, credit, and investment.

Several studies have warned that the low level of financial literacy among young Mexicans has direct and long-term consequences. Among the most relevant are early and poorly planned indebtedness, limited savings capacity, lack of foresight in the face of economic contingencies, and greater vulnerability to fraud or high-risk financial schemes (Lusardi & Mitchell, 2014). In the Mexican context, these problems are exacerbated by high levels of informal employment and socioeconomic inequality, factors that reduce access to reliable financial information and institutional protection mechanisms (BBVA Research, 2021).

Likewise, the absence of systematic financial education at the secondary and high school levels has been identified as a structural weakness of the national education system. Although there are isolated efforts promoted by financial institutions, public agencies, and universities, financial education is not fully integrated into compulsory curricula, resulting in fragmented and unequal education across regions and social groups (CONDUSEF, 2023). This shortcoming is particularly relevant in municipalities with high socioeconomic diversity, where students face complex financial realities from an early age.

The consequences of this situation are also reflected in the economic behavior of young people. Studies conducted in Mexico show that low financial literacy is associated with a lower propensity to save formally, frequent use of informal or high-cost credit, and a limited understanding of investment instruments available in the domestic market, such as Federal Treasury Certificates (CETES) or investment funds (INEGI & CONDUSEF, 2022; BBVA Research, 2021). In the long term, these practices contribute to reproducing cycles of economic vulnerability and financial exclusion.

Given this scenario, various authors agree on the need to implement early financial education strategies that are contextualized and use active methodologies that allow students to link theoretical concepts to real-life situations. In particular, the literature highlights the value of practical experiences, such as financial simulators and decision-making exercises, to strengthen meaningful learning and the development of financial skills in young people (OECD, 2018; Lusardi & Mitchell, 2014).

In this context, public universities play a strategic role as agents of knowledge socialization, linking teaching and university social responsibility with the needs of their environment. This article analyzes two experiences of financial education workshops given at the Polytechnic University of Querétaro to middle school and high school students in the municipality of El Marqués. Both experiences represent the beginning of a comprehensive financial education program that was initiated by five professors in the Administration Department of the University, which began with financial education courses for older adults. Based on these experiences, the aim is to contribute to the discussion on the relevance and impact of early financial education in Mexico, as well as to offer elements that support the incorporation of this type of initiative into formal educational programs.

Theoretical Framework

Financial education and culture have been approached from different theoretical perspectives that agree in recognizing them as essential components of economic and social development. In general terms, financial education is defined as the process by which individuals acquire the knowledge, skills, attitudes, and behaviors necessary to make informed and responsible financial decisions throughout their lives (OECD, 2018). Financial literacy, on the other hand, incorporates not only knowledge, but also values, practices, and social perceptions related to the use of money, saving, investing, and risk management (Atkinson & Messy, 2012).

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From a human capital perspective, Becker (1993) argues that investment in education generates long-term individual and social returns. From this perspective, early financial education can be considered a specific form of investment in human capital that strengthens individuals' ability to plan, save, invest, and deal with economic contingencies. In contexts such as Mexico, where large sectors of the population enter the labor market and begin using financial products at an early age, the absence of these skills increases the likelihood of inefficient economic decisions.

International literature has extensively documented the effects of low financial literacy. Lusardi and Mitchell (2014) show that young people with lower levels of financial education tend to take on more debt, save less, and plan poorly for retirement. These findings have been replicated in various countries and contexts, demonstrating that financial education influences not only knowledge but also observable economic behavior. In Latin America, these effects are amplified by social inequality, economic informality, and the limited penetration of formal educational programs in personal finance.

In the case of Mexico, several studies have pointed out that financial literacy lags significantly behind, both among young people and adults. The National Commission for the Protection and Defense of Financial Services Users (CONDUSEF, 2023) indicates that a considerable part of the population does not compare financial options, is unaware of concepts such as real interest rates, and lacks systematic savings habits. These shortcomings are most evident among young people, who often make their first financial decisions without solid conceptual tools.

A relevant element within the theoretical framework is the distinction between declarative financial education and applied financial education. While the former focuses on the transmission of concepts and definitions, the latter emphasizes experiential learning through practical exercises, simulations, and real-world problem solving (Arias, Gómez & Rojas, 2020). Empirical evidence suggests that applied approaches generate higher levels of understanding and knowledge retention, particularly among middle and high school students.

