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Teachers' Perceptions of Financial Literacy and the Implications for Professional Learning

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Abstract: Consumer, economic and financial literacy education at school is central to active and informed citizenship. Over the past decade, the Australian Securities and Investments Commission has led various policy initiatives and influenced curriculum and resource development in this area. However, there remains a paucity of research exploring how Australian teachers make sense of and approach their work as financial literacy educators or their professional learning needs and interests in this interdisciplinary field. This article reports research exploring practising teachers' perceptions of the opportunities for financial literacy teaching and learning. Data were collected from 35 teachers in 16 Victorian primary schools. The findings suggest a need to educate teachers to: reflect upon the knowledge, skills and capabilities required to make informed financial decisions; identify and interpret the possibilities for financial literacy teaching and learning in the Australian Curriculum; and enact sophisticated pedagogical practice.

Introduction

The Australian government has invested significantly in initiatives intended to help children understand finance. This work is led by the Australian Securities and Investments Commission (ASIC: Australia's corporate, markets and financial services regulator) and involves key government bodies, the education sector, and industry and community stakeholders. Australia has a National Consumer and Financial Literacy Framework (Ministerial Council for Education, Early Childhood Development and Youth Affairs [MCEECDYA], 2011) and consecutive National Financial Literacy Strategies (ASIC, 2011; 2014). Together, these documents provide a policy backdrop for moves to strengthen consumer, economic and financial literacy education at school.

The fallout from the global financial crisis and manoeuvring by ASIC inevitably brought legitimacy to the importance of financial literacy in the school curriculum. Australia's "education revolution" around the same time heralded the development of a new Australian Curriculum in which financial literacy is more prominently featured. The most explicit opportunities for teaching students about money are within the domains of Mathematics and Economics & Business. Within Mathematics, the 'Number and algebra' content strand includes 'Money and financial mathematics' as a sub-strand from Years 1-10 (Australian Curriculum Assessment and Reporting Authority [ACARA], 2015a). Within Economics & Business, 'Consumer and financial literacy' is one of four key organising ideas from Years 7-10 (ACARA, 2015b). Here, students explore how making responsible and informed decisions about consumer issues, money management, and assets can affect the

individual's and the community's quality of life, sense of security and awareness of future options (ACARA, 2015b). However, there are interdisciplinary curriculum connections to real world financial across almost all learning areas and each of the general capabilities.

Key to ASIC's work in the field has been the establishment of the *MoneySmart* brand (ASIC, 2016). The *MoneySmart* website is marketed as a "one stop shop" for all things money-related and includes a dedicated section for schools and teachers. The assumption seems to be that schools, teachers and students stand to benefit from workshops by *MoneySmart* representatives and downloadable teaching and learning resources. At the time of writing, links between the Australian Curriculum and *MoneySmart* websites were being strategically strengthened. The analogy of giving fish rather than teaching to fish is useful in this instance. This approach to financial literacy education has been critiqued as "missing the mark" (Blue, Grootenboer, & Brimble, 2014). Further, a recent evaluation exploring the potential of MoneySmart in four low socioeconomic schools recommended that the MoneySmart teaching and learning resources were in need of critical review (Attard, 2016). Attard (2016) also highlighted the value in working with teachers to develop contextualised mathematics lessons that fit local needs and interests while exploring ways pedagogical practice might be enhanced. The recommendations arising from this particular program evaluation are consistent with Sawatzki's (2016) findings that fit to circumstance, challenge yet accessibility and pedagogical architecture are important task design principles. However, at least to the extent that it is independent, *MoneySmart* is less troubling than close rival Commonwealth Bank's *Start Smart*, where workshops by bank employees are prerequisite to accessing further teaching and learning resources. The Commonwealth Bank has a long history of recruiting customers at a young age through its school banking program.

