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Does Financial Risk Education Improve Financial Literacy? Evidence from a Quasi-Experimental Study among Indonesian University Students

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ABSTRACT
The rapid expansion of digital financial services has increased the importance of financial literacy, particularly among young adults who are increasingly exposed to consumer credit products, online lending, and buy-now-pay-later services. This study aims to evaluate the effectiveness of a financial risk education program in improving financial literacy among Indonesian university students. A quantitative approach employing a one-group pretest-posttest quasi-experimental design was used. The study involved 70 undergraduate students from the Faculty of Economics, Universitas Sriwijaya, who participated in a financial risk education program covering financial literacy, consumer financing, responsible borrowing behavior, digital financial services, and financial risk management. Data were collected through structured questionnaires administered before and after the intervention and analyzed using the Wilcoxon Signed-Rank Test. The findings revealed a significant improvement in participants' financial literacy following the intervention, with the mean score increasing from 30.04 to 30.94. The Wilcoxon test indicated a statistically significant difference between pretest and posttest scores (Z = 2.151; p = 0.0315). Furthermore, participants demonstrated a high level of understanding regarding responsible borrowing, the risks associated with excessive use of paylater services, and impulsive buying behavior. These findings suggest that financial risk education can serve as an effective strategy for enhancing financial literacy and promoting more responsible financial decision-making among university students.

Keywords:* *Financial Risk Education; Financial Literacy; University Students; Quasi-Experimental Study; Financial Behavior

INTRODUCTION

The rapid development of digital financial services has significantly transformed the way individuals access and manage financial products. Innovations such as mobile banking, electronic wallets, online lending platforms, and buy-now-pay-later (BNPL) services have expanded financial inclusion (Coffie et al., 2021) and improved access to formal financial services. While these developments offer greater convenience and financial opportunities, they also expose individuals to a variety of financial risks (Larisa et al., 2021), including excessive borrowing, impulsive spending (Katauke et al., 2023), debt accumulation, and poor financial decision-making(Hu & Hughes, 2020). These challenges are particularly relevant for young adults(Utami et al., 2025), who are among the most active users of digital financial services but often lack sufficient experience in managing personal finances and financial risks.

In Indonesia, improving financial literacy has become a national priority as the financial sector continues to evolve (Aeknarajindawat, 2020; Sohilauw et al., 2020). According to the National Survey of Financial Literacy and Inclusion conducted by the Financial Services Authority (OJK), the financial literacy index has shown substantial improvement in recent years. However, the gap between financial inclusion and financial literacy remains a concern. Many individuals have access to financial products and services (Rahmawati et al., 2019)but do not necessarily possess adequate knowledge to evaluate financial opportunities and risks (Akhtar et al., 2024; Yang et al., 2018). As a result, consumers may engage in inappropriate borrowing practices, misuse financial products, or make financial decisions that negatively affect their long-term financial well-being.

Financial literacy is widely recognized as an essential factor in promoting sound financial behavior (Mitchell & Lusardi, 2023). Individuals with higher levels of financial literacy tend to demonstrate better budgeting practices (S et al., 2024), stronger saving habits, more effective debt management, and greater preparedness for future financial needs. Furthermore, financial literacy contributes to financial resilience by enabling individuals to evaluate financial alternatives, understand financial risks, and make informed decisions in increasingly complex financial environments (Organización para la Cooperación y el Desarrollo Económicos [OCDE], 2020). Consequently, enhancing financial literacy has become a key objective for governments, educational institutions, and financial service providers worldwide.

One of the most common approaches to improving financial literacy is the implementation of financial education programs (Anggraini et al., 2026). Previous studies have generally reported positive relationships between financial education and financial knowledge (Gibson et al., 2022; Horwitz et al., 2021), suggesting that educational interventions can enhance individuals' understanding of financial concepts and financial products. Financial education has also been associated with improvements in financial planning, responsible borrowing behavior, and overall financial capability. Nevertheless, the effectiveness of financial education programs remains a subject of debate. While some studies report substantial improvements in financial literacy following educational interventions (İlbasmış et al., 2025), others find relatively modest effects (Kaiser & Menkhoff, 2017), indicating that educational outcomes may depend on participant characteristics, instructional methods, and program content (Jin et al., 2025).