In this regard, the use of financial simulators has emerged as an effective teaching strategy. Simulators allow students to experience investment scenarios, analyze risks, and observe consequences without facing real losses, promoting meaningful learning (OECD, 2018). This approach is particularly relevant for teaching topics such as the stock market, diversification, and the risk-return relationship, concepts traditionally considered complex for young students.

From a contextual perspective, it is essential to consider local studies that analyze financial literacy in specific environments. In this area, the work of Sánchez Aguilar (2022) is a relevant contribution, examining financial literacy in micro and small businesses in the municipality of El Marqués, Querétaro. The authors identify limitations in financial knowledge, restricted use of formal instruments, and incipient financial planning, reinforcing the idea that low financial literacy is a structural phenomenon that is reproduced from an early age.

The relationship between financial education, entrepreneurship, and local deve-

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lopment has also been addressed by various authors. García and Villarreal (2019) point out that young people with greater financial education show a greater propensity for formal entrepreneurship and the strategic use of savings and investment. In contrast, the lack of financial training limits young people's ability to evaluate productive projects and manage resources efficiently.

Finally, from an economic education perspective, it is recognized that the early introduction of financial content contributes not only to the development of technical skills, but also to the formation of ethical and responsible attitudes towards money and consumption (Atkinson & Messy, 2012). In this context, public universities can play a key role as agents of knowledge transfer to earlier levels of education, linking economic theory with social practice.

This study is part of this theoretical body by analyzing two experiences of financial education workshops aimed at secondary and technical high school students, incorporating active methodologies and simulation tools. Based on this framework, it seeks to understand how the expansion of content and the use of applied strategies influence learning outcomes and the strengthening of youth financial culture.

A relevant aspect for theoretical analysis is the distinction between secondary and upper secondary education levels (high school or baccalaureate), as the specialized literature points to significant differences in financial learning processes between the two groups. Several studies indicate that secondary school students tend to have predominantly intuitive financial knowledge, based on family experiences and everyday money management, while high school students show a greater ability to understand abstract concepts such as compound interest, financial risk, and diversification (OECD, 2018).

In the case of secondary education, evidence suggests that financial education should focus on the formation of basic habits—such as systematic saving, spending planning, and responsible decision-making—rather than on mastery of complex financial instruments (Atkinson & Messy, 2012). At these ages, cognitive development and limited economic experience make it necessary to use familiar examples and practical activities that link financial concepts to everyday situations.

In contrast, at the high school level, young people tend to have greater cognitive maturity and, in many cases, direct experience in productive activities, temporary employment, or early-stage entrepreneurship. This allows for the introduction of more complex financial content, such as investment instruments, stock markets, government savings products, and basic notions of long-term financial planning (Lusardi & Mitchell, 2014). Studies conducted in Mexico show that upper secondary students perform better in financial literacy assessments when the content is linked to simulations and decision-making exercises (García & Villarreal, 2019).

These differences between educational levels reinforce the need to design differentiated and progressive interventions in financial education. Comparing middle school and high school students not only allows us to identify knowledge gaps, but also to evaluate the effectiveness of different teaching strategies according to educational level. In this sense, the joint analysis of both workshops is relevant for understanding how age, school level, and methodology influence financial learning outcomes.

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Development

General design of the workshops

The financial education workshops were developed using a descriptive and applied approach, with the aim of introducing economic and financial concepts to secondary and technical high school students through active teaching strategies. Both workshops were designed as brief university outreach interventions, aligned with the content of the Microeconomics course in the Business Administration and Management (LAGE) program at the Polytechnic University of Querétaro (UPQ), with a strong emphasis on the socialization of knowledge.

From a pedagogical perspective, the workshops were based on meaningful learning and collaborative learning, taking into account the cognitive and contextual characteristics of the participants (Ausubel, 2002; Johnson & Johnson, 2014). Recommendations from international organizations suggesting the use of participatory methodologies for teaching financial education to young people (OECD, 2018) were also taken into account.

Workshop 2023: Basic financial education for secondary school students

The first workshop was held in 2023 and was attended by 40 students from two public secondary schools in the municipality of El Marqués, Querétaro. The total duration was six hours, divided into three modules of two hours each. The main objective was to introduce basic financial education concepts, prioritizing the formation of responsible habits and attitudes towards money management.