An important aspect of financial capability is to interact critically with governments and corporations, particularly the financial services industry. Equipping students to do this requires skilful navigation of the Australian Curriculum, interdisciplinary approaches, and sophisticated pedagogy. Meeting these demands necessitates quality professional learning opportunities for both preservice and practising teachers, although we are not aware of any research exploring Australian teachers' professional learning needs related to financial literacy education. Rather, the field is dominated by program evaluations generated by the finance industry, research consultancies, and academics with expertise in business and finance. The evaluation of school-based programs typically focus on student engagement and assessment-based measures of learning, with limited insights into the role and expertise of teachers.

This article reports research exploring practising teachers' perceptions of the opportunities for financial literacy teaching and learning and their confidence as financial literacy educators. Through involving practising teachers in design research where classroom tasks were developed, trialled and studied, the research contributes to understanding teachers' professional learning needs and interests, with important insights for teacher educators.

Relevant Literature

To the extent that they are ultimately responsible for enacting the curriculum, teachers are fundamental to school-based financial literacy education. In Australia, there is a need for independent educational research exploring how teachers interpret and pursue their work as financial literacy educators.

The findings of recent studies conducted in the United States are informative to the extent that they highlight what we do not know about Australian teachers. Loibl (2008) investigated the scope, determinants and nature of personal finance instruction in Ohio high

schools. A sample of 710 high school teachers completed an online survey consisting of 54 questions, which included items relating to teacher financial literacy levels, attitudes towards teaching financial literacy, and engagement in teaching financial literacy in their schools. Participants' responses were compared across four academic content areas: business education; family and consumer sciences; social studies; and mathematics, science, technology and agricultural sciences. Loibl (2008) found that in most schools, financial literacy topics were addressed in elective courses. The four academic content areas differed significantly in their interest toward teaching personal finance, the significance they attached to these topics, and diligence in researching them. Business education teachers were more likely to have completed formal education in finance areas, were more likely to teach elective courses, and attached great significance to teaching financial literacy compared with their colleagues. Even so, the mean personal finance quiz scores for all four academic content areas were below pass standard, signalling significant room for improvement. This study reveals the variability in teachers' approaches to financial literacy education and highlights the need for improved teacher education to build teacher capability, motivation and confidence in their work as financial literacy educators.

Way and Holden (2009) investigated the extent to which preservice and practising teachers in the US have the capacity to teach personal finance. They surveyed a national sample of 504 K-12 teachers and 627 preservice teachers about their personal financial literacy education and training, perceived level of financial literacy, preparation to teach financial literacy, opinions and beliefs about the importance of teaching financial literacy and willingness to participate in professional development in the area. They found that while most of the teacher participants agreed that financial literacy education was important, only 30 per cent were involved in teaching personal finance topics. Interestingly, almost half believed that financial literacy education is too complex for primary school-aged children. While teachers with backgrounds in mathematics, social, and vocational education were better qualified and more likely to include financial literacy education in their lessons, fewer than 3 percent of the sample reported having taken a tertiary course with content related to financial literacy education. These findings indicate that preservice and practising teachers would benefit from professional learning in financial literacy curriculum and pedagogy.

Otter (2010) investigated teachers' attitudes and beliefs about teaching financial literacy and their understandings of several core personal finance concepts. A large sample of California classroom teachers were surveyed about financial literacy policy, concept knowledge, instruction, and professional development. The participants strongly supported the teaching of financial literacy in K–12 schools. Contrasting Way and Holden's (2009) findings, close to 80 per cent of participants believed that financial literacy education should begin in elementary school (the equivalent of primary school in Australia). They also believed that the best way to teach financial literacy is through both stand-alone courses and embedding concepts in other courses (i.e., an interdisciplinary approach).

In seeking to extend such research to Australia, we drew on two projects - Task Types in Mathematics Learning (TTML) and the Encouraging Persistence Maintaining Challenge (EPMC) project - which applied design research methodology (van den Akker, Gravemeijer, McKenney, & Nieveen, 2006) to classroom experimentation involving different mathematical tasks. Both projects involved the development of innovative classroom tasks; engaged teachers in professional learning; studied the implementation of the tasks in diverse classrooms; and surveyed teachers about their professional learning needs and experiences.

