MATHEMATICS + MONEY = ENGAGEMENT

Financial Literacy as a tool to increase opportunity and engagement with mathematics for students from low socio-economic areas

Final Report

Associate Professor Catherine Attard

Financial Literacy Australia

Western Sydney University
The Centre for Educational Research
Mathematics + Money = Engagement

Financial Literacy as a tool to increase opportunity and engagement with mathematics for students from low socio-economic areas

FINAL REPORT
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This project would not have been successful without the cooperation of the school principals from Austral Public School, Fairfield Public School, St Columban’s Catholic School, Mayfield, and St Michael’s Catholic School, Deniliquin. The enthusiasm and dedication of the participating teachers, Matt, Anne, Amanda, Tiffany, Jacqui, Sally and Lauren, ensured the project activities would be successful. I acknowledge the students who participated in the focus group discussions at each school; their generosity in sharing their thoughts is appreciated.

Finally, I thank Lin Brown for her administrative support and Western Sydney University for providing campus facilities for the professional days attended by the teachers from Austral and Fairfield Public Schools.

Catherine Attard
EXECUTIVE SUMMARY

Introduction

This was a pilot research study developed to investigate whether students’ engagement with mathematics would improve if financial literacy education was integrated into the teaching and learning of mathematics within primary classrooms. The Australian Curriculum: Mathematics (ACARA, 2012) includes aspects of financial literacy as part of its content descriptors under the title Money and Financial Mathematics. However, the topic is not treated in any depth from a financial literacy perspective, or in the context of real-life scenarios that promote active participation and illustrate to students the relevance of mathematics in day-to-day life.

One of the most common complaints from students with regard to mathematics education is its lack of relevance to students’ lives outside the school. It is an expectation of today’s students that learning is meaningful and makes sense to them (Australian Association of Mathematics Teachers, 2009). There needs to be a change in the way we establish relevance and applicability in mathematical engagement because the type of mathematics that students use outside school is often radically different in content and approach to the mathematics encountered in school (Lowrie, 2014).

Student engagement is linked to the individual’s relationships with school, curriculum, and pedagogy. We can view the concept of engagement as multi-faceted, operating at cognitive, affective and operative levels. For this project, the definition of engagement with mathematics is the coming together of all three facets, leading to students valuing and enjoying school mathematics and seeing connections with their own lives beyond the classroom (Attard, 2014).

The Project

This project investigated if the incorporation of financial literacy (based within students’ immediate contexts) into mathematics would lead to students seeing the relevance of
mathematics to their everyday lives, and therefore promote higher levels of engagement with mathematics while increasing their financial literacy.

The central research question in the project was:

*Can the use of financial literacy education improve students’ engagement with mathematics within low socioeconomic areas?*

The project aimed to:

- Explore teachers’ and students’ perceptions of financial literacy and its links to the mathematics curriculum;
- Develop contextualised units of work that are derived from students’ interests and needs; and
- Investigate changes in students’ engagement as a result of the implementation of the contextualised units of work.

Four schools from low socioeconomic areas (two in regional New South Wales and two in south western Sydney) participated in this project. The four schools that participated in the project were:

- **Case 1:** Austral Public School
- **Case 2:** Fairfield Public School
- **Case 3:** St Columban’s Primary School, Mayfield
- **Case 4:** St Michael’s Primary School, Deniliquin

Three teachers and their students within each school agreed to take part in the project activities. The project was carried out in three distinct phases.

During Phase 1, the participating teachers underwent professional development in relation to financial literacy, the *MoneySmart* program, and student engagement with mathematics. They selected a *MoneySmart* unit of work to implement with their students. In Phase 2, the teachers evaluated the *MoneySmart* unit they had taught, and after reflecting on their students’ academic needs and interests in relation to money and mathematics, designed and implemented their own contextually based units of work.
During the final Phase, the teachers completed their units of work and evaluated their effectiveness in relation to their students’ engagement with mathematics and the usefulness of incorporating financial literacy as a way to access the mathematics curriculum. The complete units of work are available in appendices of the full project report and in a separate document.

Each of the teachers participated in a semi-structured interview at the start, middle, and end of the project. Three student focus groups were formed at each of the schools. These groups were comprised of some students from each of the participating teachers’ class groups.

