

Improving Financial Education for Young Women: A Case Study of Australian School Students

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Abstract—There is a sustained observable gender gap in financial literacy, with females consistently having lower levels than males. This research explores the knowledge and experiences of high school students in Australia aged 14 to 18 in order to understand how this gap can be improved. Using a predominantly qualitative approach, we find evidence to support impacts on financial literacy from financial socialization and socio-economic environment. We also find evidence that current teaching and assessment approaches to financial literacy may disadvantage female students. We conclude by offering recommendations to improve the way financial literacy education is delivered within the curriculum.

Keywords—Financial literacy, financial socialization, gender, maths.

I. INTRODUCTION

A significant number of Australians struggle to manage their money, and one in three people find dealing with money stressful and overwhelming [1]. Increasingly complex financial choices and products bring a need for consumers to be empowered with knowledge and to understand the consequences of their financial decisions. Australia's first National Financial Literacy Strategy prioritized educational pathways, in particular, the school curriculum [2]. The second National Financial Literacy Strategy set the first priority to "educate the next generation, particularly through the formal education system", which resulted in financial literacy education being formally integrated across Australia's network of approximately 9,500 schools [3]. Despite this strategy, the Program for International Student Assessment (PISA) tests of 15-year-old school students show a decline in average financial literacy scores from 526 in 2012 to 504 in 2017 [31].

Regarding general financial literacy indicators, evidence consistently shows that being young, female, a single parent, in poor health, unemployed and with low income and wealth increases the likelihood of low levels of financial literacy [4]. This paper focuses on two of those cohorts: females and young people. An extensive number of studies have found females outperform males overall in high school, outnumber males in university, and are higher qualified in the workforce [6]-[8]. However, there remains consistent evidence that

women, and in particular young women, have lower financial literacy levels than men [5]-[7], leading some to observe females have a 'grave' need for financial education [8].

Using a mixed methods approach, we examine the financial knowledge, socialization, and education needs of young Australians aged between 14 and 18. We find evidence of differences in the socialization of genders, but more importantly, in the need for varied education and assessment approaches for males and females.

The remainder of this paper is structured as follows: The next section will discuss the relevant literature. This is followed by the methodology. Section IV discusses the qualitative and quantitative findings. Finally, Section V provides a discussion and conclusion.

II. LITERATURE REVIEW

Gender is an emerging theme in financial literacy research [8], though studies for over two decades have recognised a gender gap in financial literacy. Chen and Volpe [5], [9] identified females as having lower levels of financial literacy in their survey of 924 college students. Their finding has since been supported by several international studies [6], [7], [10]-[15] and Australian research [16].

There have been different explanations proposed for this persistent gap. In Australia, financial literacy education at high school is often delivered within mathematics courses [17], and it is well documented in past research that young women perform lower in mathematics tests. Gaulin and Hoffman [18] theorized this could be due to males enhanced spatial awareness giving them an advantage in mathematics. While this may seem plausible, several researchers have proposed that non-cognitive factors could cause the discrepancy in performance. For example, Gneezy and Rustichini [19] found that more valuable monetary incentives increase test performance, providing evidence for the impact of external factors on performance. In addition, several researchers have found stereotypes have a significant impact on confidence and performance [20]-[23]. Thus, if males are stereotypically perceived as being better at mathematics, this may affect females' results in mathematics tests. Following this, Niederle and Vesterlund [24] proposed that differences in mathematics test performance may actually be due to how the different genders experience the testing environment, with females underperforming in these conditions.

Given mathematical concepts are a key component of financial literacy, the studies discussed above indicate that there may be non-cognitive reasons that explain why young females score lower in tests of financial literacy. This would

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mean that instead of being a reality, young women having lower levels of financial literacy is a socially constructed concept. The Gender Identification Hypothesis [25] proposes that during adolescence, there is increased pressure to conform to stereotypical gender roles, which may also explain why young women's ability in mathematics decreases. It could be theorized that these same non-cognitive impacts would also impact on young women's financial literacy.

