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Article

Knowledge to Sustainable Practice: A Longitudinal Study of Young Women's Financial Literacy Journey

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Abstract: This longitudinal qualitative study examines the impact of the Invest in Girls (IIG) financial literacy program on young women's financial knowledge, behavior, and skills, with implications for their long-term economic sustainability. Using data from 98 interviews conducted over four years with program alumnae, the study reveals a progression in financial literacy skills as participants transition from high school through college. Key findings include the evolving importance of budgeting skills, a progression from basic financial concepts to complex real-world applications, and a persistent desire for enhanced tax education. The study highlights the importance of adapting financial literacy programs to meet the evolving needs of young women. These insights contribute to our understanding of how targeted financial education can better prepare young women for long-term economic sustainability in an increasingly complex financial landscape, potentially addressing broader issues of gender inequality in finance.

Keywords: financial literacy; longitudinal study; budgeting; young women; economic sustainability

1. Gender Gaps in Finance and Financial Literacy

The finance industry offers high-demand, high-wage career opportunities, being one of the vital sectors in the global economy [1]. In the United States, the median hourly wage for business and financial occupations was \$38 in May 2023, higher than the median hourly wage of \$23.11 for all occupations [2]. Although women constituted approximately 51% of the financial activities workforce, the numbers are much lower in lucrative subsectors such as funds, trusts, and other financial investments (37%) and rental and leasing services (24.8%) [3]. Deeper inequalities exist within the industry, especially regarding earnings and leadership representation. In 2020, women in finance and insurance combined earned about 76% of what their male counterparts earned [4]. Women occupy 23% of executive committee roles and 29% of senior leadership positions in financial services [4], underscoring persisting gender gaps in finance.

Several interrelated factors have contributed to the underrepresentation of women in finance. First, the finance industry has historically been male-dominated [5]. With fewer female leaders to look up to, girls and young women struggle to envision themselves in finance careers, creating a self-perpetuating cycle [6]. Second, the finance industry is renowned for its long hours of work and high-pressure environments [7]. These conditions can disproportionately affect women, who are more likely to bear primary caregiving responsibilities at home [8]. The difficulty in balancing career advancement with personal commitments may lead some women to opt out of the industry or pursue leadership roles. Third, unconscious biases continue to influence hiring and promotion practices in the finance sector [9]. Bohnet (2016) found that these biases can subtly favor male candidates, particularly for leadership positions [10]. Lastly, the underrepresentation of women in finance begins early in the educational pipeline. Research indicates that fewer young women pursue finance-related majors and career pathways compared to their counterparts [11].

While these factors contribute to women's underrepresentation in finance, they are closely intertwined with a more fundamental issue: the persistent gender gap in financial literacy. The TIAA Institute-GFLEC Personal Finance Index (P-Fin Index) consistently shows that women, on average,

answer fewer financial literacy questions correctly compared to their counterparts [12]. This gap is particularly pronounced in topic areas such as investing, insuring, and comprehending risk. Compared to women with very high financial literacy, women with very low financial literacy are five times more likely to spend 10 or more hours per week on personal finance issues [13]. Lower financial literacy can contribute to lower confidence in financial matters, potentially discouraging them from pursuing finance-related education and career pathways.

The implications of this financial literacy gap extend far beyond individual competencies. Financial literacy skills foster economic sustainability for young women, as they directly affect women's ability to manage debt, plan for retirement, and accumulate wealth [14,15]. Budgeting skills, for instance, enable young women to allocate resources more efficiently, promoting sustainable financial practices. As young women gain proficiency in these areas, they become less reliant on others for financial guidance, fostering a sense of financial independence. Furthermore, understanding credit and how investment works empowers them to build and manage wealth effectively, contributing to their economic well-being. Financial literacy gaps, however, begin to form at a young age, highlighting the importance of early interventions [16–18]. Understanding and addressing this fundamental gap in financial literacy is crucial. It can help break the cycle of underrepresentation in the finance industry by empowering more girls and young women with the knowledge and confidence to pursue finance-related careers [19]. It can also contribute to closing the gender wage gap by equipping women with the financial literacy skills needed to negotiate salaries and manage their finances more effectively.

