IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: XV, Issue: 2, Year: 2025, pp. 1313-1337

Financial Literacy Among High School Students: An Empirical Baseline for the Türkiye Century Education Model

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Received: 02.10.2025, Accepted: 28.12.2025
10.5281/zenodo.18190226

Abstract

This study examines the level of financial literacy among high school students in Türkiye and investigates how these levels differ across school types, grade levels, and selected socioeconomic characteristics. The study was conducted in the province of Isparta and employed a structured survey that was conducted to 608 students attending six different types of public high schools. The findings indicate that students' financial literacy levels are generally low, with comparatively higher scores observed in academically selective schools. Financial literacy is positively associated with parental education level and household income, while no statistically significant differences are found with respect to gender. Twelfth-grade students tend to outperform ninth-grade students; however, the magnitude of improvement across grade levels remains modest. In addition, a notable mismatch emerges between students' self-assessments of their financial literacy and their objectively measured knowledge, pointing to limited awareness of their own financial competencies. Situated within the framework of the Türkiye Century Education Model, which defines financial literacy as a cross-disciplinary competency, these findings provide an empirical reference point for understanding existing student competencies and for informing the design and interpretation of financial literacy integration within secondary education.

Key words: Financial Literacy, Secondary Education, Türkiye Century Education Model, Türkiye

JEL Code: I21, G53, D14

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1. Introduction

Recent social and economic dynamics and developments have led to greater individual responsibilities. Economic challenges require individuals to develop financial awareness, along with calculation and interpretation skills, from an early age. Regulations concerning pension systems, rising inflation even in developed countries, and ongoing political and military crises are shaping significant social and economic transformations worldwide (Lusardi, 2019). Irrespective of individuals' prior experiences or financial means, these global changes require them to restructure their current and near-future goals while ensuring their financial security. At the same time, individuals are becoming increasingly vulnerable to governments acting as regulators and businesses serving as market makers within the economic system (Willis, 2017). In such cases, individuals may have limited and insufficient opportunities to achieve positive financial outcomes, regardless of social media influence or pressure from close circles, especially family. These conditions point to the necessity of initiatives that raise awareness of financial issues (Amagir et al., 2018). The concept of financial literacy (FL) lies at the center of these discussions.

International organizations and governments emphasize financial awareness, which can be defined as an awareness of one's own financial actions, as a crucial skill set enabling individuals to make sound financial decisions. International initiatives led by the OECD, World Bank, and European Central Bank often target adults, offering awareness-raising activities such as short courses and community gatherings. Industrialized countries prioritize the integration of FL into classrooms from an early age. This integration generally takes two forms: a standalone FL course or incorporation into related subjects such as mathematics. Curriculum development and planning efforts to integrate FL into educational systems are central to this process. Countries generally assess their national FL needs, capacities, and achievements before implementing financial literacy education (FLE) initiatives that also typically refer to international standards indicating criteria for FL competence and reference points for measurement and evaluation studies.

The Türkiye Century Education Model (*Türkiye Yüzyılı Maarif Modeli*, TYMM), which restructures the primary and secondary education curriculum and will be gradually implemented starting from 1st, 5th and 9th grades in 2024 (Republic of Türkiye Ministry of National Education, 2024a, 2024b), introduces FL as one of the core literacy skills to be developed across curricula. Within this framework, FL is not conceptualized as a stand-alone subject but as a cross-disciplinary competency, embedded through a developmental process progressing from awareness to functional application and, ultimately, action-oriented decision-making. The model explicitly outlines FL process components as follows: understanding income, ensuring money management, making sense of financial technologies, practicing conscious spending and borrowing, and maintaining regular saving and managing investments (Republic of Türkiye Ministry of National Education, 2024c).

This cross-disciplinary approach is visible in course-level guidance. For example, the middle school mathematics program explicitly includes "FL" (as coded OB3 and can be found in many themes) and connects mathematics learning outcomes to everyday financial contexts such as unit-price comparisons that support conscious consumer habits (Republic of Türkiye Ministry of National Education, 2024d). Such examples indicate that the TYMM is not merely a policy declaration; it is already translated into curriculum materials and learning activities across grade levels and disciplines.

This study aims to assess the FL levels of Turkish high school students and to examine how these levels vary across school types, grade levels, and selected socioeconomic characteristics. Unlike most existing research in Türkiye, which primarily reports on descriptive literacy levels, this study places its analysis within the context of ongoing national curriculum reform. Specifically, the study provides an empirical baseline for the TYMM. By measuring students' FL during the early phase of this curriculum reform, the study offers evidence on students' current competency profile and highlights potential gaps between curricular expectations and existing competencies.

Studying contributes to literature in three main ways. First, it extends empirical research on FL among adolescents by providing reform-aligned baseline evidence aligned with a nationally defined competency framework. Second, it contributes to curriculum and policy discussions by linking internationally recognized FL standards with the process-oriented structure adopted in the TYMM. Third, it offers insights into the discrepancy between students' self-perceived financial competence and their measured knowledge, an issue that has important implications for FL education and instructional design. Taken together, these contributions support future monitoring of the model by offering an initial benchmark against which progress can be assessed in different school contexts.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework, reviewing key conceptualizations of FL, standards, and empirical findings related to young people and FLE initiatives. Section 3 describes the research design, including the sample, data collection instrument, methodology, and reports the empirical findings. Section 4 discusses the results in relation to existing literature and the TYMM, and Section 5 concludes with implications for policy, curriculum development, and future research.