There are other explanations given as to why females have lower financial literacy, with a growing acknowledgement of the role of financial socialization. There is evidence of gender bias in the financial socialization of children in the home, with male children reporting earlier conversations about money [26]. However, Cupák et al. [27] explain that personal characteristics such as financial socialization can only partly explain the gap. They propose socio-economic environments may explain more of the difference in gender scores. Recently, West et al. [28] provided evidence that women respond differently to financial literacy questions, providing some support for Niederle and Vesterlund [24] on gender differences in testing in the financial literacy area.

This discussion leads to the question: Are the observed lower average financial literacy levels of young women a product of cognitive skill, social construction, or a result of how we measure and define this ability? And further, are there other explanations for the discrepancy between male and female financial literacy?

III. METHODOLOGY

This project aimed to understand the interaction of young women and financial literacy. While existing literature has assessed young women and financial literacy using quantitative methods, we are unaware of any research that has used a qualitative approach to learning about high school students' financial knowledge.

Financial literacy is a complex latent variable that is influenced by several aspects of a young person's life. Qualitative research allows researchers to gain a deeper understanding of complex issues. In this case, we were looking for the context or reasons behind why young women appear to have lower levels of financial literacy. Qualitative approaches can overcome the limitations of the existing quantitative research. However, in order to triangulate our results, we also employed a survey to capture more data on the personal characteristics and attitudes and behaviours of students.

Our target participants were Australian high school students, both boys and girls. Given financial concepts are often not relevant until a student is working, we targeted students in years 10, 11 and 12 – an age range of 14-18 years old. The research aimed to explore not only students' knowledge of financial concepts, but also their attitudes and behaviours to financial decision-making, their experiences with money in the household, at school and amongst peers, their financial decision-making in relation to significant life events like starting work and buying a car, and other financial socialization factors.

Four schools were recruited to participate in the research: two from a regional area, and two from an urban area. Importantly, we focused on publicly-funded state high schools and purposively recruited from both a regional and urban area. These schools should be more representative of the population compared to privately-funded high schools (which are more likely to have socially advantaged students) or schools that are only located in urban areas with better access to services. Ethical clearance was obtained from both the state Department of Education and the University's Human Research Ethics Committee.

Broadly, the research aimed to address the following research questions:

1. Where do students learn about financial concepts?
2. What do they know about personal finance and managing money?
3. Are there observable differences between young women and men?
4. How can we improve the financial literacy and capability of young Australians?

We used an inductive research approach given the exploratory nature of the research questions and the lack of extant qualitative research in this area. Inductive research involves relying predominantly on observation of the students to determine patterns, and building theories based on those observed patterns.

To provide enough observational data, we used both focus groups and interviews. Focus groups were employed to listen to the conversations that students had amongst themselves and analyse the language that was used. Students were asked what they knew about money and where they acquired that information. We also asked students to participate in activities that involved personally identifying spending priorities and working together in a group to order asset classes in levels of riskiness.

Interviews were used to gain a deeper understanding of the students and their knowledge of money. These discussions included more personal questions about their household and their parents' experiences with money - including whether they or their family had experienced financial difficulties - and more detailed discussions around financial decision-making.

Data collection commenced in February 2020 and was completed in March 2021. Table I provides the breakdown for the number of focus groups and interviews that were conducted at each school. Both interviews and focus groups were semi-structured to guide discussions whilst still allowing for deeper exploration into different topics.

TABLE I
 NUMBER OF FOCUS GROUPS AND INTERVIEWS AT EACH SCHOOL

| Area | School | Focus Groups | Interviews |
|----------|----------|--------------|------------|
| Regional | School A | 3 | 5 |
| | School B | 4 | 6 |
| Urban | School C | 6 | 6 |
| | School D | 3 | 14 |
| Total | | 16 | 31 |

All focus groups were recorded and then transcribed. Our

analysis involved thematically coding the transcripts to identify common themes in the discussions. These can be topics of discussion, ideas, or patterns that emerge from repetition. The findings are presented in terms of the broad themes that were identified.

In addition to thematic coding of transcripts, the audio recordings were also used to gain contextual understanding of the data. This could involve listening for changes in voice such as laughter, or uncertainty. It allows a deeper understanding of the data when used in conjunction with the coded transcripts. Following initial coding, data were then grouped based on the gender of participants, and compared in order to search for other themes that may differentiate these groups.

The next section will discuss the findings in terms of the broader themes, followed by the comparison of genders. To preserve anonymity, participants are referred to by a code. The code for the data collections at each school and survey results are available from the authors on request.