Given these implications, this study highlights the importance of financial literacy programs specifically designed for girls. It aims to examine the long-term impact of one such program, Invest In Girls (IIG), on the development of financial literacy skills among its alumnae. The effectiveness of the IIG curriculum was examined in our previous study using a quasi-experimental separate-samples pretest-posttest design [20]. The study also provided details of the curriculum, outlining three workshop modules and the demographic information on the participating high schools. To conduct a deeper examination of the curriculum's long-term impact on IIG alumnae, the research team carried out one-on-one interviews annually from Fall 2019 through Spring 2023, following these young women after their graduation.

2. Financial Literacy Programs in the United States

Financial literacy programs in the United States vary in scope, target audience, and delivery method, reflecting the diverse needs of the population. At the national level, the Financial Literacy and Education Commission (FLEC), established by the Fair and Accurate Credit Transactions Act of 2003, coordinates financial education efforts across federal agencies [21]. Aligned with the existing literature [16–18], FLEC's national strategy emphasizes the importance of starting financial education early and continuing it throughout life. In the education sector, there has been a growing trend towards integrating financial literacy into school curricula. As of 2022, 23 states require high school students to take a course in personal finance [22]. These courses typically cover topics such as budgeting, saving, and investing. Several non-profit organizations also play a crucial role in providing financial education. For example, Jump\$tart Coalition for Personal Financial Literacy offers a variety of educational resources as well as advocates for effective financial education policies [23]. In the private sector, many banks offer financial literacy programs as part of their corporate social responsibility initiatives. For instance, Wells Fargo's Hands on Banking program provides free financial education resources for individuals of all ages [24]. Similarly, Fidelity Investments offers various financial education initiatives, including Fidelity Financial Forward, which provides online resources for teens and families, as well as infographics for educators [25].

The OECD's PISA financial literacy assessment framework provides guidance in this area, recommending four key topic areas: money and transactions, planning and managing finances, risk and reward, and financial landscape [26]. This framework aligns with the comprehensive view of financial literacy proposed by Huston (2010), who argues that financial literacy should include the ability to understand financial terms, have sufficient knowledge to manage personal finances, and

the capability to utilize that knowledge in financial decision-making [27]. Building on these foundational efforts, research has begun to identify specific skills that contribute to overall financial literacy. For example, Lusardi and Mitchell (2014) identified numeracy to calculate interest rates, an understanding of inflation, and knowledge of risk diversification as fundamental knowledge and skills [15]. Similarly, Xiao and O'Neill (2016) found that budgeting behavior was positively associated with overall financial capability, including better credit management and long-term financial planning [28].

While financial literacy programs and research studies are widespread for the general population, initiatives targeting girls are limited. Recognizing the unique challenges faced by girls and women in finance, some organizations have developed tailored programs. One notable example that begins early is the Girl Scouts of the USA, which offers a series of financial literacy badges for girls from kindergarten through 12th grade [29]. These badges cover topics such as budgeting, philanthropy, and business ethics, providing age-appropriate financial education. The YWCA USA has also developed girl-specific financial literacy programs. Their "Economic Empowerment" programs aim to help participants develop healthy financial habits and gain confidence in managing their own money [30].

Despite these efforts, research on the long-term impact of girl-specific financial literacy programs remains scarce. A longitudinal study conducted by the New Zealand Financial Education and Research (NZ Fin-Ed) Centre is highly relevant, as participants are repeatedly surveyed and interviewed every five years [31]. However, the study tracks the evolving financial knowledge and behaviors of the general population without a specific intervention. Danes and Haberman (2007) support that gender-specific approaches to financial education can be more effective for girls, highlighting the need for more tailored programs [17]. The lack of girl-specific financial literacy programs, coupled with the gender gap in finance, underscores the importance of the present study and future research in this area. By examining girls' experiences with the IIG program and changes in their knowledge, behavior, and skills over time, the study fills a critical research gap and informs the design and implementation of more effective financial education programs for girls.