The four schools each had unique contexts in relation to geography, cultural backgrounds, size and communities. Likewise, the participating teachers differed in age, experience and views in relation to teaching and learning mathematics. This diversity resulted in a broad range of experiences for the teachers and students from each of the schools which are described in detail within the full project report. The new, contextualised units of work produced at each of the participating schools are as follows:

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>UNIT TITLE</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUSTRAL PUBLIC SCHOOL</td>
<td>Money Museum</td>
<td>Years 3 and 4</td>
</tr>
<tr>
<td>FAIRFIELD PUBLIC SCHOOL</td>
<td>Three Little (and not so little)</td>
<td>Part 1: Year 2</td>
</tr>
<tr>
<td></td>
<td>Piggies Made a Market</td>
<td>Part 2: Year 6</td>
</tr>
<tr>
<td>ST COLUMBAN’S</td>
<td>Class Economy</td>
<td>Year 1</td>
</tr>
<tr>
<td></td>
<td>Mayfield Monopoly</td>
<td>Year 3</td>
</tr>
<tr>
<td></td>
<td>Sizzling Sausages</td>
<td>Year 6</td>
</tr>
<tr>
<td>ST MICHAEL’S</td>
<td>Learning through Fundraising</td>
<td>Year 2</td>
</tr>
<tr>
<td></td>
<td>Making Cents of Building</td>
<td>Year 3</td>
</tr>
</tbody>
</table>
Project Findings

Teachers’ perceptions

For most teachers at the start of the project the concept of financial literacy related to understanding how to recognise and deal with our Australian currency system. Although the NSW K-10 Mathematics Syllabus includes aspects of money that are also linked to the General Capabilities, it does not provide any further detail to assist teachers in conceptualising the teaching of money and mathematics through a vehicle of financial literacy.

The ASIC MoneySmart teaching resources played an integral role in this study as they provided a foundation for the teachers to base their understandings of the place of financial literacy in the primary school curriculum. The inclusion of a professional learning session from the NSW MoneySmart officer along with the introduction of the National Consumer and Financial Literacy Framework (ASIC, 2011) and the Framework for Engagement with Mathematics (FEM) (Attard, 2014) assisted greatly in orienting the teachers towards seeing the potential of financial literacy to be an important tool to engage their students with mathematics.

One of the biggest challenges for the teachers at the start of this project, and arguably for most primary teachers, was the struggle to address the many components of the mathematics curriculum within the confines of their daily timetables. This struggle arises from the common perception that every outcome (in NSW) or Content Descriptor (from the Australian Curriculum) must be addressed as an individual topic. This often results in mathematical concepts being taught in an isolated manner, without any real context for students. A result of this is a negative impact on student engagement (Attard, 2014). Students fail to see how the mathematics relates to their real lives. They also fail to see the connections between the mathematical concepts.

This project allowed the participating teachers to explore how the curriculum could be delivered in a different way. By designing units of work that were directly responding to their students’ needs and interests, and taking advantage of their unique contexts, the
teachers were able to see how mathematics could be taught in a more meaningful and engaging manner. After teaching and evaluating their units of work, the teachers’ perceptions of financial literacy had changed dramatically from the start of the project. They now understood the benefits of financial literacy education, embedded and acknowledged within mathematics teaching and learning. Teachers saw the benefits of this approach as:

- The ability to integrate mathematical concepts in a much more meaningful and purposeful way;
- A *working smarter, not harder* approach to teaching mathematics;
- Purposeful and active learning that improved students’ engagement with mathematics;
- Mathematics activities that were driven by student’s needs and interests resulted in students being more invested in their learning, and therefore were more willing to work harder; and
- Students were able to see the links between the mathematics they learned in the classroom, to their lives outside the school.

**Students’ Perceptions of Financial Literacy**

Like the teachers, their students also developed different perceptions of financial literacy as a result of their participation in this project. At the beginning of the project, almost all of the focus group participants had a very narrow view of money and financial literacy that reflected how their teachers had taught money concepts. A common understanding amongst all of the children was that money is important for survival, that is, to pay for food, water and shelter. They also showed some understanding of the concepts of poor and rich. Another, perhaps more significant commonality amongst all of the participants was that they were all very interested in the topic of money and were able to link their discussions to their own lives. By the conclusion of the project, almost all of the children displayed a much more sophisticated understanding of money and financial literacy as a direct result of the contextualised units of work.

These units provided real-life experiences that required a much deeper interaction with money and mathematics, and therefore exposed the students to more complex concepts relating to financial literacy, money, and other curriculum areas. The activities experienced by the students within the project varied widely, and each of the units resulted in a
culminating activity that had purpose and provided hands-on experience with a wide range of mathematical concepts.