Among other things, the projects found that many students do not fear challenges in mathematics, but welcome them. Further, rather than preferring teachers to instruct them on solution methods, students prefer to work out solutions and representations for themselves (Sullivan, Clarke, Cheeseman, Mornane, Roche, Sawatzki, & Walker, 2014). Sullivan and

Davidson (2014) found that students learn substantive mathematics content from working on challenging tasks prior to instruction from the teacher and are willing and able to develop ways of explaining their reasoning. In Sullivan, Askew, Cheeseman, Clarke, Mornane, Roche, and Walker (2014) results are presented that indicate that teachers welcome not only the particular lesson structure recommended to facilitate these outcomes, but also the ways that the suggestions for teaching and learning are presented.

One aspect of the EPMC project explored the teaching of 'Money and financial mathematics' through challenging contextualised learning tasks termed "financial dilemmas". Insights from data collected from teacher participants as part of this work is the focus of this article. The research questions were:

- What are practising teachers' perceptions of the opportunities for financial literacy teaching and learning?
- What are the insights for teacher educators?

The Research Design

The Research Context

Data were collected from 35 teachers in 16 Victorian primary schools. The schools included Government and Catholic schools located in metropolitan and regional areas (see Table 1). The Index of Community Socio-educational Advantage (ICSEA), created by the Australian Curriculum, Assessment and Reporting Authority (ACARA), was used to understand the socioeconomic profile of the school communities. Note that each school has students from each of the ICSEA quarters. This signals that student socioeconomic background can vary even within local contexts. Some schools are over-represented in the top quartile (i.e., School E), while others are represented in the bottom quartile (i.e., School L). These factors create some confidence that the sample depicts the range and diversity of schools, teachers and students across Victoria.

	Enrolments	ICSEA Value	Bottom quarter	Middle quarters		Top quarter
School A (Government)	233	1025	3%	26%	36%	21%
School B (Catholic)	547	1047	8%	37%	38%	17%
School C (Government)	509	949	41%	31%	25%	3%
School D (Government)	265	944	24%	48%	22%	5%
School E (Government)	561	1198	1%	3%	19%	77%
School F (Government)	720	1202	1%	5%	30%	64%
School G (Government)	593	1162	1%	5%	28%	67%
School H (Government)	158	914	45%	33%	17%	5%
School I (Catholic)	343	1050	5%	26%	47%	21%
School J (Government)	583	1027	12%	29%	31%	28%
School K (Government)	175	892	-	-	-	-
School L (Government)	2143	916	54%	34%	10%	2%
School M (Government)	177	1035	7%	40%	34%	19%
School N (Government)	300	1040	11%	30%	35%	24%
School O (Catholic)	658	1096	3%	20%	37%	41%
School P (Government)	441	954	27%	37%	24%	12%
Australian distribution	-	1000	25%	25%	25%	25%

Table 1: myschool Index of Socio-Educational Advantage (ICSEA) profile of participating schools

Design Research involving an Educational Intervention

Being design research (Anderson & Shattuck, 2012), the study focused on the design and testing of an educational intervention. The intervention consisted of a series of ten challenging tasks; a three phase *Launch*, *Explore* and *Summary* lesson structure (Lappan, Fey, Fitzgerald, Friel, and Phillips, 2006); and researched pedagogies.

Five of the ten challenging tasks that were designed, trialled and studied in this iteration of the EPMC project are called "financial dilemmas". Financial dilemmas feature social and mathematical dimensions, involve multiple solutions, and invite students to share and explain their reasoning. Each financial dilemma was designed to be the focus of one 60-90 minute mathematics lesson, with enabling, consolidating and extending versions of each task being available (Sullivan, Mousley, & Jorgensen, 2009). The tasks involve real world financial contexts that 10-12 year old children might be familiar with and/or interested in and/or able to imagine. As an example, "Anna and her friends," a task about going to the movies, is presented below and referred to later in the paper.

