Innovations in Financial and Math Education: Boosting Learning in Primary School Students

Innovaciones en educación financiera y matemática: impulsando el aprendizaje en estudiantes de primaria

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Abstract

This research focuses on strengthening the educational competencies in financial education and mathematics of sixth-grade students, in the context of Law No. 31900 of 2023, which prioritizes these contents in the school curriculum. The objective was to analyze the didactic strategies implemented by teachers in social sciences and mathematics to assess learning achievements. A quantitative approach was adopted, with a quasi-experimental design and a correlational level, developing the study with two classrooms (VI B and VI D) of the Educational Institution No. 22303, Santa Rosa de Lima, located in Ica. The results show a direct relationship between financial education and learning in mathematics. The conclusions suggest that recommendations and training actions in the teaching of financial education not only favor the development of mathematical competencies, but also prepare students to face contemporary technological challenges. This study highlights the importance of integrating both areas to contribute to a comprehensive and relevant education in the current context.

Keywords: financial education, educational skills, teaching strategies.

Resumen

La presente investigación se centra en fortalecer las competencias educativas en educación financiera y matemática de los estudiantes de sexto grado, en el contexto de la Ley N.º 31900 de 2023, la cual prioriza estos contenidos en el currículo escolar. El objetivo fue analizar las estrategias didácticas implementadas por los docentes en ciencias sociales y matemáticas para evaluar los logros de aprendizaje. Se adoptó un enfoque cuantitativo, con un diseño cuasi-experimental y un nivel correlacional, desarrollándose el estudio con dos aulas (VI B y VI D) de la Institución Educativa N.º 22303, Santa Rosa de Lima, ubicada en Ica. Los resultados evidencian una relación directa entre la educación financiera y el aprendizaje en matemática. Las conclusiones sugieren que las recomendaciones y acciones de capacitación en la enseñanza de la educación financiera no solo favorecen el desarrollo de competencias matemáticas, sino que también preparan a los estudiantes para enfrentar los desafíos tecnológicos contemporáneos. Este estudio destaca la importancia de integrar ambas áreas para contribuir a una formación integral y pertinente en el contexto actual.

Palabras clave: educación financiera, competencias educativas, estrategias didácticas.

Introduction

In the current era of knowledge, reflection on the relationship between education and finance has been revitalized. Part of the issue lies in the indicators associated with financial education being linked to risk indicators among students, necessitating a rethinking of how to inform and educate about basic finance. This teaching should not be limited solely to secondary or higher education but should be integrated from mathematical education at early levels.

Mathematical education today holds a prominent place in school training, as it provides students with formal access to mathematical operations, essential concepts, and data necessary for understanding basic finance. However, as Radford (2021) warns, the challenge of promoting financial education through mathematics often results in prioritizing the teaching of content framed within rigid structures, detracting from its application in everyday life. This approach has led to the trivialization of arithmetic operations and properties, reducing them to mere assessment tools without fostering comprehension, analysis, or resolution of contextualized situations.

Additionally, the learning of mathematics was adversely affected during the confinement of 2020 and part of 2021, during which the virtual teaching efforts of educators were often accompanied asynchronously by family members of the students. Although many activities were completed, they did not always reflect significant learning. This situation was evidenced by the results of the PISA 2022 assessment, which showed that three out of four Peruvian students aged 15 did not achieve basic competencies in mathematics, communication, sciences, and financial education.

While many primary school teachers were adapting their strategies to enhance learning, the asynchronous education imposed during confinement hindered this process. Activities designed to develop mathematical thinking through problem-solving were limited, also affecting the development of financial skills, which have traditionally been absent from the national curriculum.

Now more than ever, it is essential for primary education students to strengthen their financial behavior from an early age, as this will contribute to more informed decision-making within their family and community environments, enabling them to understand and utilize products and services of the financial system. In a world dominated by information technology, financial education is key to preparing citizens to navigate economic situations autonomously.

Mohamad et al. (2023), in their study on the impact of financial behavior on the well-being of young adults in Malaysia, concluded that factors such as financial education, socialization, self-control, and the use of technology are determinants of financial conduct. Similarly, Cordero et al. (2020) highlight that the knowledge acquired at different educational levels is fundamental for financial literacy.