IV. FINDINGS

A. Where Students Learn about Money

Parents: We asked all of the students where they learn about money. Most students mentioned learning about money at home from their parents, although there were wide variations in what they were learning. One student, whose mum runs her own small business, explained “When we were little, we were always taught how to do things, like with money, and like save it – at least half your pay every pay or all of it – and I would watch my mum do her taxes and she would explain what she was doing. My mum always taught us how to do things in the real world rather than do homework.” (C10)

Commonly, students who have parents running a small business had more detailed knowledge about money, even for very small businesses. “Mum, she has a market stall, another place where I learnt how to deal with money.” (A8)

Similarly, students whose parents were accountants or other finance professionals demonstrated a more advanced knowledge.

Maths, Business and Accounting: One of our prompts was to ask students if they have learned about money or financial concepts at school. Most students mentioned learning about personal finance in Maths, so we asked more specific questions about what they have learned in this subject.

Some students clearly recalled learning about interest rates, compound interest and depreciation in Maths, while others only had vague recollections of learning about these financial concepts. Different assignments were mentioned, indicating that making learning about financial concepts assessable helps kids to retain this knowledge.

Similarly, a group of boys mentioned a Maths assignment where they had to buy a car and had the option to save, get a loan, or lease a car. Importantly, they recalled car loans when we asked what they knew about loans, so this was an effective way of helping them to learn about loans. (C7)

A lot of students mentioned that they really struggled with Maths. “I don’t like how hard they make it seem; you know? It’s like you’ve got one thing to do, but you have to do it this special way.” (A6)

Others noted they particularly didn’t like the repetition in Maths. “I’ve never been good at understanding Maths, and even though it’s easy now, because I learnt how to do it all, it’s just kind of like the same stuff, just repeated, like graphing and just getting information and writing about it. Like it’s just always the same. In tourism we learn about all different stuff.” (D9)

Other students noted that Maths still wasn’t teaching them everything they need to know, particularly students taking a higher level of Maths. Comments such as “I just find some of the concepts of Maths useless to my future career.” (A6) were common. One student identified the problem with having to take either a Maths subject that would help them get into TAFE, or Essential Maths where they learn about personal finance. That student also noted that even essential Maths didn’t cover everything. “When we were doing Maths [essential]... we didn’t do anything on wills, life insurances, charities, records, we didn’t do any of that.” (A1)

Whilst financial literacy education can be addressed across a range of curriculum areas, in Australia most exposure is delivered in Maths, usually in the lower level Maths subjects. A majority of students we spoke to, particularly girls, identified Maths as their least favourite subject. This means that this really important life skill is being embedded in Maths where many students are already disengaged. The next most common response was when prompted about learning financial concepts at school was “Definitely Accounting and Business.” (A6)

Throughout all four schools, students who were studying business had much broader and more detailed knowledge of financial concepts. Business studies helped some students learn about, or at least become aware of, concepts such as investing in shares, insurance and superannuation. Interestingly, students who were studying business had a better understanding of the profit motives of financial services companies, and they had a better understanding of corporate structures.

Other subjects: Students also recalled learning about money and personal finance in other subjects. For example, one student mentioned work studies, where they learned “If something looks too good to be true, it usually is.” (B2) They explained that they learned not just about jobs, but also about money. Another student mentioned geography. They explained that they learn about the economies of other countries in that subject (D2). Finally, a student studying Building and Construction talked about one of their projects which required costing a garden build (C11).

Media: Some students talked about learning from TV and social media. For example, one girl mentioned “There’s this Podcast and Facebook group – She’s on the money.” (B3) Another talked about how “I watch a TV show and like some 13-year-old has to budget for a family to make them spend less money.... I picked up something from that.” (D7)

Work: Students who were working had an advantage over students who had never worked in that they were more familiar with receiving and managing money regularly. Some gained other more specific knowledge from work “I found out how to do my taxes from one of my bosses that I used to work with. He taught me how to do it.” (C2) One student who lives in residential care spoke about how they are paid for chores, and were able to figure out how much money they would have by the end of the year from completing chores regularly (A7).