Research questions include:

- a. In what ways does the financial literacy knowledge gained from the IIG program manifest in participants' financial behaviors and skills?
- b. How do participants' perceptions of the various aspects of the IIG curriculum evolve over time, from immediately after participation through their college years?
- c. How do the financial education needs of participants change over time, and how well does the IIG program address these evolving needs?

3. Methods

This study employed a longitudinal qualitative approach [32] to examine the long-term impact of the Investing in Girls (IIG) financial literacy program on participants' knowledge, behavior, and skills. Conducted from 2019 to 2023, the study was designed to capture changes in financial literacy and skills over time. By following cohorts for up to four years, the study addresses both the immediate and long-term impact of a girl-specific program.

3.1. Participants

Participants were recruited through IIG directors, who invited the girls to participate in the study upon the program completion. Those interested submitted a Google form to the directors, and once it was determined that we had a large enough pool of participants, the directors forwarded their contact information to the research team. In Fall 2019, seven IIG alumnae expressed their interest in the first-year study (Fall 2019 Cohort). Five of these alumnae came back for the second-year interviews conducted in Fall 2020, and all seven participants returned for the third- and fourth-year interviews conducted in Fall 2021 and Fall 2022. A new cohort of eight IIG alumnae were interviewed in Spring 2020 (Spring 2020 Cohort). Five of these alumnae participated in the second-year interviews

in Spring 2021, and four and three returned for the third- and fourth-year interviews conducted in Spring 2022 and Spring 2023, respectively.

The COVID-19 pandemic had a significant impact on recruitment in the following years. A new cohort of two alumnae were interviewed in Fall 2020 (Fall 2020 Cohort), and both came back for the second and third-year interviews in Fall 2021 and Fall 2022. As data collection ended in Spring 2023, there were no fourth-year interviews conducted with this cohort.

Starting from Spring 2021, the research team followed up with the potential participants as soon as they submitted their interest form, instead of waiting for a cohort to be established. This helped increase the response rate, resulting in a total of 18 students participating in the interviews in Spring 2021 (Spring 2021 Cohort). Thirteen of them returned for the second-year interviews conducted in Spring 2022, and 12 returned for the third-year interviews conducted in Spring 2023. During the 2021-22 academic year, there were staff transitions at IIG which made it difficult to identify new study participants. While we had a limited number of students interested in the study during this time (2 participants in Fall 2021), it was determined that data saturation had been reached for the one-year post-graduation data, where additional data confirmed the themes and patterns that had already been identified from the previous cohorts.

Table 1 summarizes the number of participants in each cohort and their participation in subsequent interviews. As data collection ended in Spring 2023, the Fall 2019 cohort had completed four interviews; the Spring 2020 cohort had completed four interviews; the Fall 2020 and Spring 2021 cohorts had completed three interviews; and the Fall 2021 cohort had completed two interviews. In total, 98 interviews have been conducted across all cohorts, with 37 one-year post-graduation interviews, 26 two-year post-graduation interviews, 25 three-year post-graduation interviews, and 10 four-year post-graduation interviews.

Table 1. Number of Interviews by Participants Cohort.

Cohort	1-year post	2-year post	3-year post	4-year post
Fall 2019	7 students	5 students (Fall 2020)	7 students (Fall 2021)	7 students (Fall 2022)
Spring 2020	8 students	5 students (Spring 2021)	4 students (Spring 2022)	3 students (Spring 2023)
Fall 2020	2 students	2 students (Fall 2021)	2 students (Fall 2022)	-
Spring 2021	18 students	13 students (Spring 2022)	12 students (Spring 2023)	-
Fall 2021	2 students	1 student (Fall 2022)	-	-
Total (98 interviews)	37	26	25	10

3.2. Data Collection Procedure

Semi-structured interviews were conducted annually with each participant via Zoom, which lasted approximately 30 minutes. Initial interviews followed these steps: a) Review of IRB consent information; b) Questions about the study and their rights as participants; c) Main interview; and d) Final comments and next steps. To ensure consistency in data collection across multiple years, the same core set of questions was used in each interview. Follow-up interviews typically followed the same steps with a brief review of IRB information and a few additional questions during the main interview. These additional questions were included in subsequent years to explore how participants' experiences and perspectives changed over time (see Appendix for the interview questions).