In this context, educating in mathematics has also required transformations in both teaching and learning. Ávila (2023), in his study on how to teach mathematics during the pandemic, found that the gap in knowledge achieved by students in synchronous activities compared to asynchronous activities established during student confinement increased. The learning achieved was conducted using technological tools like WhatsApp or other electronic applications, impoverishing the synchronous learning of students in areas where electronic tools could not be used, relying solely on workbooks provided by educational institutions and meetings every two weeks. The constructive teaching of the last decade was displaced by the use of other strategies for explaining definitions, mathematical models, and procedures, with the teacher managing the content. However, the learning outcomes were influenced by family interventions, which obscured the true achievements of the students.

Thus, Peruvians have historically demonstrated their capacity for entrepreneurship as a necessity in response to the scarcity of job opportunities. Salas & Ticlla (2022) studied financial education and the development of entrepreneurship among non-university higher education students in the San Martin region, concluding that the stronger the financial capabilities, the greater the students' commitment to generating entrepreneurial initiatives, verified by 49% of respondents. This suggests that financial education contributes to improving the quality of life by managing monetary resources to face future uncertainties.

Furthermore, entrepreneurship has become a frequent alternative in the face of job shortages. Salas & Ticlla (2022), when studying the relationship between financial education and entrepreneurship among non-university higher education students in San Martin, found that those with stronger financial capabilities exhibited a greater commitment to generating entrepreneurial initiatives, demonstrating the positive impact of financial education on quality of life.

Similarly, Biggio (2022) identified three necessary conditions for developing financial education in Regular Basic Education in Peru: a clear public policy, solid teacher preparation, and a suitable pedagogical foundation. Since 2016, the National Curriculum of Peru has included a competency related to the responsible management of economic resources, aimed at helping students identify the agents that meet their financial and economic needs.

Therefore, mathematical education for school-age children has been and continues to be a challenge for successful implementation by educators, as it serves as a formal science supporting reasoning and the development of problem-solving and decision-making abilities. Chávez-Epiquén et al. (2021) concluded in their study that primary education students at the Kuso Chico Amazonas educational institution did not interpret mathematical content in the same way their teachers intended, which was crucial for integrating into the resolution of their everyday problems and subsequently developing their capacity for mathematical abstraction. Additionally, it was evident that the teacher possessed an active didactic foundation for executing their teaching work in bilingual institutions across the country.

This research has been significant in gathering key information about the development of competencies in financial and mathematical education. Furthermore, teacher training programs in financial inclusion were implemented, which allowed for improved pedagogical practices and strengthened professional performance. This experience expanded the resources available for teachers and will serve as a basis for future studies that contribute to the development of comprehensive competencies in students. Thus, the objective of this study was to analyze the teaching strategies employed by social sciences and mathematics teachers to evaluate the learning achievements attained by students.

Methodology

This research was an applied study with an experimental design. It was based on the analysis of knowledge from the perspective of factual science, focusing on observable, concrete facts. For data treatment, a quantitative approach was employed at a correlational level, adopting a quasi-experimental design consisting of an experimental group and a control group. The study was conducted at Educational Institution No. 22303, Santa Rosa de Lima, located in the city of Ica, known for its years of service to the community, proactive teachers, and highly motivated students.

The population consisted of sixth-grade primary education students from this institution, who studied in two shifts: morning and afternoon. In 2024, this population reached a total of 120 students, distributed across four classrooms: three in the morning shift and one in the afternoon shift. For the sample, a non-probabilistic sampling method was selected, choosing one classroom from the morning shift (experimental group) with 31 students, and the afternoon classroom as the control group, consisting of 27 students.

Data collection utilized two main techniques: surveys, employing a standardized assessment instrument, and documentary analysis, using bibliographic records as an instrument. The latter technique was applied to gather information from academic databases such as Scopus and SciELO, university repositories, guides, manuals, and didactic materials for mathematics and social studies, as well as the National Curriculum.

The application of the instruments was carried out according to an established schedule in two phases. In the first phase, termed the pre-experimental phase, the entry instrument was administered to both groups. Subsequently, training on technological strategies in financial and mathematical education was provided to the teachers. Following this intervention, the exit instrument was then applied in both classrooms, in both the control and experimental groups.