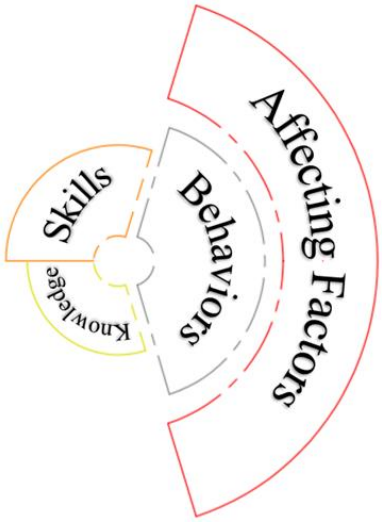
2. Theoretical Framework, Measurements and Practical Steps

2.1. Financial Literacy as a Competency for the 21st Century

FL refers to the knowledge and abilities required to make sound and confident financial decisions (Lusardi, 2012; OECD, 2020). The capacity to make

consciously informed choices constitutes the core skill of FL (Aprea et al., 2016). FL encompasses abilities that are integral to everyday life and relevant to all individuals, not merely those in financial professions (Shim et al., 2010). It should not be narrowly construed as limited to budgeting or frugality. Growing complexity, heightened competition, and rapid technological advancements in the financial sector have made financial knowledge increasingly essential (Morgan et al., 2019). Knowledge, skills, behaviors, and influencing factors represent the four fundamental elements of financial competency (OECD, 2020; Ozkale & Ozdemir Erdogan, 2022). As illustrated in Figure 1, the Coliseum Financial Literacy Model emphasizes the dimensions of FL and their interconnections, rather than focusing solely on discrete skills.

Figure 1. Coliseum financial literacy model



Source: Ozkale & Ozdemir Erdogan (2022).

Within the Coliseum Model, financial behaviors are shaped by the interaction of the other dimensions. Financial knowledge and skills may guide certain behaviors, but personal perceptions, values, beliefs, and the social environment also play a decisive role in shaping financial actions. Research indicates that financial knowledge alone exerts limited influence on actual financial behavior (Lyons & Kass-Hanna, 2021; Lusardi & Mitchell, 2014; Shim et al., 2010; Willis, 2017). In general, individuals often fail to base their financial decisions solely on available information. Instead, their decisions are frequently shaped by family and social environments (Lusardi, 2012). Ideally, financial behavior should emerge from the integration of sound knowledge and skills, while being positively influenced by both environmental and societal factors (Goyal & Kumar, 2021).

This multidimensional understanding of FL is consistent with curriculum framework of TYMM that conceptualize literacy as a developmental process rather than a static outcome. Within TYMM, FL is situated in broader system-thinking framework (Republic of Türkiye Ministry of National Education, 2024e). TYMM frames FL acquisition through sequential stages of awareness, functionality, and

action (Republic of Türkiye Ministry of National Education, 2024c), suggesting that financial knowledge should be internalized, contextualized, and eventually translated into behavior.

2.2. Standards for Financial Literacy

FL comprises four fundamental contents: (1) earning, (2) purchasing, (3) investing and saving, and (4) financial management and planning (Bosshardt & Walstad, 2014; Lucey & Henning, 2021; OECD, 2020). These contents rest on a knowledge framework that includes financial realities, economic reasoning, and mathematical foundations (Lusardi, 2012). Mathematical literacy is considered a prerequisite for FL (OECD, 2020). At the core of financial awareness lies financial reasoning. This covers abilities such as tracking income and expenditure ratios, evaluating alternatives to identify the optimal choice, and calculating as well as interpreting the outcomes of financial decisions (Lusardi & Wallace, 2013). Furthermore, financial metacognition such as the ability to critically evaluate one's own financial capabilities (Antonietti et al., 2016), represents a fundamental dimension of financial management competence.

The four contents of FL provide a framework for both FL standards and abilities. For instance, “Financial management and planning” address issues such as retirement preparation, ensuring financial security, monitoring savings, and managing other major family-related transactions. These contents also intersect in practice. For example, obtaining appropriate investment advice may be considered part of “earning” when returns are considered. Likewise, access to financial services, including mobile banking and digital financial security, forms part of FL standards because modern life in many societies cannot be considered separately from technology and the financial system (Morgan et al., 2019).

TYMM has sought to operate these standards through structured competency domains. Within the TYMM, FL standards are articulated across income generation, money management, conscious consumption and borrowing, saving and investment strategies, and financial Technologies (Republic of Türkiye Ministry of National Education, 2024c). These domains align closely with international FL frameworks while embedding financial reasoning within real-life contexts and ethical considerations.

Since 2010, an expanding body of research has examined FL abilities competencies and the establishment of standards. Lusardi et al. (2010) found that two-thirds of adults lack adequate financial knowledge. Although financial knowledge tends to be higher among more educated individuals, even developed countries continue to struggle with issues of financial management. Expanding financial access, especially for young people, may create risks of excessive borrowing and broader economic challenges if not paired with adequate literacy (Lusardi & Mitchell, 2014). Klapper et al. (2015) reports that rates of retirement saving and investment remain low across Europe, where individuals increasingly bear responsibility for their own retirements. While Faulkner (2022) emphasizes

that the FL levels of citizens in developed countries are not proportional to their income, Lusardi and Messy (2023) state that the real-life effects of FL deficiencies are more severe for vulnerable groups. Klapper and Lusardi (2020) highlight that 47% of those who do not invest or save also lack FL.