3.3. Plan for Analysis

The interview data were transcribed and coded using NVivo qualitative data analytic software. A thematic analysis was conducted, combining the steps outlined by Braun and Clarke (2006) with a hybrid coding process that begins deductively with overarching themes and allows for the inductive

creation of new codes as they emerge [33]. The analytic process followed these steps: a) Familiarization with the data through the analysis of sample responses; b) Identification of meaningful responses; c) Development of overarching themes and codes; d) Modification and expansion of the code list as new codes emerged; e) Application of the coding scheme to a larger set of responses; and f) Refinement of codes and merging into categories as appropriate.

After the initial year of data collection and analysis, the following steps were added to account for the longitudinal nature of the study, especially how themes change over time:

- a. Higher-level groupings/categories were created for each year of the study (1, 2, 3, and 4-year post-graduation).
- b. Within each year category, codes were applied independently. This means that even if similar themes (e.g., budgeting or credit cards) appeared across multiple years, they were coded separately within their respective year categories.
- c. This approach allowed for a more nuanced analysis of how themes evolved or remained consistent over time, without assuming continuity from year to year.
- d. The final step involved a cross-year comparison, where the separately coded themes from each year were analyzed collectively to identify patterns, changes, and consistencies in participants' responses over time.

Our analytic approach shares some conceptual similarities with Time-Structured Qualitative Comparative Analysis (TQCA), a method used to compare qualitative data across different time points, which might be crucial in understanding complex phenomena [34]. TQCA involves organizing data into time-based segments and comparing these segments to identify patterns of change over time [35]. Unlike traditional TQCA, which often focuses on a set of predetermined categories across time points, our approach allowed for more flexibility in the emergence of themes within each year. By integrating TQCA with thematic analysis, our analytic approach ensured that each year's data was first analyzed in isolation, preserving the context of participants' experiences at that specific time point. It also facilitated a more rigorous examination of how the impact of the IIG program manifested and potentially changed over the years.

4. Findings

Our qualitative analysis revealed four key areas: financial literacy topics the alumnae found most helpful, financial literacy skills currently in use, skills anticipated using in the near future, and financial literacy topics they wish they had learned more about. In the Findings section, we discuss these key areas/themes by year, examining student responses from one to four-year post-graduation. The Discussion section then explores patterns in these themes across years, providing a longitudinal perspective on the evolving skills and needs of the IIG alumnae.

4.1. Most Helpful Financial Literacy Topics

The most helpful topic during one-year post-graduation (Year 1) was credit cards. Many students shared that they lacked prior knowledge about credit cards. Through the program, they learned the differences between credit and debit cards and gained an understanding of credit scores and how to build and maintain them. *"I think the most helpful topic is to distinguish between credit card and debit card. That's the one that I can relate to the most because I'm going to be an adult really soon"* (Student D10). The students found the information about credit cards timely as they were approaching adulthood and financial independence. *"I'm going to college soon. My parents want me to get a credit card, so learning about credit scores was the most helpful"* (Student B34).

Credit cards remained the most helpful topic in two-year post-graduation (Year 2). Many students had an opportunity to obtain their first credit card. *"I remember, like the biggest piece of advice, they were giving was to start building credit as soon as possible. So, when I turned 18, I signed up for credit cards"* (Student M13). It was clear, however, that some students lacked practical knowledge of the next steps after obtaining credit cards despite acknowledging the importance of building credit scores. *"I got to discover credit card at the beginning of this year, but then I never activated it. That just didn't really materialize. I think I still have it somewhere or I'll just have them mail me a new one"* (Student D22).