Financial Literacy and Mathematics

This project provided an opportunity for the participating students and teachers to use financial literacy education as a tool to access mathematical concepts, critical thinking, and understandings of our currency system beyond the stated curriculum requirements (Appendix 1). These understandings included but were not limited to concepts relating to:

- Value for money
- Lending and borrowing
- Budgeting
- Profit and loss
- Interest rates
- Credit cards
- Mortgages
- Fundraising
- Production and manufacturing of currency
- Protection against counterfeit currency

At the start of the project the majority of participating teachers had only taught the very basic mathematics relating to money. That is, identification of our currency, computation with money, and other basic curriculum requirements. The units of work that were designed required the students, in most cases, to access a much broader range of mathematical concepts that spanned across all three curriculum content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. Not only did the students learn more about money and financial literacy, they were able to learn and apply skills across the mathematics strands with purpose. This learning was further enhanced because it also addressed the General Capabilities from the curriculum.

Changes to Student Engagement with Mathematics

The Framework for Engagement with Mathematics (Attard, 2014) proved to be a useful tool in supporting student engagement. The teachers used the Framework to assist in developing their units of work and as a tool for reflection and evaluation. From a research perspective, the Framework provided useful criteria to assess if the project had been successful.
Students are engaged with mathematics when:

- mathematics is a subject they enjoy learning;
- they value mathematics learning and see its relevance in their current and future lives; and
- they see connections between the mathematics learnt at school and the mathematics used beyond the classroom.

The levels of engagement of the participating students varied widely at the commencement of this project. It is clear from the data gathered from teachers and students on completion of the project that the students’ engagement towards mathematics improved as a direct result of their involvement with the contextualised units of work using financial topics. The teachers attributed this improved engagement with the change in pedagogical practices required to teach units of work that were student-centred and focused upon the students’ needs and interests. Many of the units of work were focused on problem-based learning which is in direct contrast to a traditional approach to teaching mathematics where content is taught in a teacher-centred manner.

As a result of this project, the teachers’ and students’ perceptions of and understandings relating to financial literacy changed significantly. The teachers and students progressed from viewing financial literacy as simply recognition of currency and transaction-related computation, to more complex concepts such as understanding value for money, lending, profit and loss, and credit cards. They explored these concepts through hands-on activities and a range of projects that required them to deal with real money in real situations.

There were additional, unexpected benefits that included the teaching and learning of a much broader range of mathematical concepts that naturally integrated into the financial literacy units. The Working Mathematically components and the General Capabilities featured heavily in each of the contextualised units of work. However, the students gained much more than knowledge in this project. They improved their collaborative skills and many gained a sense of agency by being able to use money they had earned or raised to assist other, more vulnerable members of their communities.
RECOMMENDATIONS

• Financial literacy should play a more prominent role in school classrooms, to both improve engagement with mathematics and improve financial literacy. It would be beneficial if it was explicitly embedded into school curricula.

• The National Framework for Consumer and Financial Literacy should be promoted more widely in schools as a useful planning tool for teachers.

• The development of resources that specifically promote the benefits of financial literacy education through rich, real life tasks and from a mathematics curriculum perspective (depth and breadth of curriculum covered) is highly recommended.

• The MoneySmart resources require a critical review to ensure the pedagogies and topics reflect contemporary teaching and learning expectations, particularly in relation to timing of discussions, integration of practical activities and the incorporation of mobile technologies.

• It is recommended that this research project be replicated with a focus on the middle years of schooling (Years 5 to 8) as this may have a bigger impact on participating students in relation to both money and mathematics due to the students having more access to money and the more complex curriculum demands relating to money and financial mathematics.

• Future iterations of this project should promote collaboration between teachers at participating schools with off-site meetings as this was beneficial to the Sydney-based teachers in this pilot project.

REFERENCES


INTRODUCTION

Financial Literacy as a Tool to Increase Opportunity and Engagement with Mathematics for Students from Low Socio-economic Areas was a pilot research study developed to investigate whether students’ engagement with mathematics would improve if financial literacy education was integrated into the teaching and learning of mathematics within primary classrooms. Although the Australian Curriculum: Mathematics (ACARA, 2012) includes aspects of financial literacy as part of its content descriptors under the title Money and Financial Mathematics (ACARA, 2016), the topic is not treated in any depth or in the context of real-life scenarios that promote active participation and illustrate to students the relevance of mathematics in day-to-day life. Rather, the concept of money is often integrated into the mathematics curriculum in a rather shallow sense, focusing on identifying currency, computing with money amounts, basic budgeting, and, in the upper primary years, some work with percentages.

Low levels of school engagement with mathematics is a significant concern in Australia (Attard, 2011; 2013), with particular attention currently being paid to science, technology, engineering and mathematics (STEM) to ensure “the continued prosperity of Australia on all fronts – socially, culturally and economically – for all our citizens and for our place in the world.” (Office of the Chief Scientist, 2013, p. 3) There are moderate to strong correlations between academic achievement and academic self-concept (Barker, Dowson, & McInerney, 2005), and often students who do not achieve well in school mathematics experience low levels of engagement. One result of such low engagement in mathematics is that many students discontinue the study of mathematics beyond the mandatory years, thus limiting their life choices and prospective career opportunities.