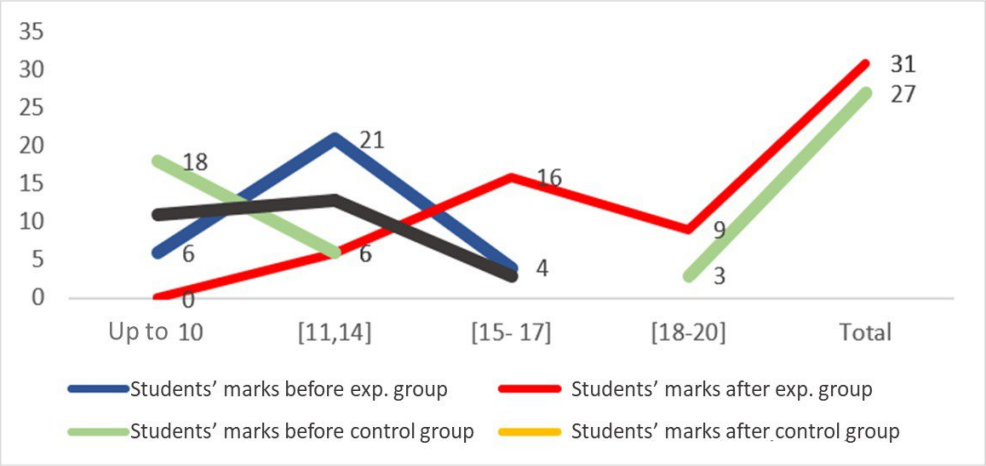
The obtained data were organized and processed using descriptive statistical tools, presenting results in frequency tables and statistical graphs, allowing for analysis and interpretation. Finally, the inferential method of the paired Student t-test was applied to contrast the general hypothesis and specific hypotheses of the study.

Results

To evaluate the impact of the implemented teaching strategies on the development of competencies in financial and mathematical education, measurement instruments were applied before and after the pedagogical intervention in both the experimental and control groups. This phase of the study allowed for the identification of significant advances in the learning of sixth-grade primary students, utilizing a quasi-experimental approach that combined quantitative methods and statistical techniques for data analysis. The results, processed with SPSS and Excel software, are presented in tables and graphs reflecting the progress of students in key skills such as mental calculation, budgeting, saving ability, and problem-solving, demonstrating the positive effect of the strategies applied following teacher training in financial and mathematical education.

Figure 1

Achievement of financial knowledge



Regarding the achievement of financial knowledge in the experimental group, during the pre-experimental stage, it was observed that 19.4% of students did not meet the expected performance levels in topics such as financial rights and responsibilities, advertising, saving, and budgeting. However, in the post-experimental phase, a significant increase in achievement levels was evidenced: 45.2% reached a "very satisfactory" level, while 29.5% achieved a "satisfactory" level. In contrast, during the pre-experimental phase, only 45.2% were at the "in progress" level. In the control group, 66.7% did not meet the expected performance levels at the initial stage; although this figure decreased to 40.7% in the final stage, 48.1% improved their financial knowledge but remained at initial levels.

Table 1

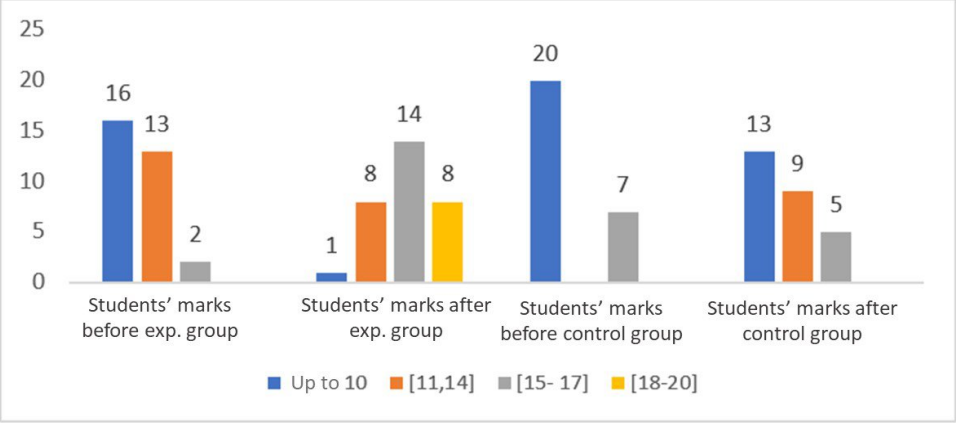
Development and achievement of financial skills of students in the experimental group

Marks	Number of Students Pre-Experimental	Percentage	Number of Students Post-Experimental	Percentage
Up to 10	18	58.1	1	3.2
[11-14]	11	35.5	17	67.7
[15-17]	2	6.4	5	16.1
[18-20]			4	12.9
Total	31	100.0	31	100.0

In terms of saving ability, students in the experimental group showed notable progress. Initially, 51.6% did not apply saving methods in practice; however, in the subsequent phase, this figure drastically reduced to 3.2%. Additionally, 45.2% achieved a satisfactory performance, and 25.8% reached a "very satisfactory" level, indicating their conceptual and practical understanding of saving. In the control group, 74.1% faced difficulties in this area

at the beginning; by the end of the study, 48.1% still did not achieve the expected outcome, while 51.9% demonstrated improvements at initial and satisfactory levels.