During three-year post-graduation (Year 3), the most helpful topic shifted to budgeting. Students found budgeting valuable because it helped them manage new financial responsibilities in college and independent living. Some students shared that budgeting was particularly useful for managing scholarship funds or financial aid. The students applied specific budgeting techniques, such as the 80/20 rule where they put 20% of their income toward savings. These skills gave them a sense of control and confidence in financial decisions. *"So, now I have to factor in groceries. I have my car on campus, so I have to factor in gas. There's more budgeting, and I felt really prepared to deal with that"* (Student S1).

Budgeting continued to be the most helpful topic during four-year post-graduation (Year 4). It appeared that budgeting provided a sense of control and helped reduce financial stress among the alumnae. It was clear that the impact of budgeting skills was long-lasting and significant. *"Learning how to budget, I think that's really important, and I know I talk about budgeting a lot, but I think that took a lot of stress off of me focusing on living situations and how I was going to survive"* (Student S65).

As long as I kept my budget, I didn't have to worry about it. There's always increased stress when going to college, anyway, because you're transitioning to harder classes and meeting new people; there's already stress involved in that. So, knowing how to budget, that's like you can at least not have financial stress. (Student S65)

4.2. Financial Literacy Skills Currently in Use

The primary skill the students were actively using in Year 1 was budgeting. Students were creating and maintaining budgets, often developing simple saving strategies they could easily do by themselves. *"I made a spreadsheet of my budget because that's one of the things that they showed us that you could just do at home"* (Student M12). *"I've actually been working from home...I put away a certain sum of money and then I am allowed to spend only a certain amount of money"* (Student A8).

Budgeting remained the key skill in use in Year 2. Students were implementing specific budgeting techniques like the "50-30-20 rule" where they spend up to 50% on needs that they must do/have, dedicate 20% to savings, and leave 30% for wants. The students adapted their strategies to fit their individual circumstances. *"I designate days where I don't spend any money. So on Monday, Tuesday, and Wednesday, I make it a point that I'm not spending any money at all"* (Student S15).

In Year 3, students began using their knowledge of credit in a more practical way. The students came up with strategies to build credit scores by opening multiple cards for different purposes to maximize benefits. They showed awareness of credit utilization and its impact on credit scores and overcame initial fears about credit cards. *"I use my Bank of America card whenever I'm purchasing anything online because I get 3% back. But then I use my Amex blue card for gas purchases because then I also get 3% on that"* (Student A25).

During Year 4, the focus returned to budgeting and saving (as part of budgeting), but with increased complexity. Students were managing more intricate budgets due to off-campus living and increased financial responsibilities. They used digital tools like Excel sheets and apps for expense tracking and continually developed their budgeting skills to meet their evolving financial needs. *"At the beginning of each semester, I make a budget with how much I'm going to spend to make sure I can pay my rent and my utilities, and also enough for food, and have something set aside to do fun things with my friends, and then some that I'm saving"* (Student S65). *"I've been using an Excel sheet where I keep track of everything that I spend my money on"* (Student I62).

4.3. Financial Literacy Skills Anticipated Using Near Future

During Year 1, the primary skill students expected to use in the near future was comprehensive budgeting, particularly in relation to college expenses. Students anticipated greater financial independence as they transitioned to college and expected to manage various aspects of college life, including tuition, living expenses, and personal spending. *"I expect to know my budget by heart because college can be really expensive and I don't really want to put that weight on my parents"* (Student M12).

In Year 2, budgeting remained the key skill students expected to use in the following year. With their first-year experience in college, students developed more restrained expectations for their

spending while handling college-specific expenses like meal plans and textbooks. *"What I've been doing [and will continue to do] is budgeting myself around \$50 a week"* (Student R42). *"I know when to stop because... everything at college is overpriced so that's like a big wake-up call"* (Student B33).