B. Knowledge of Financial Concepts

As part of trying to determine where students learned about money and finances, we asked individuals and focus groups about significant purchases that they have made and how they went about making those financial decisions. Purchases were typically a phone, a laptop, a TV or a car.

Most students reported relying on a family member, usually a parent, to help them make the decision. This was especially the case for purchasing cars. For phones or laptops, the students reported more of their own reasons for wanting to buy that particular item. In many cases they reported doing their own research, however that was not as common as talking to friends and family. It was also more common for students to do more of their own research when they had to make their own significant financial contribution to the purchase of phones, laptops, and other electronics.

In order to gauge what students do know about money and personal finance, we asked all students about the following financial concepts.

Savings: All students reported a good understanding of savings; they were aware that saving was a positive behaviour, and the majority had some form of savings system. Those who were more organized reported having two bank accounts: one for spending and one for savings. Others reported having their parents handle their savings, and one student kept their savings in a locked box in their room.

Students used different methods for determining how much to save. Some indicated that they would transfer over a certain percentage into their savings account, but it was more common for students to refer to a dollar amount, which is consistent with literature stating people struggle with percentages [29].

The number of students who saved all of what they earned or received was significant. Comments such as: “I’m pretty good at it (saving). I don’t really shop or spend money.” (D16) were very common. And then comments such as: “I really don’t spend anything. If I need something normally I’ll get someone else to buy it for me.” (D17), started to reveal that some of these students were not actively saving as such, rather, they were not just spending.

We found further evidence of this behaviour with some of the older students, with comments such as: “I’ve never felt like I was saving, more just earning more than I spent.” (D17) Saving seems to become an issue for students once they start having substantial expenses. This indicates that these students do not necessarily have the skills to prioritize saving and moderate spending. In other words, they have not really been

learning how to save, they just did not have to spend. Once they are responsible for certain expenses and spending increases, then they are no longer able to save. Those students who were struggling with expenses and not able to save were very interested in learning more about how to manage this.

Loans: Most students understood the concept of a loan, but they had to be prompted to remember that loans attract interest. A lot of students saw positives and negatives associated with loans, for example “I think they can be good, or they can be bad, because I know some people can have trouble with loans.” (A6)

There was evidence of some students not really understanding the implications of borrowing, with comments such as “Free money.” (B9) In addition, very few students understood eligibility. Most assumed loans were something you could just get if you needed. An interesting finding was that students who had had exposure to investments, usually through their parents, had more of an idea of good debt. These students were more aware of mortgages and borrowing for other purposes “Like when you start up your own business.” (D16) Knowledge of loans came mostly from home, but one student at School D mentioned learning about loans in Economics and Business.

Credit cards: There was no strong knowledge of credit cards demonstrated. While most students recognised credit cards were a form of borrowing, there were other comments that indicated a lower level of understanding. “You want a credit card so if you ever have any small expenses, something you want to pay for that’s probably good.” (A6). Comments such as: “They’re dangerous” (D15) were common from students who had heard negative stories about credit cards, often from parents or other family members having financial difficulties because of debt. Interestingly, students were less aware of credit cards than expected. Given the prevalence of ‘tap and go’, there is less mindfulness of credit cards as they all appear the same.

Insurance: Students who have been exposed to insurance at home had a fairly good understanding of what it was for. “My family has had to get insurance quite a few times because my father went overseas so Mum got life insurance for him. My sister went on the ski trip, she got insurance for that with the school. I’m going on the ski trip, I’m getting insurance for that. Mum...went to a show and one of the requirements to have a market stall there was to have insurance on the stall. And she’s had that stall for ages, back when my Grandma used to make treats and all. So, Grandma would pay for the insurance and Mum would take the stuff down there.” (A8). Interestingly, some students had learned about insurance through media advertising. “Oh! I know this one. It’s like, um, like health insurance and like if you pass away your family get the money that you have. So there’s life insurance, health insurance, house insurance...” (A7) A lot of students with cars had discussions with their parents about insurance, usually related to compulsory third party insurance as evidenced by one student’s comment. “We’ve got third party insurance for other people.” (A8)

Investments: Generally, students knew little about

investments unless they had been exposed to them at home. Students from families with more wealth were likely to understand the investments their family owned. When asked about property, they would respond with answers like “Yeah, I’d like to own a home, probably buy some other ones to rent out to people so I get some money.” (B6) Students whose family had investment properties also demonstrated fairly advanced knowledge of property as an investment. A student whose father is a property developer stated “Property is riskier than you guys think. It’s quite risky.” (D17)

Students with less exposure to investments thought of property in much more practical terms. “Well, if you need to pay rent you have got to save up for your rent money. You got your water bills, and you got your electrical, and all that kind of thing.” B9 Legal studies students also demonstrated a better understanding of property from a legal perspective.