2.3. Financial Literacy Among Young People

Financial considerations are closely linked to major life events such as education, marriage, child-rearing, home ownership, and retirement (Walstad et al., 2017). Adolescence represents a critical stage, as it provides opportunities to plan for the future, complete pre-responsibility education, gain initial access to financial services, engage in entrepreneurial activities, and develop independence from parental support (Erner et al., 2016). From this perspective, studies that assess and enhance the FL of young people represent a valuable line of inquiry for FLE.

A key factor influencing FL is social background. Numerous studies show that young people from financially advantaged families demonstrate higher levels of FL compared to their peers (Garg & Singh, 2018; Lusardi et al., 2010; Mandell, 2008). Lower levels of literacy are often observed among women and immigrants, while language proficiency and cognitive competencies are positively associated with literacy outcomes. Research further reveals that fewer than one in three young people possess even basic financial knowledge (Erner et al., 2016). Families also serve as important role models, shaping financial attitudes and perceptions (Fraczek & Klimontowicz, 2015). For example, young individuals from families engaged in investing demonstrate 45% greater financial knowledge (Lusardi et al., 2010). Globalization contributes to the homogenization of financial behaviors, with young people worldwide displaying emotional decision-making, susceptibility to advertising, and peer-driven consumption patterns (Fraczek & Klimontowicz, 2015, Ulusoy & Çelik, 2019). Corporations exploit these tendencies to establish lasting consumer relationships, while research highlights that young people embedded in popular culture often struggle to control excessive spending and long-term debt (Fraczek & Klimontowicz, 2015).

The need for comprehensive FLE is a recurring conclusion in empirical studies. Mandell (2008) stresses the importance of developing curricula that go beyond personal finance or money management courses to reduce disparities between wealthier and less affluent students. Evidence from California indicates that FL training for high school students improves outcomes by 13% compared to control groups (Gill & Bhattacharya, 2019). Similarly, Fraczek and Klimontowicz (2015) show that even exposure to basic FLE increases awareness of fundamental financial concepts such as interest rates and risk-return balances and promotes more rational decision-making. Garg & Singh (2018) further argue that integrating FL into formal education is essential for improving literacy among economically disadvantaged groups.

Research in Türkiye aligns with these findings. Studies conducted in Turkish high schools imply that students' FLis positively associated with their families' education and income levels, as well as with parental financial behaviors

and guidance (Erkılıç, 2019; Yıldız & Çankaya, 2019; Yıldırım & Özbek, 2021). Awareness of the importance of saving is higher among students from lower-income families (Yüceyılmaz & Özgürel, 2018). Academic achievement, school ranking, and grade level (e.g., G12 vs. G9) are also significantly related to literacy levels (Koç et al., 2022; Üğüdücü, 2018). Gender differences persist, with male students demonstrating higher literacy levels than female students (Semercioglu & Akcay, 2016). However, Er and Taylan (2017) observe that FL levels are not always translated into consistent financial behaviors.

Cross-national studies confirm that socioeconomic status, family environment, peers, and the media collectively influence financial knowledge and behaviors. These findings underscore the necessity of well-designed and effective FLE programs to enable better financial decision-making. Since the early 2000s, the importance of FL has grown considerably, with the 2005 OECD report and the integration of FL into PISA assessments serving as main drivers of this trend (OECD, 2005).

2.4. Financial Literacy Education Initiatives

In recent years, numerous governments have introduced (FLE) initiatives designed to enhance students' financial competence. A significant portion of the literature examines both the design of these initiatives and the abilities to be emphasized within FL curricula. Walstad et al. (2017) argue that financial education varies according to age and social context, yet they note that student loans, home ownership, retirement planning, and financial counseling for young people need to be fundamantal layers of such programs. Bosshardt and Walstad (2014) identify six standards of FL: (1) earning income, (2) buying goods and services, (3) saving, (4) using credit, (5) financial investing, and (6) protecting and insuring. They contend that these standards can serve both as a framework for structuring FLE and as benchmarks for measurement and evaluation.

Several countries have made notable advances in implementing FLE. In the United Kingdom, a five-year preparation process culminated in the introduction of a course called financial capability in schools in 2005 (Farnsworth, 2016). In Ontario, Canada, FL was integrated into existing subjects, especially mathematics, beginning in 2009, following the efforts of education stakeholders. Implementation began in 2010, and in 2020 FL was incorporated as one of the five curricular strands during curriculum revisions (Ontario Ministry of Education, 2010, 2020). The Netherlands has also pursued systematic development of FLE. The National Institute for Family Finance Information and the Money Wise Platform play central roles in financial education (Bosshardt & Walstad, 2014). FL competencies were first articulated in 2008, aligned with curriculum objectives in 2009, harmonized with the PISA framework in 2013, and formally included in the national curriculum in 2017 (Amagir et al., 2020).

The design and priorities of FLE initiatives are shaped by sociopolitical contexts. In Mexico, for instance, national goals include expanding financial access,

encouraging legal investment products, and reducing literacy disparities between socioeconomic groups (Ruiz-Durán, 2016). In Germany, however, the federal system and diversity of school types have prevented the establishment of a unified FL program, underscoring the need for a systematic national initiative (Frühauf & Retzmann, 2016).

Overall, national FLE strategies are strongly influenced by contemporary socioeconomic conditions, cultural and historical factors, and international financial education movements. Importantly, these initiatives are often advanced through collaboration among diverse stakeholders.

3. Empirical Analysis

This section presents the empirical design of the study, which aims to document high school students' financial literacy levels and examine variations across school types, grade levels, and selected demographic and socio-economic characteristics. In line with the study's baseline purpose, the analysis focuses on identifying existing patterns in financial literacy rather than evaluating the effects of a specific instructional intervention. The research questions and corresponding hypotheses guiding the empirical analysis are outlined in Table 1.