Budgeting continued to be the main skill students in Year 3 expected to use in the near future, with an anticipation that they would need to start saving for unexpected expenses and circumstances. Some anticipated managing expenses related to off-campus housing. *"I am moving into an off-campus house next year. So, I'm anticipating and saving for weird things that we might need that we didn't consider"* (Student S1)

During Year 4, the focus shifted slightly to "wise spending" skills. Students anticipated prioritizing essential expenses over wants when living independently. Some expected major life transitions, like moving out, and had to consider location-based financial impacts on decisions.

When I do live alone, I would obviously prioritize like rent, utility bills, and being able to know what I need versus what I want. And that's really important... I live in the Bronx, but my job is on the lower West side, so it's like an hour on the train. I have a car, but traffic in the city is not the best. So I am moving out, [and that would be] the biggest that I'm probably gonna have to be paying. (Student Y67)

"I keep track of everything...my needs and my wants, and like how much I could afford to be spending on stuff like that" (Student I62).

4.4. Financial Literacy Topics Students Wish They Had Learned More

The primary focus in Year 1 was on credit. While the students had a general understanding of credit and the importance of obtaining one, they wanted to learn more about the long-term implications of credit on their financial futures.

[I wished I learned] when the right timeline is to get a credit card because you're going to want to buy a house one day; you're gonna want to have an apartment. One day you're going to want to get a car. (Student D22)

In Year 2, the focus shifted to taxes. Students reported feeling unprepared, anxious, or overwhelmed when it came to handling their own taxes. Many expressed that while IIG had touched on the subject of taxes, they felt the coverage was insufficient for their needs as they began working and filing their own taxes. *"I probably want to know a little bit more about taxes. We brushed over it a bunch of times... But now that I do my taxes now, I think I have so many questions that I'm always asking"* (Student Y3)

In Year 3, taxes remained the primary area where students wished they had learned more. They continued to report feeling unprepared, particularly in complex situations. Students noted that taxes seemed less relevant during the program, but the importance became apparent as they entered the workforce.

I didn't realize I get taxed twice, and I feel like that's something should have been talked about. Because I get tax from New York because I'm from here, and that's where all my documents are out, but then I get tax from Massachusetts because that's the location where I work. (Student Y7)

Taxes continued to be the main area in Year 4, where students wished they had received more education. Many were still relying on their parents for help with taxes but felt they should be more independent in this area. Some students suggested that practical, hands-on experience with tax filing would have been beneficial.

They don't put a great importance to that, [but] taxes should be a class within itself because you're gonna need it. And you're not going to be taught it in college, and you now have to search for it on your own. (Student I62)

5. Discussion

This longitudinal study revealed subtle shifts in participants' financial knowledge, skills, and needs over the four years following their participation in the Invest in Girls program. Changes in the patterns across the four years are discussed in the following key areas: financial literacy topics the

alumnae found most helpful, financial literacy skills currently in use, skills anticipated using in the near future, and financial literacy topics they wish they had learned more about.

5.1. Changes in the Patterns: Most Helpful Topic

There is a clear shift in focus from credit cards in the earlier years (Years 1 and 2) to budgeting in the later years (Years 3 and 4). The findings, however, revealed that our conversations with the students in Years 1 and 2 stayed at foundational knowledge and basic skills such as the concept of credit cards, differences between credit and debit cards, and how to actually create one. Some students never used their credit cards after creating one. During Years 3 and 4, students emphasized the practical application of the knowledge they gained from the IIG program, leading to the use of more complex budgeting skills.

As students progressed from Year 1 to 4, there was an overall trend towards greater financial responsibility and independence, with knowledge and application contributing to the development of self-sufficiency and sustainability. Both credit card knowledge and budgeting skills were also cited as helping to reduce financial stress and increase confidence in financial decision-making.

5.2. Changes in the Patterns: Skills Currently in Use

The analysis reveals several notable patterns in the application of financial literacy skills developed through the IIG program, starting with basic budgeting, moving to credit management, and then returning to more complex budgeting and saving. There is consistent importance of budgeting as a core financial skill used by the students on a daily basis in Years 1, 2, and 4. There is a clear progression in the complexity with simple budgeting in Year 1, implementation of techniques like the "50-30-20 rule" in Year 2, and more sophisticated use of Excel and online tools for various expense categories in Year 4 while highlighting saving as part of budgeting.