Despite the growing body of literature on financial literacy, several research gaps remain. First, many existing studies rely on cross-sectional survey designs that examine the association between financial literacy and financial outcomes (Purnomo, 2019; Rohaeni, 2025; Zhao & Zhang, 2020). Although such studies provide valuable insights, they offer limited evidence regarding whether educational interventions directly improve financial literacy. Second, relatively few studies specifically evaluate financial risk education programs that focus on responsible borrowing, debt management, digital financial services, and financial risk awareness (Buchdadi et al., 2020; Larisa et al., 2021). Third, empirical evidence from developing countries, particularly Indonesia, remains limited despite the rapid growth of digital financial services and increasing concerns regarding financial behavior among young adults (Utami et al., 2025).

Addressing these gaps is important because financial risk education differs from general financial education. Financial risk education emphasizes individuals' ability to identify, assess, and manage financial risks associated with borrowing decisions, consumer financing products, and digital financial services. As financial products become increasingly accessible, understanding financial risks is becoming as important as understanding financial products themselves. Therefore, evaluating the effectiveness of financial risk education programs is necessary to determine whether such interventions can improve financial literacy and promote more responsible financial behavior.

This study focuses on university students because they represent a population that is increasingly exposed to various financial products and services while simultaneously developing financial independence. University students are frequently confronted with decisions related to spending, borrowing, saving, and the use of digital financial services. Consequently, strengthening their financial literacy and financial risk awareness may contribute to healthier financial behavior both during their academic years and in their future professional lives.

To address the identified research gaps, this study evaluates the effectiveness of a financial risk education program among Indonesian university students using a quasi-experimental approach. Unlike many previous studies that employ cross-sectional survey methods, this study applies a one-group pretest-posttest design to directly measure changes in participants' financial literacy following an educational intervention. The program covers financial literacy, responsible borrowing behavior, consumer financing products, digital financial services, and financial risk management.

This study contributes to the existing literature in three ways. First, it extends previous research by focusing specifically on financial risk education rather than general financial education. Second, it employs a quasi-experimental design that provides more direct evidence regarding the effectiveness of educational interventions. Third, it offers empirical evidence from Indonesia, an emerging economy where financial inclusion has expanded rapidly while financial literacy challenges remain significant. Therefore, the objective of this study is to examine whether participation in a financial risk education program can improve financial literacy among Indonesian university students.

METHODS

This study employed a quantitative approach using a quasi-experimental design with a one-group pretest-posttest format to evaluate the effectiveness of a financial risk education program in improving financial literacy among university students. A quasi-experimental approach was considered appropriate because the study aimed to assess changes in participants' financial literacy before and after an educational intervention in a real educational setting where random assignment and the inclusion of a control group were not feasible(Hallberg & Eno, 2015).

The study was conducted during a financial risk education program organized for undergraduate students of the Faculty of Economics, Universitas Sriwijaya. The educational intervention was designed to enhance participants' understanding of financial literacy, financial inclusion, consumer financing products, responsible borrowing behavior, digital financial services, and financial risk management. The program was delivered by practitioners from the financial services industry through presentations, interactive discussions, and question-and-answer sessions. The intervention lasted approximately three hours.

The population of this study consisted of undergraduate students enrolled in the Faculty of Economics, Universitas Sriwijaya. Participants were selected using a convenience sampling technique based on their voluntary participation in the educational program. A total of 70 students who completed both the pretest and posttest questionnaires were included in the final analysis. University students were chosen as the target population because they are increasingly exposed to financial products and digital financial services while simultaneously facing important financial decisions related to spending, borrowing, and personal financial management.

Primary data were collected using structured questionnaires administered before and after the educational intervention. The pretest instrument initially consisted of ten Likert-scale items designed to measure participants' financial literacy, financial risk awareness, and financial decision-making attitudes. The posttest instrument consisted of seven comparable Likert-scale items and three knowledge-based questions related to responsible borrowing, paylater services, and impulsive buying behavior. Responses were measured using a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Negatively worded items were reverse-coded to ensure consistency in score interpretation, with higher scores indicating higher levels of financial literacy and financial risk awareness.