Table 1. Research Questions and Related Hypotheses

Research Question 1. What are high school students' general condition regarding FL knowledge level? **$H1_0$:** There is no statistically significant difference between the FL knowledge levels of students in different school types.
Research Question 2. Does attending only a high school provide significant improvement in the FL knowledge score? **$H2_0$:** There is no statistically significant difference between the FL knowledge level of freshman and senior high school students.
Research Question 3. Is there a relationship between the FL knowledge level of high school students and demographic and socio-economic variables? **$H3_0$:** There is no statistically significant difference between the FL knowledge level of male and female students. **$H4_0$:** There is no statistically significant difference between the FL knowledge level of students whose parents have different educational backgrounds. **$H5_0$:** There is no statistically significant difference between the FL knowledge level of students whose household income differs. **$H6_0$:** There is no statistically significant difference between the FL knowledge level of students with different working experience. **$H7_0$:** There is no statistically significant difference between the FL knowledge level of students with and without a bank account.
Research Question 4. Are students' FL knowledge level perceptions compatible with the phenomenon? **$H8_0$:** There is no statistically significant difference between the FL knowledge level of students, who have different perceptions about FL knowledge.

3.1. Data

Developing a data collection tool

To establish a foundation for curriculum design and to address the research questions outlined above, we developed a data collection tool designed to measure FL knowledge levels, as well as the perceptions, habits, and tendencies of high school students. The tool was structured around four key dimensions that can be observed from students: knowledge, skills, behaviors, and attitudes toward fundamental FL concepts. To date, few studies have focused on creating FL measurement instruments for high school students in Türkiye; for instance, Güvenç (2016). Thus, the present tool represents one of the first comprehensive efforts in this area. The development process involved a detailed review of the FL literature and relevant standards and was finalized with contributions from experts at the Faculty of Education, Anadolu University.

The tool consists of three sections. The first section is a questionnaire on sociodemographic characteristics, including high school type, grade level, gender, family education level, household income, and work experience. It also includes items addressing students' experiences, tendencies, habits, perceptions, and future plans related to FL.

The second section is an FL knowledge and skills test consisting of 20 multiple-choice questions. These were developed in alignment with the National Standards for Personal Financial Education (NSPFE), a unified framework that promotes effective financial education in K–12 settings and serves as a guide for educators, researchers, and curriculum designers (Council for Economic Education, 2022). Jointly released by the Council for Economic Education and the Jump$tart Coalition for Personal Financial Literacy, NSPFE outlines six fundamental standards: earning income, saving, investing, managing credit, and managing risk (Council for Economic Education, 2022). The 20 items in this section cover topics such as time value of money, basic and health/unemployment insurance, minimum wage, risk–return relationships, compound interest, credit use, portfolio diversification, taxation, budgeting, net versus gross income, career planning, saving and numeracy skills, and basic banking knowledge. Each question has a single correct answer, and with five points assigned per item, the maximum possible score is 100.

The third section consists of an 11-item Likert-type scale (1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree) measuring FL attitudes. This section evaluates students' views on career prospects, concerns about their future financial situations, expenditure planning, saving behaviors, perceptions of the link between career planning and income, and consumer practices.

Application of the Data Collection Tool

The Landscape of Turkish Secondary Education

Secondary education in Türkiye consists of three main branches: general secondary education, vocational and technical secondary education, and religious education. General secondary and vocational–technical schools exist in both public and private forms, while religious education is provided exclusively in public institutions.

Within each branch, there are various school types. General secondary education includes Anatolian high schools, science high schools, social sciences high schools, fine arts high schools, sports high schools, multi-program Anatolian high schools, and music and performing arts high schools. Vocational and technical education covers institutions such as vocational education centers, vocational and technical Anatolian high schools, and vocational open education high schools. Religious education consists mainly of Anatolian Imam Hatip high schools and open education Imam Hatip high schools. This differentiation aims to prepare students for specific fields of vocational training and higher education (Arslan & Şen, 2021).

According to the National Education Statistics Report for the 2020–2021 academic year, approximately 6.3 million students were enrolled in nearly 13,000 high schools, with 3.3 million male and 3 million female students. General secondary education accounted for the majority, with 3.92 million students (62%). Among these, public schools comprised nearly 90%. Anatolian high schools represented the largest share, with 1.92 million students (55% of public school enrollment). This was followed by science, social sciences, sports, and fine arts high schools, which together served about 218,400 students. Additionally, approximately 1.25 million students were enrolled in open education high schools (Republic of Türkiye Ministry of National Education (2021).

The same report indicated that 1.73 million students were enrolled in vocational and technical secondary education, with 92.5% (1.6 million) attending public schools. The vocational and technical Anatolian high school was the largest institution type in this category, serving 1.23 million students. In religious education, 666,000 students were enrolled, of which 567,000 attended Anatolian Imam Hatip high schools (Republic of Türkiye Ministry of National Education (2021).

Placement in Turkish high schools is carried out through both examination-based and non-examination systems. Students may enter schools such as Anatolian high schools, Anatolian Imam Hatip high schools, or Vocational and Technical Anatolian high schools based on residential address, middle school grades, and attendance records. However, admission to some "qualified" high schools, including science high schools, social science high schools, project schools, and certain vocational and technical programs, requires passing a national exam

administered by the Ministry of National Education. Placement in these institutions depends on exam scores, with top-performing students often choosing science high schools in each province.