In terms of shares, most students had heard of shares, but they did not really understand what they were. One of the regional high schools had an assignment on shares which a lot of the participants recalled. However, the piecemeal approach was acknowledged as a limitation by students. “We haven’t really covered it since we did that assessment. So, we really covered it, then did the assignment, then moved on.” (B4) Students were not aware of term deposits. Most of them had heard of Bitcoin and some students were particularly knowledgeable, but there was a fair bit of misinformation as well.

Superannuation: Surprisingly, a lot of students had heard of superannuation and could identify it as money set aside for retirement. However, most did not recall ever learning about it in school. Again, students who had been exposed to conversations about superannuation had a better understanding.

Inflation: There was very little knowledge of inflation and most students had never heard of it before. One teacher suggested they may be aware of it as Consumer Price Index (CPI), but when we tried that approach, students did not recognize that term either. The inflation finding is important as Lusardi and Mitchell’s ‘Big 3’ financial literacy questions, often used to measure financial literacy, contain a question on inflation. If students do not know or understand what inflation is, they will not be able to answer this question correctly. It is also important to understand that if a person’s wage does not increase in line with inflation, then that person’s purchasing power is eroded over time. As students are making decisions on career and lifestyle pathways, insights into the importance of wage growth can help make informed decisions.

V. INSIGHTS INTO TEACHING AND ASSESSING FINANCIAL CONCEPTS

Through the data analysis process, several themes emerged that have significant implications for our current practices with teaching and assessing financial concepts.

A. Calculations

We observed several instances of students trying to focus on the mathematics or calculations when asked about financial

concepts. For example, when we asked a girl what she knew about savings or compound interest, rather than explaining what it is or how she knew about it, her response was “I know what it is, I just have to have like the working out in front of me and then I can do it all. Like I just need to have it there, and then I’ll be able to remember it.” (B6) Her ability to understand interest was tied to the calculations or working out, rather than an applied understanding, and there were several more instances of this. When asked about interest, a female year 10 student said “I think we did that in Maths, so that’s like how you work it out.” (A2)

We showed students one of the Big 3 financial literacy questions which is a very simple question about interest and asked the students what their thought process was when reading the question. “I think I learnt this last year. Is it like the interest rate, and the P. I forgot what the P meant.” (D2)

A year 10 girl from School A, when asked what was going through her brain responded: ‘Math.’ She froze and could not really consider the question because the Maths was standing in the way. She was trying to recall formulas rather than just trying to understand the question. But it was not just girls who had this reaction. One boy commented “I’m kind of confused. As soon as I see per cents and stuff like that, I get really confused straight away.” (D3)

The most interesting part of this reaction from the students is that the question does not require a calculation to be able to answer it. As long as they understand the financial concept, they can answer it quite easily. One student provided some insight into why this might be occurring. “I only really remember the formula because that’s all we got taught.” (B4)

When the focus for financial concepts in maths classrooms is on formulae and calculations, it may be that students just do not recall the other aspects. This is an issue as many students appear to ‘switch off’ when confronted with Maths, especially girls.

B. The Importance of Stories

Throughout our analysis it became clear that when students recalled a financial concept, there was usually a story attached. They showed a fairly advanced understanding of all sorts of FINANCIAL CONCEPTS WHEN THEY COULD RELATE IT TO A PARTICULAR story. For example, the limited number of students who had any knowledge of inflation could explain it in some detail. “I know that in Business when I did it a few years back there was, we did learn about it. You know, say one pack of gum could have been like 90 cents and then like in a few years it could have been a dollar ten.” (A6)

Another student learned about the concept of inflation by watching shows on YouTube. “Over time, because obviously more money is being printed...people think printing money creates more money and you’re richer, when in reality you’re just making the currency you have worthless, because there’s so much of it, that it’s not difficult to acquire it at all. I learned most of that from history.” (A3) The student went on to give examples of ancient Rome and the impact of minting coins.