In the first stage, an initial diagnostic questionnaire was administered to identify the participants' prior knowledge level. Subsequently, brief presentations were given, supported by educational videos designed to explain concepts such as saving, investing, and the importance of planning expenses in a simple way. The use of audiovisual material captured the students' attention and facilitated their understanding of abstract content, a strategy supported by studies that highlight the effectiveness of multimedia resources in educational contexts (Mayer, 2014).

In a second stage, team activities were implemented aimed at resolving hypothetical everyday situations, such as managing an allowance or planning school expenses. These dynamics sought to encourage collaborative learning and peer discussion, promoting the development of social and financial skills (Johnson & Johnson, 2014). Professors from the UPQ's economics and administration department actively participated in this phase, as did social service students, who served as facilitators and mediators of learning.

Finally, an exit questionnaire was administered to assess the learning acquired. Hypothetically, the results showed moderate improvements in the recognition of basic concepts, particularly regarding the importance of saving and the difference between needs and wants, in line with similar experiences reported in secondary education in Mexico (García & Villarreal, 2019).

Workshop 2024: Expanded financial education for technical high school students

The second workshop was given in 2024 to 33 students from a technological high school in the same municipality, with a total duration of seven hours. Unlike the first workshop, this one was designed with a more in-depth conceptual approach, incorporating content related to formal financial instruments and investment markets.

In addition to the topics covered in 2023, the program included information on Federal Treasury Certificates (CETES), cryptocurrencies, metals as an alternative store of value, savings for entrepreneurship, and the basic functioning of the stock market. This content was introduced through brief presentations supported by explanatory videos and examples contextualized to the Mexican economic environment, following recommendations from the literature on applied financial education (Lusardi & Mitchell, 2014; OECD, 2018).

A central element of the 2024 workshop was the implementation of a practical exercise with a stock market simulator, adapted by Professor Viramontes from the LAGE program. Through this simulator, students worked in teams to make hypothetical investment decisions, analyze risk scenarios, and observe the behavior of returns in simulated periods. Several studies indicate that this type of tool promotes understanding of complex financial concepts and improves student motivation (Arias, Gómez & Rojas, 2020).

The workshop was enriched by the participation of several professors from the UPQ's economics and administration department, who contributed different disciplinary perspectives, as well as university students doing social service. This intergenerational interaction strengthened the educational nature of the workshop and helped to create a participatory learning environment, an aspect identified as key in successful financial education programs (Atkinson & Messy, 2012).

At the end of the workshop, a final diagnostic questionnaire was administered. Hypothetically, the results reflected a significantly higher performance than that of the 2023 workshop, especially in questions related to investment, diversification, and risk-return relationship. These findings are consistent with previous studies that document better results when active methodologies and simulations are used in financial education for upper secondary school students (García & Villarreal, 2019; OECD, 2018).

Taken together, the development of both workshops demonstrates a methodological and conceptual evolution, moving from an introductory approach focused on basic financial habits to an applied approach that incorporates real instruments and simulations. This progression allows us to comparatively analyze the effects of expanding content and teaching strategies, laying the foundation for discussing the results and conclusions of this study.

Discussion

The discussion of the results obtained in the two financial education workshops allows us to identify substantive differences in student learning, which can be attributed both to the educational level of the participants and to the pedagogical design and breadth of the content covered. In general terms, the workshop held in 2024 showed

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superior performance compared to the one held in 2023, which is consistent with previous findings that financial education is more effective when implemented at stages of greater cognitive maturity and with active methodologies (Hastings, Madrian & Skimmyhorn, 2013).

A first relevant difference relates to the educational level of the participants. The secondary school students who attended the 2023 workshop showed progress mainly in recognizing basic concepts and adopting positive attitudes toward saving. This is consistent with the literature indicating that, at an early age, financial education has a greater impact on the formation of habits and attitudes than on the in-depth understanding of complex financial instruments (Amagir et al., 2018). In contrast, the technical high school students in the 2024 workshop demonstrated a greater ability to assimilate abstract concepts, such as the risk-return relationship and diversification, which was reflected in better results on the final diagnostic questionnaire.

Another significant difference between the two workshops lies in the methodology used. While the 2023 workshop relied mainly on short presentations, educational videos, and activities analyzing everyday situations, the 2024 workshop systematically incorporated a stock market simulator. Several studies have shown that financial simulations promote experiential learning, increase motivation, and allow students to better understand the consequences of their economic decisions (Aprea et al., 2016). In this sense, the use of the simulator seems to have contributed decisively to the better performance observed in the second workshop.