Most importantly, the alumnae began applying their credit knowledge in a more practical way in Year 3 by opening multiple cards for various purposes to receive more rewards and build credit scores. They moved past their "knowledge" stage, as discussed in the Most Helpful Topic, as well as initial hesitations about credit cards and incorporated their knowledge into their long-term financial planning and economic sustainability.

5.3. Changes in the Patterns: Skills Anticipated to Use

The patterns in the students' anticipated financial literacy skills confirm a progression from basic budgeting to more sophisticated expectations for their financial behaviors. This is likely to reflect the students' growing awareness of evolving life circumstances and financial responsibilities.

In the early years (Years 1 and 2), there was a strong focus on the anticipated use of comprehensive budgeting, particularly in relation to future college expenses. Students expected greater financial independence and planned for more restrained spending based on their initial college experiences, laying the groundwork for long-term economic security. As they progressed to Year 3, while budgeting remained important, students were preparing themselves for unexpected expenses such as those associated with off-campus housing costs. This progression culminates in Year 4 with a focus on "wise spending" skills, such as prioritizing needs over wants and factoring in location-based financial impacts on decision-making. This sophisticated approach to financial management demonstrates a high level of economic independence. This increasing financial autonomy not only benefits the individual students but also contributes to broader economic sustainability by fostering a generation of financially wise young women.

5.4. Changes in the Patterns: Financial Literacy Skills in Need

Students' feedback over four years provided important information on their perceived gaps in financial literacy education. While the students found credit the most helpful topic in Years 1 and 2, our analysis found that this refers to foundational knowledge and lacks its application. The perceived

needs in Year 1 confirmed this finding as students expressed a desire for more information on the long-term implications of credit such as buying a house or car.

From Year 2 onwards, there was a shift towards taxes becoming the major area where the students felt underprepared, reflecting the evolving financial responsibilities as they transition into the workplace. While the students acknowledged that the IIG program covered taxes, many realized the coverage was insufficient as they began filing their own taxes and encountering complex situations like multi-state taxation. By Year 4, students were expressing a strong desire for a dedicated class on taxes. This evolution in students' perspectives underscores the importance of designing financial literacy programs that not only provide foundational knowledge but also practical strategies and tools that can adapt to students' changing needs as they mature financially.

6. Implications

The findings from this longitudinal study offer several important implications for the Invest in Girls (IIG) program as to how it can be further improved or adapted to meet the changing financial needs and responsibilities of young women. Patterns and themes that emerged may be relevant to understanding similar phenomena in comparable settings.

6.1. Importance of Budgeting

It was clear from our study that budgeting is the single most important topic for young women to navigate postsecondary education, the workplace, and life. Throughout our four-year study, budgeting consistently emerged as a critical skill, with its importance and complexity increasing over time. This aligns with the study conducted by Xiao and O'Neill (2016) that suggested that budgeting is not only an important skill in itself but also relates to other positive financial behaviors, such as paying their credit card in full, having an emergency fund, and calculating retirement needs [28]. Our participants reported that budgeting skills helped them manage their finances more effectively, reduce stress, and make better financial decisions, aligning with Xiao and O'Neill's findings on the broader impact of budgeting behavior. By effectively managing their resources through budgeting, young women can build a stable financial foundation, adapt to changing economic circumstances, and work towards economic well-being [36].

6.2. Practical Financial Skills

While the program provided the alumnae with strong foundational knowledge, it is critical to promote practical strategies and tools that students can apply to their evolving financial needs. This supports Hudson's (2010) argument that financial literacy should include not only the ability to understand financial terms but also the capacity to utilize that knowledge in financial decision-making [27]. We observed this progression as participants moved from a basic understanding of concepts like credit cards in earlier years to more complex financial decision-making, such as strategic credit card use and sophisticated budgeting techniques, in later years.