Some students were aware of financial concepts – such as investing in shares – from movies. “I think of, like, Wolf of

Wall Street.” (A1)

Another student understood the concepts around loans from the media coverage in Australia of the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry in 2019. “As far as I know it was pretty much about banks giving loans out to people that really shouldn't be getting them because they can't afford to pay them back. So it's like banks going yeah well we're going to get money out of you either way so we're winning but you're not and it's really not right to give a loan to maybe a disabled person that can't pay it all back so then they become in debt to this bank.” (A6)

Throughout the conversations that we had with students about what they do know, those who had detailed knowledge had a story to refer to. Often that was an experience of their family, though it did often come from media. The importance of stories could be missing in the current method of delivering these important learning topics through Maths where the focus is on calculations.

C. The Importance of Context

Talking to young people about money needs to be within a context they understand. Age in particular is a really important consideration for this context. We observed year 10 students having very little experience with money. Many do not have jobs and are still completely reliant on their family for spending money. However, most students reported learning about financial concepts such as budgeting in year 9. So there appears to be a large disconnect between when most students are learning about personal financial management in year 9, and when they are starting to experience personal financial management in years 11 and 12. Several students also spoke about the relevance of what they are learning. “I feel like one of the big things for school that we should be learning since year 7 to 12 is in budgeting and taxing (sic), instead of learning about gardens and area. That just doesn't make sense.” (C1) They also gave examples of assignments not being related to real life. For example, one student spoke about “I'm learning about - I'm hosting a dinner party, and I have to cater for I think it was 180 people. I have to come up with a recipe to give everyone, and one person has to be vegetarian.” (D1)

There are opportunities to provide learning experiences that fit within a context which is more familiar for students. Phones are highly relevant, especially for year 10. Looking at the value of what is being spent on food is relevant, as most report spending a lot of money on food, even up to “\$30 a week at McDonalds.” (B8)

D. The Impact of Home Life

Parents are highly influential on students and their understanding of financial concepts and financial decision-making ability. When students were asked who they would go to if they had a question about personal finances, responses such as, “Parents. Definitely.” (B7) were the most frequent response. Other common sources of information were the internet and other family members, but parents or primary

carers were the main source for most participants.

Students whose parents were actively involved in helping them to learn about money definitely had more knowledge. For example, when asked about his goals for his savings account, a regional student explained that “My parents are telling me to buy a house with that ... like the deposit for a house.” (B1) This student's parents are strongly encouraging their son to buy a house as an investment and have helped him to stay in school and set up a career.

Young people from homes where parents are active in financial guidance are likely to be more financially literate. These students have plans for their future and understand how they are going to make money and pay for things. But these students were the minority.

Another note on the influence of parents is that discussing financial concepts – such as loans or investments – with their children helped to provide context. For example, while most students had a basic awareness of loans, those who had experienced loans at home and had discussions with their parent or carer had more detailed knowledge. “Uh, yeah, Dad's still paying one off for his house. Mum had one for her old car.” (A4)

One of the most unexpected insights was around how few students in years 10, 11 and 12 live at home with two parents. There was huge variation in the household structures of these students. Some students had moved out on their own or with another person. Some lived with their grandparents. Quite a few had single parents, and there were many blended families with custody arrangements. There is an assumption that most students will get help at home, however in so many of these students' situations, home life is not conducive to receiving personal financial guidance. There were numerous comments that indicate that sound financial habits were not demonstrated in the home. When discussing a parent with a lot of credit card debt, one student said “I don't want to be in that spot.” (C4). Another interesting aspect came from the students who don't have conversations about money at home. One girl noted “They don't really like to talk about money in front of me because I get worried about it a lot, I guess. I don't like spending their money.” (D2)

There are also implications depending on the level of wealth at home. Students from wealthier backgrounds often did not have experience or knowledge of bad financial behaviours or outcomes. They were less familiar with financial products like buy now pay later services, and often had not experienced financial stress or limited choices. Overall, we find support for Cupák et al. [27] that socio-economic environment can have a large impact on financial literacy.