Data analysis was performed using Stata 13. Descriptive statistics were first employed to summarize participants' financial literacy scores before and after the intervention. The reliability of the instruments was assessed using Cronbach's Alpha to evaluate internal consistency. Prior to hypothesis testing, the normality of the difference scores between pretest and posttest results was examined using the Shapiro–Wilk test. Because the normality assumption was not satisfied, the Wilcoxon Signed-Rank Test was used to assess differences between pretest and posttest financial literacy scores. In addition, effect size analysis was conducted to evaluate the practical significance of the educational intervention. The three knowledge-based questions were analyzed descriptively using frequencies and percentages to assess participants' understanding of key financial concepts presented during the program.

Participation in this study was entirely voluntary. Prior to data collection, participants were informed about the objectives of the study and assured that their responses would remain confidential. No personally identifiable information was collected, and all data were analyzed anonymously. The results are reported only in aggregate form and were used solely for academic research purposes.

RESULTS AND DISCUSSION

3.1 Reliability Analysis

Prior to evaluating the effectiveness of the financial risk education program, the reliability of the research instruments was assessed to ensure the consistency of the measurements. Reliability testing was conducted using Cronbach's Alpha, which is commonly used to evaluate the internal consistency of questionnaire items.

The pretest instrument initially consisted of ten items designed to measure participants' financial literacy, financial risk awareness, and financial decision-making attitudes. The initial reliability analysis yielded a Cronbach's Alpha coefficient of 0.790, indicating an acceptable level of internal consistency. Further examination revealed that one item related to purchasing goods based on wants rather than needs demonstrated a weak correlation with the overall construct. After removing this item, the Cronbach's Alpha coefficient increased to 0.838, indicating improved reliability. Consequently, the final pretest instrument consisted of nine items and was retained for subsequent analysis.

The posttest instrument consisted of seven items measuring participants' financial literacy and financial risk awareness following participation in the educational intervention. The reliability analysis produced a Cronbach's Alpha coefficient of 0.817, which exceeded the commonly accepted threshold of 0.70. Therefore, all posttest items were retained for further analysis.

The results of the reliability analysis are presented in Table 1.

Table 1. Reliability analysis of the research instruments

Instrument	Number of Items	Cronbach's Alpha	Interpretation
Pretest (Initial)	10	0.790	Acceptable
Pretest (Final)	9	0.838	Good
Posttest	7	0.817	Good

Overall, the findings indicate that both instruments demonstrated satisfactory internal consistency. The Cronbach's Alpha values exceeded the recommended threshold of 0.70, suggesting that the instruments were reliable and appropriate for measuring participants' financial literacy and financial risk awareness before and after the educational intervention.

3.2 Changes in Financial Literacy Scores Following the Intervention

To evaluate the effectiveness of the financial risk education program, participants' financial literacy scores before and after the intervention were compared. Since the pretest and posttest instruments contained different numbers of items, only the seven comparable Likert-scale items included in both instruments were used for the analysis.

Prior to hypothesis testing, a Shapiro–Wilk test was conducted to assess the normality of the difference scores between pretest and posttest results. The results indicated that the difference scores were not normally distributed ($W = 0.930$, $p = 0.001$). Therefore, the

Wilcoxon Signed-Rank Test was employed to examine whether the educational intervention resulted in a significant change in participants' financial literacy scores.

Descriptive statistics for the pretest and posttest scores are presented in Table 2.

Table 2. Descriptive statistics of financial literacy scores

Variable	N	Mean	SD	Minimum	Maximum
Pretest Score	70	30.04	2.92	14	35
Posttest Score	70	30.94	3.40	12	35

As shown in Table 2, the mean financial literacy score increased from 30.04 before the intervention to 30.94 after the intervention. Although the increase was relatively modest, it suggests an improvement in participants' understanding of financial management and financial risk concepts following the educational program.

To determine whether this increase was statistically significant, a Wilcoxon Signed-Rank Test was conducted. The results are presented in Table 3.

Table 3. Wilcoxon Signed-Rank Test Results

Statistic	Value
Positive Ranks	38
Negative Ranks	26
Ties	6
Z-value	2.151
p-value	0.0315

The results revealed a statistically significant difference between pretest and posttest scores ($Z = 2.151$, $p = 0.0315$). Since the p-value was below the 0.05 significance level, the null hypothesis was rejected. Among the participants, 38 students demonstrated improved scores after the intervention, while 26 students showed lower scores and 6 students experienced no change. These findings indicate that the financial risk education program successfully improved participants' financial literacy and financial risk awareness. Therefore, the study objective was achieved, as the proposed educational intervention generated a measurable improvement in financial literacy among Indonesian university students.