Task 1:
Anna, Bernadette and Carol are going to the movies together. Tickets cost $12 each, but there is a special offer for everyone who books and pays online - buy two tickets, get the third ticket free. Anna booked and paid for the tickets online.

When they arrived at the theatre, they noticed the pricelist at the shop. The price list reads as follows:

Bottled Water	$4
Icecream	$4
Medium Popcorn	$8
Bottled Water, icecream & popcorn combo	$12

Anna wants to buy a bottle of water, Bernadette wants the ice-cream and Carol wants the popcorn. Anna pays for the combo.

What might Anna say to Bernadette and Carol about how much they owe her?

Task 2:
Anna, Bernadette and Carol are going to the movies together. Tickets cost $13.50 each, but there is a special offer for everyone who books and pays online – buy two tickets, get the third ticket free. Above this, there is an online processing fee of 30c for every ticket booked. Anna booked and paid for the tickets online.

When they arrived at the theatre, they noticed the pricelist at the shop. The pricelist reads as follows:

- Bottled Water $3.50
- Icecream $4.50
- Medium Popcorn $5.20
- Bottled Water, icecream & popcorn combo $10

Anna wants to buy a bottle of water, Bernadette wants the ice-cream and Carol wants the popcorn. Anna pays for the combo.

What should Anna say to Bernadette and Carol about how much they should pay?

The following researched pedagogies are recommended to bring financial dilemmas to life:

- helping students to see that the task is useful in the real world;
- activating students' imaginations through role play and concrete materials (i.e., notes and coins);
- explaining the importance of both social and mathematical thinking to informed financial problem-solving and decision-making (Sawatzki, 2014)
- emphasising problem-solving tools and strategies, including creating tables to organise information and/or drawing pictures (Goos, Dole, & Geiger, 2011);
- providing time for individual thinking and problem-solving, followed by small group collaboration where students can share and discuss their problem solving approaches and solution/s (Smith & Stein, 2011); and
- facilitating critical whole-class discussions where a range of mathematical workings and explanations are recorded, and open, sometimes provocative questions are posed to stimulate different ways of thinking (Cheeseman, 2009; Walker, 2014).

Teacher Professional Learning and Data Sources

The teacher participants attended two professional learning days led by Monash University and Australian Catholic University mathematics education researchers. Data were collected at both events and the findings reported in this article are based on that data.

The first professional learning day was intended to collect preliminary (pre-intervention) survey data and prepare the teachers to teach ten challenging mathematics tasks (five financial dilemmas plus five other mathematics tasks) to their own students in the coming months. The teachers were given a *Teacher Participant Handbook* that provided an easy-to-read synopsis of the research informing the educational intervention; guidance in implementing the three phase *Launch*, *Explore*, and *Summary* lesson structure (Lappan, Fey, Fitzgerald, Friel, & Phillips, 2006); and an overview of the rationale and pedagogical considerations related to each challenging task. The program involved members of the academic team modelling the teaching of each of the ten tasks, using the teacher participants as students. This enabled the teachers to both observe and experience first-hand expert teaching of the financial dilemmas in preparation for using these tasks with their own classes.

The second professional learning day four months later was intended to collect follow-up (post-intervention) survey and focus group data and explore with the teacher participants the ways and means by which the findings of the EPMC project might guide, inform and enhance mathematics and financial literacy teaching and learning. The program included a facilitated whole-group discussion. This session was audio-recorded so that the teacher participants' verbal contributions could be captured, considered and analysed alongside other data sources. Similarities and differences between data sets were compared and contrasted to seek rich, deep insights into financial literacy teaching and learning.

In the section that follows, data collection and analysis techniques are described further, together with the findings.

Findings

This section explores the teacher participants' perceptions of financial literacy teaching and learning before and after the educational intervention.