Figure 2



The statistical tool utilized, which highlights the strengthening of the saving ability of students in the experimental group, began with 51.6% of failures, indicating that students did not apply saving methods in practice. This reduced to 3.2% in the subsequent phase. Furthermore, 45.2% were able to appreciate and distinguish what saving is in a satisfactory manner, while 25.8% successfully applied their saving ability in a very satisfactory way, both conceptually and in distinguishing ways to save. In the control group, 74.1% initially faced difficulties in demonstrating saving abilities, with 48.1% still not achieving the expected saving ability by the end, while 51.9% showed progress at both initial and satisfactory levels, demonstrating their understanding of saving and practical applications.

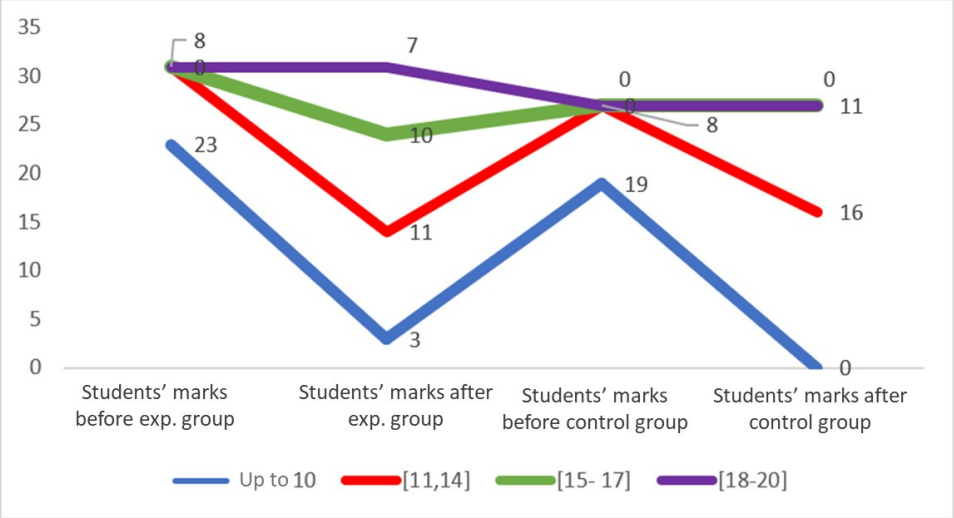
Table 2

Preparation of financial budgets by students in the experimental group

Marks	Number of Students Pre-Experimental	Percentage	Number of Students Post-Experimental	Percentage
Up to 10	16	51.6	0	
[11-14]	11	35.5	18	58.1
[15-17]	1	3.2	6	19.4
[18-20]			7	22.5
Total	31	100.0	31	100.0

Regarding the preparation of financial budgets, 51.6% of the experimental group indicated in the initial phase that they had no knowledge of how to create them. By the end of the intervention, 58.1% reached the initial level, and 41.9% achieved satisfactory and very satisfactory levels, demonstrating a significant improvement in this competency.

Figure 3
Development and achievements in mental and written calculation skills of students



In the development of mental and written calculation, the experimental group showed substantial improvements. This skill was applied to mathematical content related to financial contexts, such as calculating percentages or interest rates. At the end of the study, 51.5% of students were at the initial level, while only 9.7% showed no development in this capacity. In the control group, initially, 70.4% did not show signs of this skill; however, by the end of the study, 100% demonstrated some level of achievement, whether at the initial or satisfactory level.

Table 3
Development and achievements in problem-solving skills of students in the experimental group

Marks	Number of Students Pre-Experimental	Percentage	Number of Students Post-Experimental	Percentage
Up to 10	13	41.9	1	3.2
[11-14]	16	51.6	10	32.3
[15-17]	2	6.5	11	35.5
[18-20]	0		9	29.0
Total	31	100.0	31	100.0

Regarding problem-solving skills, considered one of the most complex areas within mathematics, the experimental group demonstrated notable evolution. In the initial phase, 41.9% did not achieve this competency; by the end, only 3.2% did not reach the expected achievements. The 51.6% that was initially at the starting level decreased to 32.3%, while 64.5% achieved satisfactory or very satisfactory performance, consolidating this key competency for academic and everyday life.