E. Gender Differences

A large part of this project was to investigate whether boys and girls demonstrated differences in financial literacy. We refer to gender as the characteristics of girls and boys that are socially constructed, such as norms, behaviours and roles associated with being a girl or boy [30]. We purposely had focus groups consisting of groups of girls, groups of boys, and

mixed groups to observe if there were differences in how they talk about money. We also asked students directly if they see any differences in the behaviour or abilities between the genders.

F. Perceptions of Gender Differences

Most students saw no gender-specific differences in their peers in how they manage money or in their ability to manage money. Most agree that it depends on the individual. "It depends on what they know." (A7) When asked about Maths ability, we received similar responses. "No, it's kind of mixed. Like it can be either." (D15)

We asked students about who manages the money or has more ability with managing money at home, and who they would ask for help with financial decisions. Most students responded that their mum had more ability, although often if the father was in business or an accountant, students would go to their father instead.

G. Girls and Spending

There does appear to be more of a social aspect to how girls were spending money. While both genders spent money predominantly on food, girls would also spend money on their friends. Spending on birthday presents, or 'shouting' friends came up in discussions with girls, but did not with boys. One girl talked about how she socializes with her friends. "For those who can't put in the money, someone else will be like, I'll pick up for their end." (C6) There is some evidence of a more collective approach to spending for young girls.

Students offered many examples of differences in spending habits for each gender; however, these were very mixed with no strong consistent patterns. These differences appear to be related to their individual experiences rather than gender-based factors.

Finally, girls reported more responsibility for personal expenses than boys. The resulting negative effect on girls' savings is more likely associated with higher spending on essential expenses rather than poor savings habits.

H. Confidence

There was an observed lack of confidence for some girls, particularly when they were in focus groups without boys present. One girl, when talking about Maths and money stated "I try but it just doesn't click. That's why I hate trying." (B6) In both regional and urban areas, we observed girls saying that they had no knowledge of the financial concepts introduced in the discussion groups. However, when we were discussing specific financial concepts, they were fairly knowledgeable. More than once, we would point out that they actually knew quite a lot.

I. Social Constructs and Financial Knowledge

We did observe instances of girls' requiring more context. For this part of the study, we used a deductive approach. Women have been found to 'opt out' of questions, rather than risk getting them wrong. We theorized that the same may hold for young women in schools.

We observed that girls have a more abstract thought process

on some questions, contemplating aspects that would not normally be considered as part of the question. For example, when talking about the riskiness of cash, one girl said "I was actually thinking cash would be risky as in where did it come from. Like do you know if it's counterfeit?" (A8) Boys were often more certain about how they had interpreted ideas. They understood the context and did not question it.

Generally, we observed no noticeable difference in the financial knowledge of boys and girls. When given the chance to discuss financial concepts and reflect on what they know, girls were just as knowledgeable as boys. Therefore, our findings on Maths and the context of assessment may be more likely to account for gender differences in financial literacy/capability for young Australians.

J. Knowledge of Money

There were several observable differences in what students knew in different areas, however these appear to be mostly driven by socio-economic differences.

Regional students generally had more knowledge of using credit, with comments like "If you do good on your bills the... people can give you a certain loan but you'll have to pay it off as time goes by and they want a certain amount of money and you can't change that like per week or something. So you can get a loan for a car or a house or something and you have to pay them back." (A1) Generally, they were more familiar with loans, but not for good debt.

Students in urban areas were far more likely to have not had any financial difficulties at home and to also come from a household that had investments. Some regional students' families did hold investments, one notably a share of a horse, but this was not as common. Consequently, regional students generally had less knowledge of investments.

Regional differences will have an impact on context for students. From what students have said, teachers were taking these differences into account when designing learning activities.

VI. DISCUSSION AND CONCLUSIONS

A range of factors, not always associated with formal education, influence the level of financial literacy and capability of young Australians. However, there are opportunities to influence the development of financial literacy and capability within the school curriculum. Our research has revealed the following ways to improve this education.

A. Improve Delivery of Financial Literacy in Maths

Maths does have the potential to effectively deliver personal finance education for our students. Whilst Maths does not currently address all financial concepts, the major advantage of delivering personal finance education through Maths is that it is a compulsory subject for all students in high school in Australia. However, as identified in our discussions with students, there is a need to improve current approaches. Mathematical formulas have one correct answer, whereas in real life a financial problem may have a variety of options that

solve the problem. When embedding financial literacy in the curriculum in such a linear way, the dynamics of real-world problem solving are ignored. Thus, the curriculum needs to include development of financial skills as well as knowledge. Our proposed solutions are discussed below.