To promote knowledge application, the program could consider creating a handbook that covers multiple levels of budgeting strategies, including basic budgeting that might be immediately applicable and more complex budgeting that can be more useful later in life. Handbooks can be useful tools that students can refer back to as the needs arise. Another example is credit. The program could introduce credit card concepts early on but frame them within the context of future financial independence. The handbook could include information on the next steps after obtaining a credit card and more complex aspects of credit such as how to maintain good credit scores in order to rent apartments or secure loans. This approach ensures that information is available when it is most relevant and applicable to students' lives, potentially increasing retention of knowledge and skills.

Additionally, the program could introduce financial literacy topics with an approximate timeline. This could include deciding when to apply for a credit card, handling unexpected expenses, and making investment decisions. While acknowledging everyone is different, such a timeline would

allow students to see the immediate relevance of basic skills covered and can prepare for applying more complex skills anticipated to use in the near future.

6.3. Enhanced Tax Education

The consistent desire for more tax knowledge expressed by participants suggests that IIG should significantly enhance its coverage of tax-related topics in a way that connects taxes to real-world challenges.

The program could incorporate case studies of complex tax situations that young women might encounter, such as working in multiple states, handling scholarships, or dealing with freelance income. IIG could consider partnering with tax professionals or organizations like VITA (Volunteer Income Tax Assistance) to provide students with practical experience in tax preparation. This could even be extended into a volunteer opportunity, allowing students to assist in preparing taxes for low-income individuals, thereby reinforcing their hands-on learning while also engaging in community service.

Lastly, our study supports the findings of Danes and Haberman (2007) on the effectiveness of gender-specific approaches to financial education [17]. The positive long-term impacts of the IIG program observed in our study, particularly in areas like budgeting and credit management, suggest that tailored programs can indeed be more effective in addressing the unique financial literacy needs of young women.

7. Future Research

Building on the insights gained from this longitudinal study, we propose the following ideas for future research:

The consistent desire for more tax knowledge expressed by participants, particularly in later years, suggests a crucial area for program enhancement. Future studies could investigate the impact of incorporating comprehensive tax education into financial literacy programs for young women. This might include exploring partnerships with tax professionals.

As our study noted the increasing use of digital tools for budgeting, future research should examine how technology can be more effectively integrated into financial literacy programs. This could include studying the impact of mobile apps, online platforms, or even gamified learning experiences on long-term financial behavior and skills retention.

Lastly, given the evolving nature of financial literacy skills observed in our study, future research should extend the longitudinal approach even further. Following participants beyond college and into early career stages could provide valuable insights into how early financial education influences major life decisions, financial well-being, and long-term economic sustainability.

This longitudinal study of the Invest in Girls program provides valuable insights into the evolving financial knowledge, behavior, and skills of young women as they transition from high school through college. Our findings reveal a progression from basic financial concepts to more complex and practical financial capability, emphasizing the critical role of budgeting skills and the need for enhanced tax education. The observed progression demonstrates how targeted financial education can empower young women to build a foundation for long-term economic well-being. These results align with and extend existing literature on financial literacy, particularly in identifying and addressing the unique needs of young women. By reflecting on the experiences of the IIG alumnae, future research and practice can remain relevant and impactful in preparing young women for the complex financial landscape they will navigate in their lives.

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Appendix

The following interview questions are designed to have a deeper conversation with IIG alumnae about their experiences.

- "When you think back to the IIG curriculum, what are the topics that you found to be most helpful?"
- "What financial literacy skills are you using presently?"
- "What financial literacy skills do you expect to be using in the next year?"
- "How have these [financial literacy] skills supported your transition into adulthood?"
- "What additional financial skills would you have liked to have learned before leaving high school?"

In addition to the core questions, longitudinal-specific questions were included, such as:

- "In what ways have your spending and saving habits changed over the past year?"
- "Have there been any significant life events or transitions since our last interview that have impacted your financial decisions or outlook?"
- "Thinking back to the financial skills you wished you had learned in high school, have any new areas emerged that you feel you need more knowledge about?"
- These questions were designed to capture changes and developments in participants' financial literacy and life choices over time.

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