Discussion

The results of this research are significant in terms of developing and strengthening competencies in financial and mathematical education among sixth-grade primary students. These findings corroborate the assertions made by Ferrada et al. (2022), whose study emphasized the importance of implementing financial education from the early stages of formal education to foster positive financial behaviors in students. This research concluded that 67.7% of students were at the initial level regarding their financial skills. Additionally, the results validate the claims of Soomro et al. (2024), who state that financial education is significantly influenced by

demographic factors and that it impacts the formation of positive financial behaviors, not only in students but also in their family members.

Among the financial performances studied was the saving ability of participating children nearing the end of primary education, with 61.4% achieving this competency at satisfactory or very satisfactory levels, distinguishing saving as the positive difference between income and expenses. This finding aligns with Silva et al. (2017), whose study was based on financial planning related to the education level of participants who had the capacity to save, thereby ensuring they had monetary resources for future expenditures.

Regarding financial commitments, awareness and financial responsibility, as well as financial resilience studied within financial attitudes, were validated in students, achieving 87.1% at satisfactory or very satisfactory levels. They felt good or very good about the financial activities pedagogically designed to enhance students' management of monetary units, similar to the findings of Mohamad et al. (2023), in their research on financial behavior and financial well-being in young adults, highlighting the importance of actions that allow the demonstration of financial education.

Students achieved a satisfactory or very satisfactory level of 59.2% in budget preparation as a practical form of financial planning, effectively listing their incomes and expenses or using these budgets to inform purchasing decisions for goods or items that meet their needs. This finding is very similar to that reported by Silva et al. (2017), which noted the foresight of young people in initiating financial planning, with male students displaying more conservative behavior with their monetary resources. They concluded that formal education contributes little to the development of students' financial capabilities.

Developing students' mathematical abilities in basic education has always posed challenges for educators and students alike. In Peru, some students progress through grades due to changes in teaching and learning strategies, including gamification, as evidenced by Delgado et al. (2023). Such strategies must be well-planned by teachers to enhance students' understanding of mathematical concepts, mental calculation, and logical reasoning.

Therefore, this research recommends ongoing teacher training in didactic strategies that incorporate technological tools, enabling students to strengthen their mathematical performance in a more meaningful and lasting way. Regarding problem-solving abilities, the research showed that 64.5% of students achieved satisfactory or very satisfactory results, while 51.8% of the control group did not pass. The learning of mathematics remains unsatisfactory for students, despite their interest in achieving mathematical success. Ruiz et al. (2023) argue that to overcome these difficulties, it is essential to employ both virtual and in-person pedagogical tools that enable lasting mathematical learning applicable to real-life situations, thereby advancing students' logical-mathematical thinking development.

Mathematical attitudes, such as interest, confidence, and appreciation for mathematics, vary among students due to cultural diversity, economic conditions, and educational backgrounds, all of which influence the teaching and learning process. This variation can be observed from one classroom to another, highlighting differing predispositions towards the subject, as noted by García (2024).

In summary, the findings of this research underscore the importance of integrating financial education into the school curriculum as an effective strategy to strengthen not only mathematical skills but also the practical competencies students need to navigate real-world contexts. The relationship between financial attitudes and academic performance in mathematics reveals a significant link that should be leveraged through innovative and contextualized pedagogical proposals. Additionally, the results support the need for ongoing, specialized teacher training to implement active and sustainable didactic approaches. This research not only contributes empirical evidence to the educational field but also invites a reconsideration of the school's role in fostering critical, responsible citizens who are prepared to make informed financial decisions from an early age.

Conclusions

First, it is concluded that financial education is directly related to the mathematical learning of sixth-grade students at Educational Institution No. 22303, Santa Rosa de Lima, Ica, 2024. This relationship is validated through a joint analysis of both financial and mathematical performances and attitudes.

However, the results indicate that financial performances do not have a significant relationship with mathematical performances. Variables such as financial skills and knowledge, saving ability, and budget preparation, as well as mathematical capabilities like problem-solving, mathematical communication, mental calculation, and logical reasoning, all show achievements at initial levels, indicating a need for reinforcement in both areas.