One of the most common complaints from students with regard to mathematics education is its lack of relevance to students’ lives outside the school. It is an expectation of today’s students that learning is meaningful and makes sense to them (Australian Association of Mathematics Teachers, 2009). There needs to be a directional shift in the way we establish relevance and applicability in mathematical engagement because the type of mathematics
that students use outside school is often radically different in content and approach to the mathematics they encounter in school (Lowrie, 2004).

This project was conceptualised to study whether the incorporation of financial literacy, based within students’ immediate contexts, would create opportunities for students to see the relevance of mathematics in their everyday lives, and therefore promote higher levels of engagement with the subject while increasing their awareness of the importance of financial literacy.

The objectives of this study were to investigate if the use of contextualised financial literacy units of work could:

• Improve students’ engagement and achievement in mathematics; and
• Provide a foundation of financial literacy that will positively impact children’s lives, providing them with a more critical perspective of the importance of financial literacy in relation to well-being and life opportunities

LITERATURE REVIEW

This review of literature pertaining to financial literacy will provide a context for this study. First, definitions of financial literacy will be provided against the backdrop of the current mathematics curriculum taught in New South Wales and nationally. The importance of financial literacy will then be explored, followed by a discussion of mathematics engagement and how financial literacy could potentially enhance students’ engagement with mathematics.

Defining Financial Literacy

Financial literacy is a broad concept that is defined in a variety of ways. A common definition describes financial literacy as basic money management that includes budgeting, saving, investing and insurance (Hogarth, 2002, as cited in Worthington, 2006). Others
include the idea of “informed and confident decision making” (Roy Morgan Research, 2003a; 2003b; 2003c, as cited in Worthington, 2006). Many of the definitions relate to a set of basic financial skills. However, The Australian Association of Mathematics Teachers (AAMT) (2012) adds the dimension of ethics and civic responsibility, claiming consumer and financial literacy are closely connected to numeracy, and people must draw on their literacy and numeracy to achieve the best personal and community outcomes:

*Consumer and financial literacy is more than just knowing about money and financial matters and more than having the skills to work with this knowledge. It also requires the confidence and capacity to successfully apply the necessary knowledge and skills in a range of contexts and for a range of purposes (p.1).*

The definition of financial literacy is further deepened by the Program for International Assessment (2012) (as cited in Thomson, 2014, p.11):

*Financial literacy is knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the well-being of individuals and society, and to enable participation in economic life (p.11).*

This definition incorporates the ability to use knowledge and skills to meet challenges in the future. Its second part refers to the purposes for developing financial literacy. The Program for International Student Assessment (PISA) conceives of the term literacy as “the capacity of 15-year-old students to apply knowledge and skills in key subject areas and to analyse, reason and communicate effectively as they pose, solve and interpret problems in a variety of situations” (p.57). PISA’s definition also includes affective elements such as attitudes, motivation and confidence.

The Australian National Consumer and Financial Literacy Framework (ASIC, 2011) add consumer literacy to financial literacy and describe those who are consumer and financial literate as individuals who “…have the ability to apply knowledge, understanding, skills and values in consumer and financial contexts to make informed and effective decisions that have a positive impact on themselves, their families, the broader community and the environment” (p.8).
The Australian National Consumer and Financial Literacy Framework provides a progression of student learning from Year 2 to Year 10, and suggests links to the Australian Curriculum General Capabilities, which are embedded in all subject areas taught within the Australian Curriculum (this is also the case for the NSW syllabus). The General Capabilities defined by the Australian Curriculum Assessment and Reporting Authority (ACARA) as:

...a key dimension of the Australian Curriculum. They encompass knowledge, skills, behaviours and dispositions that, together with curriculum content in each learning area and the cross-curriculum priorities, will assist students to live and work successfully in the twenty-first century. They play a significant role in realising the goals set out in the Melbourne Declaration on Educational Goals for Young Australians (MCEETYA) 2008 that all young people in Australia should be supported to become successful learners, confident and creative individuals, and active and informed citizens (ACARA, 2016).

Although the Mathematics curriculum focuses on financial literacy in quite simple terms (see Appendix 1), when coupled with the General Capabilities the potential for a more holistic and critical approach to financial literacy education via the mathematics curriculum can be envisaged.