Initially, the teachers varied in their views of what financial literacy teaching might involve and their self-rating of their capacity to teach financial literacy. The pre-intervention teacher survey defined financial literacy teaching and learning for participants as follows:

> *When we ask about financial literacy teaching and learning, we're referring to values, attitudes, knowledge and skills about earning, spending, saving and sharing money.*

Following this statement, the teacher participants were asked to respond to seven brief statements by indicating the extent to which they agreed on a 5-point Likert scale (strongly disagree, disagree, unsure, agree, strongly agree). The statements were designed to align with the findings of previous research related to financial literacy at school and the role of the teacher discussed in the literature review. These items and the teacher participants' responses are presented in Table 2. For each statement, the number of teachers who responded at each of the five Likert levels is presented.

Statement	**SD 1**	**D 2**	**U 3**	**A 4**	**SA 5**
a. Financial literacy is a specialised topic that should be taught for around four weeks each year.	2	12	11	8	1
b. Financial literacy is best taught using purpose designed published programs.	1	13	14	6	0
c. Financial literacy teaching and learning should involve external organisations or guest speakers.	0	10	11	12	1
d. I have a good idea about what parents are teaching students about money at home.	6	12	6	8	2
e. I am financially literate.	0	2	5	22	4
f. I am confident about teaching financial literacy.	0	7	9	12	4
g. I would like further professional development about financial literacy.	0	2	3	19	9

Table 2: Teachers' (n = 34) responses to statements about financial literacy: Pre-intervention survey

The first three statements relate to how financial literacy might be represented and taught as part of the school curriculum. The teacher participants' responses reveal a diversity of views about how financial literacy might be taught and learned. This is possibly reasonable considering the new Australian Curriculum: Mathematics features 'Money and financial mathematics' more prominently than before. More than 40% of the teacher participants did not think that financial literacy is a specialised topic deserving of its own time (around four weeks each year) in the school curriculum (statement a.). A further 30% were unsure. While these findings suggest that teachers would benefit from guidance in reading, interpreting, and making decisions about the positioning of financial literacy in the Australian Curriculum, further research is needed to understand teacher decision-making and practice related to financial literacy teaching and learning.

Despite their uncertainty about the topic, the majority of the teacher participants (more than 80%) were unsure, disagreed, or strongly disagreed that financial literacy is best taught using purpose designed published programs (statement b.). As discussed earlier,

various resources for teaching and learning financial literacy have been created and published by interested stakeholders, including ASIC and the Commonwealth Bank. These initiatives are marketed to schools as quality, "off-the-shelf" solutions. Related to this, just over one third (38%) of the teacher participants agreed or strongly agreed that external organisations or guest speakers have a role to play in financial literacy teaching and learning (statement c.). This suggests that while the teacher participants were either unaware or sceptical about the availability or usefulness of published teaching and learning programs, they were slightly more willing to invite perceived financial experts to speak with students. This may reflect familiarity or positive experiences, perhaps with representatives from local bank branches and/or parents who work in the finance industry.

While more than 75% of the teacher participants agreed or strongly agreed that they were financially literate (statement e.), only around half indicated being confident about teaching financial literacy (statement f.). This finding suggests that teachers saw being financially literate and having curriculum and pedagogical knowledge and skills to teach financial literacy to students as different types of knowledge and skills. Consistent with this, 85% of the teacher participants indicated they would like further professional development about teaching financial literacy (statement g.).

Interestingly, 70% of the teacher participants were unsure, disagreed, or strongly disagreed that they have a good idea about what parents are teaching students about money at home (statement d.). Since financial attitudes and values learned at home play an integral role in students' financial problem-solving and decision-making (Sawatzki, 2013), to find out what students already know and understand about money would seem to be an important professional learning need for teachers if they are to meaningfully tailor financial literacy teaching and learning to students' backgrounds, characteristics and interests.