On the other hand, it was identified that financial performances do significantly relate to students' mathematical attitudes. This correlation suggests that the willingness to embrace new learning, such as decision-

making based on advertising analysis, budget preparation, and saving practices, manifests in 71% satisfaction with their mathematical behaviors.

Furthermore, financial attitudes demonstrate a direct relationship with mathematical performances. With a confidence level of 95%, it is shown that responsible financial behavior and openness to new learning positively influence students' ability to tackle mathematical challenges. In this regard, 87.1% of students expressed a favorable disposition towards activities involving the use of monetary units, reinforcing the connection between both areas.

Finally, it is concluded that there is a significant relationship between financial attitudes and mathematical attitudes. This link is reflected in students' enthusiasm, interest, and active participation in the learning processes within both Social Sciences and Mathematics, reinforcing the importance of integrating interdisciplinary didactic strategies aimed at strengthening both dimensions in a coordinated manner.

References

Ávila, A. (2023). Educación matemática en pandemia: los efectos de la distancia. Educación matemática, 35(1), 8-34. https://doi.org/10.24844/EM3501.01

Biggio, M. (2022). Condiciones para desarrollar la educación financiera en la educación básica regular en el Perú. Pontificia Universidad Católica del Perú. http://hdl.handle.net/20.500.12404/21747

Chávez-Epiquén, A., Moscoso-Paucarchuco, K., & Cadillo-León, J. R. (2021). Método activo en el desarrollo de competencias matemáticas en niños de la cultura Awajún, Perú. Uniciencia [online], 35(1), 55-70. http://dx.doi.org/10.15359/ru.35-1.4

Cordero, J. M., Gil-Izquierdo, M., & Pedraja-Chaparro, F. (2020). Financial education and student financial literacy: A cross-country analysis using PISA 2012 data. *The Social Science Journal*, 59(1), 15–33. https://doi.org/10.1016/j.soscij.2019.07.011

Delgado, J., Espinoza M., Vivanco C., Medina N., Ayala M.(2023). La gamificación como eje motivador para el aprendizaje de la matemática. LATAM *Revista Latinoamericana de Ciencias Sociales*. Vol. IV (1). https://doi.org/10.56712/latam.v4i1.538

Ferrada, C., Díaz-Levicoy, D., Puraivan, E., & Lizana, A. (2022). Revisión sistemática sobre educación financiera en el contexto educativo primario. *Revista Lasallista de Investigación*, 19(1), 21-51. https://doi.org/10.22507/rli.v19n1a2

García C. (2024). La comunicación en el proceso de enseñanza aprendizaje de la matemática: Un elemento diferenciador. *Revista latino americana de calidad educativa*, V1(2). https://doi.org/10.5281/zenodo.13516834

Mohamad, F. S., Mervin, A., Siong, H. L., Husniyah, A., Nik-Ahmad, S. B., & Muslimah, I. (2023). Impact of financial behaviour on financial well being: evidence among young adults in Malaysia. *Journal of Financial Services Marketing*. https://doi.org/10.1057/s41264-023-00234-8

Radford, L. (2021). Reimaginar el aula de matemáticas: las matemáticas escolares como praxis emancipadora. Revista Chilena de Educación Matemática, 13(2), 44–55. https://doi.org/10.46219/rechiem.v13i2.88

Ruiz, J. M., Alvarez, F. D., Holgado, A. M., & Chuquiruna, V. (2023). Aprendizaje de las Matemáticas a través de los entornos virtuales en estudiantes de primaria. *Horizontes Revista de Investigación en Ciencias de la Educación*, 7(28), 660-668. https://doi.org/10.33996/revistahorizontes.v7i28.544

Salas, J., & Ticlla, I. (2022). Educación financiera y desarrollo de emprendimiento, en estudiantes de educación superior. *Revista Científica Valor Contable*, 9(1), 59-70. https://doi.org/10.17162/rivc.v9i1.1782

Silva, T. P., Magro, C. B., Gorla, M. C., & Nakamura, W. T. (2017). Nível de educação financeira de estudantes do ensino médio e suas reflexões econômicas. *Revista de Administração*, 52(3), 285-303. https://doi.org/10.1016/j.rausp.2016.12.010

Soomro, Y. A., Ali, M., Yaqub, M. Z., Ali, I., & Badghish, S. (2024). Financial education is more precious than money - examiningthe role of financial literacy in enhancing financial wellbeingamong Saudi women. *International Journal of Business Performance Management*, 25(1), 1-24. https://dx.doi.org/10.1504/IJBPM.2024.10052141