3.3 Knowledge Acquisition After the Educational Program

In addition to evaluating changes in financial literacy scores, the study also assessed participants' understanding of key financial concepts through three knowledge-based questions included in the posttest. These questions focused on responsible borrowing behavior, the risks associated with pay later services, and impulsive buying behavior, which were among the main topics discussed during the educational intervention.

The results revealed a high level of knowledge acquisition among participants. Almost all respondents demonstrated a clear understanding of the financial concepts presented during the program. Specifically, all participants correctly recognized that excessive use of pay later services may lead to financial problems in the future. Likewise, all respondents correctly identified repayment capacity as the most important consideration before taking a loan. In addition, 97.1% of participants correctly classified purchasing goods solely because of large discounts without considering actual needs as a form of impulsive buying behavior.

The results are presented in Table 4.

Table 4. Participants' responses to financial literacy knowledge questions

Knowledge Question	**Correct Response**	**Correct Responses (n)**	**Percentage (%)**
Consequences of excessive pay later use	Financial problems in the future	70	100.0
Most important consideration before taking a loan	Ability to repay	70	100.0
Purchasing goods because of discounts without considering needs is classified as	Impulsive buying	68	97.1

The findings indicate that the educational intervention was effective in delivering practical financial knowledge directly related to everyday financial decisions. The high percentage of correct responses suggests that participants were able to understand and retain the key messages communicated during the program. This outcome is particularly important given the increasing popularity of consumer financing products and digital credit services among young adults.

3.4 Discussion

The findings of this study demonstrate that financial risk education can significantly improve financial literacy among university students. The significant difference between pretest and posttest scores indicates that the educational intervention successfully enhanced participants' understanding of financial management, responsible borrowing, and financial risk awareness. These findings provide empirical support for the argument that financial literacy is not merely an individual characteristic but can be developed through structured educational interventions (İlbasmış et al., 2025; Zhu et al., 2021).

From a theoretical perspective, the results are consistent with Human Capital Theory (Khan et al., 2025), which suggests that investments in education increase individuals' knowledge and competencies, thereby improving their ability to make informed decisions. In the context of financial literacy, educational programs provide participants with information and analytical skills that enable them to evaluate financial products, understand financial risks, and make more rational financial decisions (Baschieri & Carosi, 2025). The observed improvement in literacy scores suggests that the intervention contributed to the accumulation of financial knowledge, which may serve as an important foundation for future financial behavior.

The findings also support the Financial Capability Framework, which argues that effective financial decision-making depends not only on access to financial services but also on individuals’ ability to understand and manage financial resources (Lučić et al., 2023) . As digital financial products become increasingly accessible, financial capability has become a critical component of financial well-being. The educational intervention examined in this study focused not only on financial concepts but also on practical issues such as debt management, paylater services, and consumer financing (Mabula & Ping, 2018). Consequently, participants were exposed to financial situations that closely resemble real-life financial decisions (Rohaeni, 2025), making the learning process more relevant and applicable.

The results are generally consistent with previous studies that report positive effects of financial education on financial literacy outcomes. Earlier research has shown that educational interventions can improve financial knowledge, increase awareness of financial risks, and promote more responsible financial behavior (Garg & Singh, 2018). Similar to these studies, the present research found that participants demonstrated higher levels of financial literacy after participating in the educational program. However, unlike studies that reported large improvements in financial literacy scores, the magnitude of change observed in this study was relatively modest (Angrisani et al., 2023).

Several factors may explain the relatively small effect size despite the statistically significant improvement. First, participants entered the program with relatively high baseline literacy levels, as reflected by the pretest mean score of 30.04 out of a maximum score of 35. This suggests that many participants already possessed a basic understanding of financial concepts before the intervention. Consequently, the opportunity for substantial improvement was limited. This phenomenon, commonly known as a ceiling effect, is frequently observed in educational research when participants begin with relatively high levels of prior knowledge.