Research sample

The research sample consisted of high school students in the province of Isparta, where the authors' universities are located. Prior to data collection, the necessary permissions were obtained from the Ministry of National Education and the Governorship of Isparta. Geographically, Isparta is situated in the western Mediterranean region of southern Türkiye. According to university placement statistics for 2018, Isparta ranked 13th among Türkiye's 82 provinces in terms of student success (Higher Education Council of Türkiye, 2019). Thus, the quality of secondary education in Isparta is above the national average. Therefore, the results from Isparta are deemed suitable for drawing broader inferences about other provinces.

The province, with an approximate population of 450,000, consists of 13 districts, including the central district. Nearly 30,000 students are enrolled in 91 high schools across Isparta (Republic of Türkiye Ministry of National Education, 2021). This study focused on high schools located in the central district. Considering that there are approximately 6.3 million high school students nationwide, the minimum representative sample size was calculated as 385 at a 95% confidence level with a 5% margin of error. Ultimately, a total of 608 students were surveyed from six main types of high schools: science high school, social sciences high school, Anatolian high school, Anatolian Imam Hatip high school, fine arts high school, and vocational and technical Anatolian high school. All were public institutions; among them, the science and social sciences high schools admit students through national examinations, while the others accept students without entrance exams. Including participants from this diverse range of school types minimized bias and provided a more comprehensive view of secondary education in Türkiye.

The data collection tool was administered to 9th- and 12th-grade students only. This design allowed the 9th-grades to represent the entry point into secondary education, while the 12th-grades represented its outcome, thereby enabling analysis of the overall impact of secondary schooling on FL levels. The sample structure is summarized in Table 2. 95 students from science high schools, 99 from social sciences high schools, 100 from Anatolian high schools, 90 from Anatolian Imam Hatip high schools, 64 from fine arts high schools, and 160 from vocational and technical Anatolian high schools participated in the study. Of the total participants, 314 (51.6%) were in the 9th grade and 294 (48.4%) were in the 12th grade.

Table 2. Sample Structure

High School Type	Grade		Total
	9th	12th	
Science High School	50	45	95
Social Science High School	49	50	99
Anatolian High School	50	50	100
Anatolian Imam Hatip High School	42	48	90
Fine Arts High School	44	20	64
Vocational and Technical Anatolian High School	79	81	160
Total	314	294	608

3.2. Methodology

Cronbach's alpha test (Cronbach, 1951) was conducted to evaluate the reliability of the FL knowledge test items and the attitude scale. For this analysis, the multiple-choice items in the knowledge test were converted to a binary scale; a value of 1 was assigned to correct answers and 0 to incorrect answers. The results yielded Cronbach's alpha of 0.793 for the knowledge test and 0.708 for the attitude scale, indicating acceptable levels of internal consistency for both instruments.

The distribution of the knowledge test scores was examined using the Kolmogorov–Smirnov test, which revealed that the variable was not normally distributed. Consequently, non-parametric statistical tests were employed to test the hypotheses derived from the research questions. Non-parametric tests are distribution-free procedures (Bürkner et al., 2017) and are generally less restrictive than their parametric counterparts (Gultekin & Gultekin, 1983). They are based on ranking procedures (Rozeff & Kinney, 1976) and can provide better performance when the assumptions underlying parametric tests are not met. For example, the Kruskal–Wallis test often outperforms parametric alternatives in such cases (Van Hecke, 2012), while the Mann–Whitney U test may involve only minimal power loss compared to the unpaired t-test (Gibbons & Chakraborti, 1991).

Accordingly, the Mann–Whitney U test (Mann & Whitney, 1947), a robust non-parametric equivalent to the independent-samples t-test, was applied to hypotheses $H2_0$, $H3_0$ and $H7_0$. For hypotheses $H1_0$, $H4_0$, $H5_0$, $H6_0$ and $H8_0$, the Kruskal–Wallis test (Kruskal & Wallis, 1952), a widely used non-parametric alternative to the one-way ANOVA F-test, was employed.

3.3. Results

The descriptive statistics for demographic and socio-economic variables are presented in Table 3. Of the participants, 50.7% were male and 49.3% female. The education levels of students' families showed a declining trend, from elementary school (48%) to postgraduate education (1.5%). Regarding household income, 23.3% of families reported living on up to the minimum wage, 27.6% on up to 1.5 times the minimum wage, 27.1% on up to 2.5 times the minimum wage, 17.6% on

up to 5 times the minimum wage, and 4.5% on more than 5 times the minimum wage.

Only 4.3% of students had previously taken a course involving finance or economics, while 95.7% had not. Although 38% expressed an interest in taking such a course, 62% reported no interest. When asked how they would invest 250,000 TL, 41.3% of students indicated they would choose real estate, while 24.6% preferred gold.

In terms of work experience, 50.5% of students reported never having worked, 41% had worked only during the summer, and 8.5% had worked both during the summer and after school hours. With respect to future income expectations, 5.2% anticipated earning around the minimum wage, 13.5% up to 1.5 times the minimum wage, 31.3% up to 2.5 times the minimum wage, 23.5% up to 5 times the minimum wage, and 11.3% more than 5 times the minimum wage. 15% of students stated that they had never considered how much income they would like to earn in the future.

When asked to identify the three most instructive sources on money management, 71.5% cited their families as the primary source, followed by friends (25.1%) and life experience (23.4%). Finally, 33.6% of students reported having a bank account in their own name, whereas the majority did not.