The pre-intervention teacher survey also included an open-response item asking the teacher participants to suggest three things students should know and understand about money by the time they leave primary school. This question was intended to reveal insights how teachers perceive financial literacy learning outcomes in the upper primary years. The teacher participants' qualitative responses were dissected, categorised and sub-categorised. Two colleagues were enlisted to check and discuss the appropriateness of the categories and sub-categories: one being a social educator, the other a mathematics educator. A small number of suggestions were worded in such a way as to suggest more than one idea, and were assigned to multiple categories accordingly. Some teacher participants made only two suggestions. This meant that, together, the 35 teachers made a total of 107 suggestions.

The first level of categorisation related to whether the suggestion constituted a social or a mathematical understanding. Social understandings were suggested on 63 occasions. Mathematical understandings were suggested on 44 occasions. Sub-categorising proved challenging, and reinforced that the social understandings related to financial literacy teaching and learning involve attitudes, values, knowledge, and skills. Initially, four social sub-categories were selected in line with the "big ideas" usually associated with financial literacy teaching and learning: "Earning money," "Spending money," "Saving money," and "Sharing money". However, some suggestions did not fit neatly into any of these four social sub-categories. Furthermore, the idea that students might learn about sharing or donating money was not raised by the teacher participants. Four of the 107 suggestions were aligned with the types of understandings included as part of the Australian Curriculum: Economics and Business – namely, "money is a limited resource," "the purpose of money," "the difference between needs and wants," and "factors that influence consumer spending and prices." As such, these suggestions were sub-categorised as "Other economic understandings". Various suggestions reflecting attitudes and/or values to money were made, including "how others view and experience money," "positive attitudes and values to

money," "the relationship between money and opportunity," and "gambling". Hence, a final social sub-category titled "Socio-ethical understandings" was created. By contrast, the mathematical understandings suggested seemed to imply the view that money is simply a practical example or problem context to which mathematical knowledge and skills can be applied. Three sub-categories were readily identified: "Adding, subtracting, multiplying, and dividing quantities of money," "Percentage discounts, also expressed as fractions," and "Interest calculations". "Adding, subtracting, multiplying, and dividing quantities of money," regularly involved reference to calculating change (16 times). The frequency of teacher participant suggestions by category and sub-category is presented in Table 3.

Social understandings		**Mathematical understandings**	
Earning money	4	Adding, subtracting, multiplying, and dividing quantities of money	28
Spending money	39	Percentage discounts, also expressed as fractions	4
Saving money	8	Interest calculations	12
Other economic understandings	8		
Socio-ethical understandings	5		
Total	**63**	**Total**	**44**

Table 3: Categorised and sub-categorised suggestions what teacher participants thought students should know and understand about money by the time they leave primary school: Pre-intervention survey

Note that social understandings were suggested more frequently than mathematical understandings. Almost two-thirds of the social understandings suggested related to spending money. This suggests that the teachers viewed financial literacy as more likely to involve social understandings related to expenditure. When one takes into consideration that 39 suggestions related to "Spending money" and 28 suggestions related to "Adding, subtracting, multiplying, and dividing quantities of money," more than 60% of suggestions related to students being able to accurately carry out operations with money (i.e., simple everyday financial transactions) by the end of primary school. It seems there may be opportunities for further discussions with teachers to explore the extent to which they plan to teach interrelated social and mathematical understandings about money in holistic ways.

It was suggested 12 times that primary students be able to calculate interest paid on debts or earned on savings and investments by the end of primary school. Currently, "to solve problems involving simple interest" does not feature in the Australian Curriculum: Mathematics until Year 9. There may be the potential to introduce conceptual understandings about interest earlier than this – for example, by introducing and discussing interest as both an incentive to save and a cost associated with borrowing, and exploring students' social understandings related to these financial practices.