Second, the intervention was conducted as a single educational session lasting approximately three hours. While such programs can effectively improve knowledge and awareness, financial literacy is a complex competency that develops over time through repeated learning experiences and practical application. Previous studies have suggested that sustained educational exposure, experiential learning, and continuous reinforcement tend to produce stronger and more durable improvements in financial literacy. Therefore, the modest effect size identified in this study should not be interpreted as evidence of limited program value, but rather as an indication that financial literacy development is a gradual process.

An important insight emerges when the effect size results are considered alongside the knowledge-based assessment. Although the increase in overall literacy scores was relatively small, participants demonstrated exceptionally high levels of understanding regarding key financial concepts. Nearly all respondents correctly identified the risks associated with excessive use of paylater services, recognized repayment capacity as the most important consideration before borrowing, and understood the concept of impulsive buying behavior.

These findings suggest that the intervention was particularly effective in transmitting practical financial knowledge that participants could immediately comprehend and apply.

This distinction is important because financial literacy encompasses multiple dimensions, including knowledge, attitudes, confidence, and behavior. Educational interventions often generate immediate improvements in knowledge acquisition, while changes in attitudes and behavior typically require longer periods to develop. Therefore, the modest increase in literacy scores should not overshadow the substantial gains observed in participants' understanding of responsible financial practices. The findings indicate that financial risk education may be especially effective in strengthening short-term financial knowledge, which can subsequently contribute to improved financial decision-making over time.

The practical implications of these findings are particularly relevant in the context of rapid digital financialization. Young adults are increasingly exposed to online lending platforms (Utami et al., 2025), consumer financing products, and buy-now-pay-later services that offer convenience but also introduce significant financial risks (Kempers et al., 2019). Without adequate financial literacy, individuals may underestimate borrowing costs, accumulate excessive debt, and engage in impulsive consumption. The results of this study suggest that financial risk education can serve as an effective preventive strategy by increasing awareness of financial consequences before risky financial behaviors become established.

Despite these contributions, several limitations should be acknowledged. The use of a one-group pretest-posttest design limits the ability to isolate the intervention effect from other external influences. In addition, the sample was restricted to students from a single university, which may limit the generalizability of the findings. Furthermore, the study measured outcomes immediately after the intervention and therefore could not determine whether knowledge gains would be retained over the long term. Future studies should employ control groups, larger and more diverse samples, and longitudinal designs to examine the sustainability of educational outcomes and their influence on actual financial behavior.

CONCLUSION AND RECOMMENDATIONS

This study examined the effectiveness of a financial risk education program in improving financial literacy among Indonesian university students using a one-group pretest-posttest quasi-experimental design. The findings indicate that participation in the educational program resulted in a statistically significant improvement in financial literacy. In addition, participants demonstrated a strong understanding of key financial concepts, particularly those related to responsible borrowing behavior, the risks associated with excessive use of paylater services, and impulsive buying behavior. These results suggest that financial risk education can serve as an effective approach to strengthening financial literacy and increasing awareness of responsible financial decision-making among young adults.

Although the magnitude of improvement was relatively modest, the findings highlight the importance of educational interventions in developing financial knowledge and risk awareness. The results support the view that financial literacy can be enhanced through structured educational programs and that financial risk education represents a valuable complement to broader financial literacy initiatives. Given the increasing accessibility of digital financial products and consumer credit services, strengthening financial risk awareness among young adults has become increasingly important.

The findings of this study have practical implications for universities, policymakers, and financial institutions. Educational institutions may consider integrating financial risk education into academic and student development programs, while policymakers and financial service providers may utilize similar educational initiatives to promote responsible financial behavior and improve public financial capability. Such efforts may contribute to reducing financially risky behaviors and supporting long-term financial well-being.

Several limitations should be acknowledged. First, the study employed a one-group pretest-posttest design without a control group, limiting the ability to attribute changes exclusively to the intervention. Second, the sample was restricted to students from a single university, which may limit the generalizability of the findings. Third, the study measured outcomes immediately after the intervention and therefore could not assess the long-term retention of financial knowledge and awareness.

Future research is encouraged to employ experimental or quasi-experimental designs involving control groups, larger and more diverse samples, and longitudinal assessments. Further studies may also examine whether improvements in financial literacy translate into long-term changes in financial behavior, including borrowing decisions, saving habits, and financial planning practices. Such research would provide a more comprehensive understanding of the role of financial risk education in promoting sustainable financial well-being.

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