Table 3. Descriptive Statistics for Demographics and Socio-Economic Variables

Variable	**Category**	**Valid Percent**	**Variable**	**Category**	**Valid Percent**
Gender	Male	50.7	If you had 250,000 TL, which investment tool would you turn to? (The two most selected have been reported)	Real Estate	41.3
	Female	49.3		Gold	24.6
Minimum education level of parents (both parents or one of the parents)	Elementary School Diploma	40.8	What is your work experience?	Never worked before	50.5
	Middle School Diploma	27.7		Only summers	41
	High School Diploma	19		Summers and after school	8.5

	Bachelor's Diploma	11	Your future income expectation after your education life	Up to the Minimum Wage	5.2
	Post-Graduate Diploma	1.5		Up to 1.5x of Minimum Wage	13.5
Household Income	Up to the Minimum Wage	23.3		Up to 2.5x of Minimum Wage	31.3
	Up to 1.5x of Minimum Wage	27.6		Up to 5x of Minimum Wage	23.5
	Up to 2.5x of Minimum Wage	27.1		More than 5x of Minimum Wage	11.3
	Up to 5x of Minimum Wage	17.6		Never thought before	15
	More than 5x of Minimum Wage	4.5	The three most instructive resources on matters related to managing your money	Family (1st choice)	71.5
Taking a finance / economics-related course or education before	Yes	4.3		Friends (2nd choice)	25.1
	No	95.7		Life experiences (3rd choice)	23.4
Would you like to take a finance/economics-related course?	Yes	38	Do you have a bank account in your name?	Yes	33.6
	No	62		No	66.3

Based on the 20-question knowledge test scored out of 100 points, Table 4 presents an overview of the FL knowledge levels of high school students. When all students are considered together, the mean test score was 37.61 (SD = 20.79). The average score of 9th-grade students (34.37, SD = 18.61) was lower than that of 12th-grade students (41.07, SD = 22.42). Among the six high school types surveyed, only science high school students achieved a mean score (65.31, SD = 15.17) above the threshold of 50. Additionally, the mean score of 12th-grade students at social sciences high schools (53.60, SD = 22.24) also exceeded 50.

IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: XV, Issue: 2, Year: 2025, pp. 1313-1337

Table 4. An Overview of High School Students' FL Knowledge Level

School Type	Mean Score	Std. Dv.	9th Grade Mean	9th Grade Std. Dv.	12th Grade Mean	12th Grade Std. Dv.
Science High School	65.31	15.17	60.70	16.72	70.44	11.37
Social Science High School	47.87	19.49	42.04	14.21	53.60	22.24
Anatolian High School	35.65	16.49	32.80	14.29	38.50	18.13
Anatolian Imam High School	31.33	17.84	27.73	15.74	34.47	19.10
Vocational and Technical Anatolian High School	25.21	10.43	23.22	9.13	27.16	11.28
Fine Arts High School	23.51	10.18	24.09	10.07	22.25	10.57
Overall	37.61	20.79	34.37	18.61	41.07	22.42

The distribution of responses to the FL knowledge test is presented in Table 5. The percentage of correct answers exceeded that of incorrect answers in only 3 out of the 20 questions. Thus, 85% of the items were answered incorrectly by most students, while only 15% were answered correctly by most participants.

Table 5. Distribution of Responses to FL Knowledge TestQuestions

Nr.	Standard	Correct (%)	Nr.	Standard	Correct (%)
1	Saving	39.9	11	Earning Income	39.5
2	Managing Risk	36.1	12	Earning Income	44.7
3	Saving / Investing / Credit Man.	29.9	13	Earning Income	26.6
4	Saving	22.7	14	Saving	50.7
5	Credit Management	27.5	15	Credit Management	48
6	Investing	36.9	16	Spending	29.6
7	Earning Income	59.9	17	Earning Income /Managing Risk	30.8
8	Spending	54.7	18	Investing	48.4
9	Spending	47.9	19	Earning Income	36.9
10	Managing Risk	35.3	20	Saving / Credit Man.	46.3

The Kruskal–Wallis test was applied to examine whether students' test scores differed significantly across school types (H1). The results (Table 6) revealed a statistically significant difference in FL knowledge levels among students from different school types ($X^2(5) = 256.834$, $p<0.01$). In terms of mean rank scores, science high schools and social sciences high schools ranked highest, followed by Anatolian high schools and Anatolian Imam Hatip high schools. Fine arts high schools and vocational and technical Anatolian high schools, which had similar mean rank scores, occupied the lowest positions.

Table 6. Hypothesis 1 Kruskal Wallis Test Result

FL Knowledge Test Score		N	Mean-Rank	Chi-square	Df	*P*
School Type	Science High School	95	512.43	256.834	5	0.000*
	Social Science High School	99	398.90			
	Anatolian High School	100	302.78			
	Anatolian Imam Hatip High School	90	251.96			
	Vocational and Technical Anatolian H. S.	160	201.57			
	Fine Arts High School	64	183.73			

*P <0.01. df = degree of freedom.

In Table 4, the difference in FL knowledge levels between 9th- and 12th-grade students is evident across all high school types except Fine Arts High School. To determine whether the higher scores of 12th-grade students differed significantly from those of 9th-grade students (H2), the Mann–Whitney U test was applied. Because the mean scores of 12th-grade students exceeded 50 points only in science high schools and social sciences high schools, the hypothesis was tested only for these two school types. The results of the Mann–Whitney U test (Table 7) showed statistically significant differences between the knowledge levels of 12th- and 9th-grade students in both school types (U=743.5, p<0.01; U=843.5, p<0.01).