Given these teacher participants' statements about what students should know and understand about money by the time they leave primary school, an interesting anomaly was discovered at the post-intervention professional learning day. In facilitating the whole-group discussion, teacher participants were asked, "How many of you implemented the version of the movies task involving prices in whole dollar amounts?" All the teacher participants raised their hands. The group was then asked, "Keep your hand up if you moved on to the more challenging version of the movies task, with prices in dollars and cents and an online processing fee?" Only a few hands remained raised. This is problematic. The Australian Curriculum: Mathematics stipulates that at Year 4, students will learn to solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies. In this regard, the introductory version of the movies task was pitched to Year 4 students. The question is, given what is written in the Australian Curriculum and that

the teacher participants' responses to the pre-intervention teacher survey indicate they believe students should be able to accurately carry out operations with money (i.e., simple everyday financial transactions) by the end of primary school, why did they not challenge their Year 5 and 6 students to work in both dollars and cents? In this example, the teacher participants' reports of their practice appear to be contradictory to their beliefs and the achievement of student learning outcomes stipulated in the Australian Curriculum. While much research highlights the congruence between teacher beliefs and practice (Fang (1996) produced an excellent review of the literature), it has been acknowledged that there can be conflict and contradictions between the two because "beliefs are prioritised according to their connections or relationship to other cognitive and affective structures" (Pajares, 1992, p.325). Furthermore, the complexities of teachers' work and classroom life can constrain teachers' abilities to attend to their beliefs and provide instruction which aligns with them (Duffy & Anderson, 1984). There may be merit in encouraging teachers to critically reflect upon the alignment between their beliefs and practice, particularly the extent to which they are preparing students to work in both dollars and cents.

The post-intervention teacher survey posed a number of items to elicit feedback from the teachers about their experiences using the financial dilemmas. Overall, the teacher participants' responses revealed three insights: that the financial dilemmas and associated pedagogies benefitted both the teachers and their students; that there were particular considerations for an effective financial literacy lesson; and that the teachers were willing to learn about and experiment with new tasks and pedagogies through research-based professional learning. The teacher participants were asked to respond to three brief statements by indicating the extent to which they agreed on a 5-point Likert scale (strongly disagree, disagree, unsure, agree, strongly agree). These items and participants' responses are presented in Table 7.5.

Statement	**SD 1**	**D 2**	**U 3**	**A 4**	**SA 5**	**Total**
a. My students seemed to know more about using money than I had realised.	2	8	6	9	6	31
b. These tasks helped me to feel more confident about teaching financial literacy.	1	0	1	16	13	31
c. I will use these tasks again.	1	0	0	6	22	29

Table 4: Teachers' responses to statements about the financial dilemmas: Post-intervention survey

The teacher participants' feedback on the five financial dilemmas was positive. Around half the teacher participants strongly agreed or agreed that the students seemed to know more about using money than they had realised, suggesting that the financial dilemmas provided a means for teachers to learn about their students' existing financial attitudes, values, knowledge and skills. On the other hand, other teachers did not learn more about their students financial understandings' through these tasks. This might reflect differences in teachers' approaches, particularly the extent to which social thinking was discussed and debated.

More than 90% of the teacher participants strongly agreed or agreed that the tasks helped them to feel more confident about teaching financial literacy, and that they would use the tasks again in the future. Recalling the pre-intervention teacher survey where only half of

the teacher participants indicated being confident about teaching financial literacy (Table 2), it seems that being involved in the EPMC project was a productive professional learning experience. This finding is particularly significant in light of the pre-intervention teacher survey results that more than 80% of teacher participants were unsure, disagreed, or strongly disagreed that financial literacy is best taught using purpose designed published programs and 38% agreed or strongly agreed that external organisations or guest speakers have a role to play in financial literacy teaching and learning. It seems that teachers are discerning consumers of teaching and learning materials, and would prefer to be empowered to learn through experimentation how they might refine their practice. Providing teacher professional learning where tasks and pedagogies are modelled by "experts" and teachers are given time to implement, reflect on and provide feedback about those tasks and pedagogies was an effective way to engage teachers in researching and learning about their practice.

The teachers were also asked, "What did you find most difficult about teaching the financial dilemmas?" and were given a list of eight options among which to choose three. These responses are presented in Table 5.