Using different approaches to learning: Drawing on our findings around the importance of stories, we recommend using stories to help deliver the content. For every financial concept, there is an interesting historical event that can illustrate the point. Updating teaching resources for Maths to include more stories may help to increase student interest and engagement with the content.

Another point is to gradually build the skill over time. The current approach appears to teach a concept and then move on. As with most skills, some revisiting over years would be beneficial in helping students to build financial capability.

Finally, financial literacy needs to be addressed in all Maths courses. Students taking Maths Methods do not appear to receive as much instruction in this area of the curriculum, but it is just as important for them to learn. Currently financial literacy is predominantly taught in General and Essential Maths.

Continue to use assessment, but change the focus: Apart from stories, the most effective means of having students recall financial concepts is when learning is tied to their assessment. In that regard, assessment drives participation in learning about financial concepts and retention of that information. However, it must be noted that when assessing learning about financial concepts, it is important to use other forms of assessment rather than those just based on calculations. The current approach in Maths is to assess the formulas and calculations. This approach may actually disadvantage some students, in particular girls, who need more context. In this regard we find evidence to support Niederle and Vesterlund's [24] hypothesis that differences in Maths performance between genders may be due to how the different genders experience the testing environment. Based on our analysis, it is plausible to conclude that females have different strengths when it comes to communicating their financial knowledge. Including more written assessment that assesses the concepts without focusing on calculations would benefit these students.

Matching context to students: It is important that the content of financial concepts delivered in the classroom has meaning for students. Students indicated that some financial concepts have limited relevance for their age group. From our conversations with students, phone ownership and managing the cost is a great option for teaching these skills, as every single student, even the most financially disadvantaged, had a phone. Managing aspirational savings goals, including cars, and formals (especially for girls) are also good topics. Maths lessons involving interest, especially compound interest, need to be better connected to real life motivations for saving, including unexpected life events.

Financial literacy outside of Maths: While addressing financial literacy education predominantly in maths may be the most wide-reaching approach in the short term given that

Money and Financial Mathematics is a core component for years 1-10 in the Australian Curriculum, there are opportunities to teach financial concepts in other subjects. Many students reported learning about a lot of financial concepts in Business Studies and Legal Studies, however there is also scope to include these concepts in History, English and even Art. For example, Art and English projects can explore feelings about money and experiences within the household, while history could explore how our knowledge of finance evolved. Once we stop viewing financial literacy as exclusively a Maths-based responsibility, then there is potential to address financial concepts across the curriculum, benefitting students who are disengaged with Maths. Spreading the delivery of financial literacy education across several subjects may also alleviate some of the problems with the overcrowded curriculum and trying to limit financial literacy to any one subject.

Learning how to actually save: There is significant evidence of students not actually knowing how to moderate spending in order to save. Saving was approached as a 'not spending' behaviour, which appears to not hold once students begin to experience necessary expenses. Learning how to save even when on a tight budget, and understanding the lifelong benefit of that behaviour, would be of significant assistance to all students.

VII. LIMITATIONS

Qualitative research is, by its nature, a more subjective research approach. Efforts have been made to reduce researcher bias in analysing and interpreting the data. Further research would be required to quantitatively assess statistical significance.

The COVID-19 pandemic impacted on the data collection process given the requirements for social distancing and a pause on research activities within schools. In order to progress the research, we utilized virtual focus groups and interviews for part of the data collection. Virtual data collection relies on microphones and internet connections which in some cases impacted on our ability to hear participants. In addition, some students have been financially disadvantaged either personally through lost work, or if their family was impacted due to the pandemic. Some families may have benefitted from financial assistance programs. This may have affected their perceptions of personal finance and money management during the data collection period.

Our gender assessment only considered binary genders given the sample size. We believe that our findings and recommendations around improving financial literacy education would benefit all genders.

Finally, our survey sample size is small. The focus of this research was more of a qualitative approach given the extant literature is dominated by quantitative studies. It would be useful to draw on larger sample sizes to confirm our findings.

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