Table 7. Hypothesis 2 Mann-Whitney U Test Results

FL Knowledge Test Score		N	Mean-Rank	Mann-Whitney U	*P*
Science High School	9th (Freshmann)	50	40.37	743.5	0.004*
	12th (Senior)	45	56.48		
Social Science High School	9th (Freshmann)	49	42.21	843.5	0.007*
	12th (Senior)	50	57.63		

*P <0.01

The influence of demographic and socio-economic factors on FL knowledge levels was examined across gender (H3), parental education background (H4), household income (H5), work experience (H6), and bank account ownership (H7). Hypotheses H4, H5, and H6 were tested using the Kruskal–Wallis test, while H3 and H7 were tested using the Mann–Whitney U test. The results (Table 8) can be summarized as follows. First, no statistically significant difference was observed between the knowledge levels of female and male students (U=42,355, p>0.05). Second, parental education background significantly influenced students' FL knowledge levels (X^2(4)=47.036, p<0.01), with mean rank scores increasing in parallel with family education level. Third, household income also had a

statistically significant effect ($X^2(4)=59.890$, $p<0.01$), and mean rank scores indicated that students from wealthier households demonstrated higher FL knowledge. Fourth, work experience was found to influence FL knowledge levels ($X^2(2)=7.302$, $p<0.05$). Interestingly, mean rank scores showed that students with work experience during the summer months or outside of school hours scored lower than students with no work experience. Finally, a statistically significant difference was observed between students with and without a bank account in their own name ($U=32{,}053$, $p<0.01$), with account holders achieving higher FL knowledge scores.

Table 8. FL Knowledge Level Across Key Demographic and Socio-Economic Variables

FL Knowledge Test Score		**N**	**Mean-Rank**	**Chi-square**	**Df**	***P***
Family Educational Background	Elementary School Diploma	245	273.53	47.036	4	0.000*
	Middle School Diploma	166	267.69			
	High School Diploma	114	333.32			
	Bachelor's Diploma	66	409.41			
	Post-Graduate Diploma	9	425.44			
Household Income	Up to the Minimum Wage	135	213.14	59.890	4	0.000*
	Up to 1.5x of Minimum Wage	160	273.13			
	Up to 2.5x of Minimum Wage	157	313.06			
	Up to 5x of Minimum Wage	102	367.92			
	More than 5x of Minimum Wage	26	359.13			
Working Experience	Never worked before.	109	344.18	7.302	2	0.026**
	Only summertime	427	293.72			
	In summertime and after school hours	70	299.83			
Financial Literacy Knowledge Test Score		**N**	**Mean-Rank**	**Mann-Whitney U**		***P***
Gender	Male	304	309.17	42355		0.213
	Female	296	291.59			
Having a Bank Account	Yes	200	335.24	32053		0.000*
	No	395	279.15			

*P <0.01, **P <0.05. df = degree of freedom.

In addition to the objective FL knowledge test, students were asked to evaluate their own FL by describing it as “good,” “normal,” or “bad.” These self-assessments reflected students’ perceived FL levels. To determine whether test

scores differed significantly across these perception groups (H8), the Kruskal–Wallis test was applied. The results (Table 9) revealed a statistically significant difference among the groups ($X^2(2)=10.645$, $p<0.01$). Interestingly, the mean rank scores indicated that students who described their FL as "bad" achieved higher knowledge test scores, whereas those who rated themselves as "good" had lower scores.

Table 9. Hypothesis 8 Kruskal-Wallis Test Result

FL Knowledge Test Score		N	Mean-Rank	Chi-square	Df	*P*
FL Knowledge Perception	Bad	137	331,33	10.645	2	0.005*
	Normal	328	301,92			
	Good	134	263,27			

*P <0.01. df = degree of freedom.

4. Discussion

The overall findings reveal that the FL level of high school students is generally low. Although science high schools stand out with higher levels, this situation cannot be generalized. These schools admit the most successful students through competitive placement exams and consistently achieve the highest university entrance rates (Arslan & Şen, 2021). There are only 322 public science high schools in Türkiye, educating approximately 135,000 students, which represents only 2.1% of the total secondary school student population (Republic of Türkiye Ministry of National Education, 2021). Consistent with our findings, previous studies have also reported higher FL levels among science high school students compared to other types (Yücel & Uysal, 2020; Semercioglu & Akcay, 2016). Social sciences high schools, another category of selective schools, also display relatively higher FL levels, though not as high as science high schools. For example, the mean score of 12th-grade students in social sciences high schools exceeded 50 out of 100. However, as social sciences high schools were introduced only in 2003 and expanded more widely after the 2010s, their overall presence remains limited, with just 92 schools serving around 43,000 students (0.68% of total high school enrollment) (Republic of Türkiye Ministry of National Education, 2021).

Both science and social sciences high schools admit students through entrance examinations, and graduates from these schools enjoy greater success in entering undergraduate programs compared to other types of high schools (Fevkal.com, 2022). Accordingly, the findings show that higher levels of FL are positively associated with higher levels of academic achievement. Yet, considering the broader picture, low performance in basic FL is evident. In line with this, Koç et al. (2022) emphasized that Turkish students score below the OECD average in the PISA assessments among 9th-grade students. Similarly, studies by Erkılıç (2019) and Şimşek et al. (2021) consistently reported low FL levels across different regions and school types. From the perspective of the TYMM, it could be inferred

that existing learning experiences may support limited financial awareness but fall short of fostering functional and action-oriented financial competencies at scale.