Answer	Bar chart	Number of responses	% of teacher participants
Encouraging students to find more than one option		26	84%
Encouraging students to compare and contrast different options in order to make a decision		16	52%
Getting students to develop an argument based on both social and mathematical thinking		16	52%
Helping the students relate to the scenarios		11	35%
The literacy demands of the tasks		7	23%
Getting students to explain their social thinking		5	16%
Getting students to explain their mathematical thinking		5	16%
Helping students to understand how money was changing hands		5	16%

Table 5: What teachers found difficult about teaching the financial dilemmas: Post-intervention survey (n=31)

Table 5 shows that three of the skills that seem to be critical to financial problem-solving and decision-making – finding multiple options; comparing and contrasting different options in order to make a decision; and developing an argument based on both social and mathematical thinking – are challenging for teachers to teach and, by association, students to learn. Since these skills are arguably central to financial literacy, further research into strategies to overcome the difficulties reported by teachers may be the focus of future educational research and teacher professional learning.

That 35% of teachers reported finding it difficult helping students relate to the scenarios is a complex result to interpret. The fit between local context and problem context (fit to circumstance) is an important task design principle (Geiger, Goos, Forgasz, & Bennison, 2014). Related to this, it is possible that teachers would benefit from further ideas about what pedagogical practices might ease accessibility to problem contexts for students and how to use these effectively.

Conclusion and Implications

It is interesting to note that the teacher participants seemed to distinguish between being financially literate themselves and having curriculum and pedagogical knowledge and skills to teach financial literacy to students. While more than 75% of the teacher participants agreed or strongly agreed that they were financially literate, only around half indicated being confident about teaching financial literacy. Pre-intervention, the vast majority signalled an interest in further professional development about teaching financial literacy.

The findings highlight a need for teacher professional learning related to reading and interpreting the possibilities for financial literacy teaching and learning in the Australian Curriculum and enacting sophisticated pedagogical practice – for preservice and practising teachers. Financial literacy is an interdisciplinary teaching and learning need that is represented broadly across the Australian Curriculum's learning areas and general capabilities via many a real world context that might engage students. The teacher participants' suggestions of what students should know and understand about money by the time they leave primary school indicate a need to expand teachers' notions what it means to be financially literate. For example, the finding that the teacher participants perceived social understandings related to spending money and the use of mathematical operations as prominent learning outcomes reveal a typical view that calls to mind best buy and change calculation activities. It may be productive to help teachers reflect upon the knowledge, skills and capabilities required to make informed financial decisions, then work with them to locate relevant opportunities and interdisciplinary connections in the Australian Curriculum.

The findings also confirm a need to equip teachers with sophisticated pedagogical practice. If we accept that financial literacy teaching and learning should place students at the centre of simulated real world financial problem-solving and decision-making experiences, then a focus on teaching skills and capabilities is essential. If we accept that the most important financial decisions people face involve choices, then there is a need to predispose students to be critically informed. Identifying multiple options; comparing and contrasting these in order to make a decision; and developing an argument based on both social and mathematical thinking are challenging for teachers to teach and, by association, students to learn.

The teacher professional learning needs identified by this research relate to curriculum and pedagogy. Hence, they are likely to be best met by experts in teacher education. After all, a clear takeaway from the global financial crisis is that effective financial literacy teaching and learning must instil a healthy scepticism when interacting with the finance industry. The findings signal a need to be critical of investments in school-based financial literacy education by ASIC and the Commonwealth Bank – these programs give fish rather than teaching to fish. Effective problem-solvers can locate multiple options, compare and contrast these, and apply social and mathematical understandings to make a critically informed financial decision. Teaching students to do these things is challenging and calls for sophisticated pedagogical practice. The teacher participants reported that being involved in the EPMC project (as an example of educational design research) helped them to feel more confident about teaching financial literacy. This finding is suggestive of the sorts of professional learning activities teachers find meaningful and impactful to their practice and their students and where further educational research is needed.

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