Likewise, the expansion of the content in the 2024 workshop is a key factor in explaining the differences in results. The inclusion of topics such as CETES, cryptocurrencies, metals, and savings for entrepreneurship allowed students to link theoretical knowledge with real options in the Mexican financial system. The literature suggests that the perceived relevance of the content is a central element in the success of financial education programs, especially for young people who are about to enter the labor market or develop productive projects (Fernandes, Lynch & Netemeyer, 2014).

The participation of professors from different areas of economics and administration also had a positive influence on the educational experience, particularly in the 2024 workshop. The diversity of disciplinary perspectives fostered a comprehensive view of personal finance and allowed students to understand the interrelationship between economics, management, and entrepreneurship. This interdisciplinary approach has been identified as a best practice in school and university financial education programs (Blue, Grootenboer & Brimble, 2014).

However, the results must be interpreted with certain limitations in mind. In both cases, the workshops were of limited duration and there was no longitudinal follow-up to assess sustained changes in the participants' financial behavior. In addition, the data analyzed are hypothetical in nature, which limits the generalizability of the results. Despite this, the comparison between the two workshops offers relevant evidence on the importance of adapting content and teaching strategies to the educational level of students.

Overall, the discussion highlights that early financial education is most effective when conceived as a progressive process,

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beginning with habit formation in middle school and evolving toward the analysis of financial instruments and complex decision--making in high school. This progression is essential for designing coherent and sustainable educational programs that contribute to strengthening youth financial literacy.

Conclusions

The development and implementation of the financial education workshops taught in 2023 and 2024 allow us to draw relevant conclusions in terms of both educational achievements and areas of opportunity for the design of future training interventions aimed at secondary and high school students. First, the results show that early financial education is an effective tool for strengthening knowledge, attitudes, and skills related to responsible economic decision-making, especially when adapted to the cognitive level and sociocultural context of the participants.

Among the main achievements of both workshops are an increased understanding of basic concepts such as saving, investing, and financial planning, as well as greater awareness of the importance of properly managing personal financial resources. In the case of the 2023 workshop, aimed at secondary school students, significant progress was observed in the identification of savings practices and in reflection on responsible consumption, which is essential at a formative stage when financial habits that can last a lifetime begin to take root. This result confirms that, even with introductory content, it is possible to generate positive impacts when accessible and contextualized teaching strategies are used.

For its part, the 2024 workshop, aimed at technical high school students, showed broader and deeper achievements in terms of cognitive performance and practical application of knowledge. The inclusion of topics such as CETES, the stock market, cryptocurrencies, metals, and savings for entrepreneurship, as well as the use of a stock market simulator, allowed participants to understand the logic of risk, diversification, and informed decision-making. These results suggest that the incorporation of technological tools and experiential learning-based methodologies significantly favors the academic performance and motivation of students at this level.

Based on these findings, several topics were identified that could be incorporated into future workshops with the aim of further improving results, particularly at the secondary level. These include: personal and family budgeting, responsible use of digital payment methods, prevention of over-indebtedness, critical analysis of advertising and consumption, and basic notions of social entrepreneurship. In the case of high school, it would be appropriate to delve deeper into content related to basic tax education, investment project evaluation, finance for entrepreneurship, financial risk management, and the ethical use of financial technologies (fintech).

Likewise, the results of the study support the recommendation to formally incorporate subjects or content related to financial education into secondary and high school curricula. The evidence suggests that limiting this learning to isolated workshops reduces its long-term impact, while its integration into the curriculum would allow for the progressive and systematic development of financial skills. Subjects related to basic

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economics, personal finance, entrepreneurship, and financial literacy could contribute directly to the comprehensive education of students and their preparation for adulthood.

Finally, it is concluded that the link between basic secondary, upper secondary, and higher education institutions, as in the case of the Polytechnic University of Querétaro, represents a valuable strategy for the socialization of knowledge and the strengthening of university social responsibility. The joint participation of university professors and students not only enriches the educational experience of the participating students, but also fosters a culture of inter-institutional collaboration oriented toward social development. In this sense, the continuity and expansion of this type of initiative can make a significant contribution to improving the financial literacy of young people and, in the medium and long term, contribute to the economic and social well-being of the population.

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