We could argue that some students acquire some level of financial knowledge during their overall high school experience. It is because, the results indicated that 12th-grade students had statistically higher FL levels compared to 9th-grade students in science and social sciences high schools. Similar results were observed in studies conducted in Izmir (Yüceyılmaz & Özgürel, 2018) and Istanbul (Üğüdücü, 2018). Several factors may explain this improvement, including exposure to mathematics courses over four years, incidental encounters with financial concepts in other subjects, preparation for university entrance exams, and broader life experiences. Nevertheless, the differences in mean scores between grades were not substantial, approximately 10 points in science high schools and 11.6 points in social sciences high schools.

Demographic and socio-economic factors were also found to influence FL levels across all school types. Students from wealthier families demonstrated higher FL levels, consistent with findings by Şimşek et al. (2021) and Üğüdücü (2018). Similarly, students whose parents had higher levels of education also achieved higher FL scores (Yüceyılmaz & Özgürel, 2018; Yücel & Uysal, 2020). Additionally, students with personal bank accounts scored higher than those without. By contrast, students with work experience showed lower FL levels. Given that few secondary school students enter the workforce in Türkiye, partly due to legal protections for minors; those who do typically work only during summer breaks or part-time. 63% of students with greater work experience were enrolled in vocational and technical high schools, where FL levels were the lowest overall.

These patterns point to the continued influence of family-based financial socialization and informal exposure, suggesting that without structured educational interventions, FL development remains uneven and socially stratified, that is an issue directly targeted by the equity-oriented goals of the TYMM.

Another noteworthy finding concerns the discrepancy between perceived and actual FL. Surprisingly, students who rated themselves as “good” in FL scored lower on the knowledge test, while those who rated themselves as “bad” scored higher. This demonstrates a substantial gap between self-perception and actual competence, reflecting the phenomenon of “not knowing what one does not know.” Moreover, only 38% of students expressed willingness to take a finance-related course, and just 31% indicated interest in reading or thinking about finance and economics. These patterns reveal not only low levels of financial knowledge but also limited motivation to improve.

Interpreted through the TYMM, this misalignment highlights deficiencies at the awareness stage, especially in students’ ability to critically assess their own competencies. Without accurate self-awareness, progression to functional and action-oriented FL becomes difficult, reinforcing the need for pedagogical

approaches that explicitly cultivate reflection, responsibility, and informed decision-making.

The combination of low awareness and low willingness to learn represents a serious barrier to fostering FL among Turkish youth.

5. Conclusion

This study provides an empirical assessment of FL among secondary school students in Isparta Province of Türkiye and emphasizes the need for systematic FLE within formal schooling. A survey was conducted to assess the FL levels of 9th- and 12th-grade students from six types of high schools. The findings indicate that while students in academically selective schools demonstrate relatively higher FL levels compared to those in other schools, overall FL level remains low. Furthermore, although 12th-grade students generally outperform 9th-grade students, the difference is modest.

The results illustrate the level of FL that students demonstrate prior to the systematic and process-oriented integration of FL envisioned by TYMM. The modest improvement observed between grade levels indicates that financial knowledge tends to develop in a fragmented and incidental manner when it is not supported by clearly defined instructional processes and learning progressions.

In this context, TYMM represents a significant shift by defining FL as a core competency to be developed through a multidisciplinary perspective, linking process components with learning outcomes across different programs. Rather than positioning FL as a standalone subject, the model embeds FL within subject-specific curricula such as mathematics. However, the curriculum documents do not explicitly detail how individual FL subcomponents are to be operationalized within instructional processes, how they should be sequenced across grade levels, or how they should be addressed alongside subject-matter skills in classroom practice.

Accordingly, the effective implementation of FL within TYMM requires supporting studies and instructional guidance. The study offers the following recommendations for supporting the effective implementation of FL within the TYMM:

(1) Instructional activities aligned with the FL references in the curriculum can be designed to support the simultaneous development of subject-specific skills and FL skills. In disciplines such as mathematics, such activities may help make FL process components more explicit within classroom practice, especially given the content-focused nature of textbook examples.

(2) Measurement and evaluation tools can be developed to support the integration of FL across disciplines. Process-oriented assessment approaches may enable systematic monitoring of students' FL development and provide evidence on how different instructional practices contribute to FL outcomes.

(3) Professional development initiatives can be implemented to support teachers working within the TYMM framework. FL constitutes a relatively new competency for many teachers, raising questions about how instructional processes should be structured from an FL perspective. In-service training programs focusing on FL concepts, skills, and curriculum integration may help address these challenges.

(4) Digital learning environments such as Education Information Network (Eğitim Bilişim Ağı, EBA) and Ministry of National Education Individual Learning Platform (Milli Eğitim Bakanlığı Bireysel Öğrenme Platformu, MEBİ) can be utilized more effectively to support FL development. By incorporating interactive digital materials related to FL and embedding QR-code–linked resources into textbooks, students' in-class and out-of-class learning experiences can be enriched. Such practices may contribute to the development of FL as both a skill and an attitude, while supporting students' individualized learning pathways.

Taken together, our recommendations emphasize that the successful realization of FL within the TYMM depends not only on the inclusion of FL in curriculum documents but also on instructional design, teacher support, assessment practices, and the effective use of digital learning platforms.

Finally, we should note that the TYMM is currently in its initial phase of implementation, beginning with Grades 1, 5, and 9 in 2024 and expanding gradually to additional grade levels in subsequent years. Given this phased rollout, the full effects of the model on students' FL cannot be expected to emerge until the students have experienced the curriculum consistently across multiple years of schooling. As such, it remains premature to assess FL outcomes attributable to the model at this stage. Nevertheless, the present study provides an empirical baseline of students' FL levels across different school types and grade levels, offering a reference point that can support future longitudinal and comparative research as the implementation of the TYMM progresses.

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