**Why is Financial Literacy Important in our Schools?**

Numerous sources exist which state the need to improve financial literacy among children and adults (see for example, ASIC, 2014; Thomson, 2014). Much has been written about financial literacy in the financial management, business, investment and retirement contexts, yet there is little research literature about financial literacy in educational contexts and even less relating to financial literacy as a tool to increase opportunity and engagement with mathematics for students from low socio-economic areas.

The Australian National Consumer and Financial Literacy Framework (ASIC, 2011) acknowledges that young people are interacting with money and making consumer choices from an early age and states that effective consumer and financial literacy education “contributes to students’ cognitive, personal and social development and develops the capabilities needed to address their short-term consumer and financial issues and concerns as well as shape their social and economic futures” (p.5).
The forward to ASIC’s MoneySmart primary package includes the “priority is to ensure people of all ages can make informed and confident financial decisions...education is key to this” (ASIC, 2012). Although there are many financial literacy initiatives available that have been established by government, industry, workplaces and communities, there does seem to be some concern over the effectiveness and appropriateness of many of these programs (Worthington, 2013). Although this research project included the MoneySmart program as a way to introduce consumer and financial literacy education to the participating teachers, the goal was to have teachers design and deliver their own units of work in order to address the specific needs of their students in relation to financial literacy education, engagement, and mathematics.

**Financial Literacy, Engagement and Mathematics**

The concept of engagement can be characterised as the actions and behaviours that are the result of a student’s motivation. Engagement is linked to the individual’s relationships with school, curriculum, and pedagogy. We can view the concept of engagement as multi-faceted, operating at cognitive, affective and operative levels. Operative engagement encompasses the idea of active participation and involvement in academic and social activities, and is considered critical for the achievement of positive academic outcomes. Affective engagement includes students’ reactions to school, teachers, peers and academics, influencing the students’ willingness to become involved in schoolwork. Cognitive engagement involves the idea of investment, recognition of the value of learning and a willingness to go beyond the minimum requirements. For this project, the definition of engagement with mathematics is the coming together of all three facets; cognitive, operative, and affective, leading to students valuing and enjoying school mathematics and seeing connections between school mathematics and their own lives beyond the classroom (Attard, 2014).

The issue of lowered engagement levels in mathematics during the middle years could cause wide-reaching consequences that have the potential to affect our communities beyond the obvious need to fill occupations that require the use of mathematics. Disengagement with
Focus Group Summaries

6

mathematics leads to reducing the range of higher education courses available to students through exclusion from courses requiring specific levels of mathematics in addition to limiting their capacity to understand life experiences through a mathematical perspective (Sullivan, Mousley, & Zevenbergen, 2005).

Students who have the most to gain from engagement with mathematics are sometimes those who are most difficult to engage. Sullivan, Tobias and McDonough (2006) suggest this phenomenon becomes heightened during the upper primary and lower secondary years. To promote student engagement with learning mathematics, Sullivan and McDonough (2007) claim two sets of factors must align. The first set requires students to have the requisite prior knowledge, a curriculum that is relevant to their lives, interesting classroom tasks, and pedagogies and assessment regimes that match their expectations. This set of factors reflects the social processes and relational factors of engagement. The second set of factors put forward by Sullivan and McDonough reflects the individual aspect of engagement: students relating to teachers’ goals for learning, their willingness to persist, and the extent to which they see participation in schooling as creating opportunities. Financial literacy education, its relevance to students’ current and future lives, and the practical nature of financial literacy tasks provides an opportunity for students to engage with mathematics.

Recent research on student engagement with mathematics (Attard, 2011, 2012) indicates that during the primary and middle years there are a number of factors influencing students’ engagement, however, the most powerful influence is that of the teacher. This finding is strengthened by research conducted by Bobis, Martin, Anderson and Way (2012) that investigated the motivations and behaviour of 1,601 students in years 6 to 8 from 200 classrooms in 44 Australian schools. They found that there are a range of factors that relate to a student’s personal attributes in relation to mathematics. These factors include the student’s confidence to do mathematics, the value they place on the subject, their enjoyment level and their anxiety level. Bobis, Martin, Anderson and Way cite overall classroom climate as a major influencing factor that impacts strongly on individual students, and they suggest schools and teachers need to develop strategies to reduce negative attitudes towards mathematics.
The Framework for Engagement with Mathematics (FEM) introduced by Attard (2014) (Table 1) was devised to assist teachers in planning engaging learning experiences in mathematics. In this project, the FEM was used to introduce the teachers to important elements of teaching and learning that have a direct influence on student engagement. The FEM was also used by the teachers to plan their own units of work during Phase 3 of the project. The FEM will be used later in this report as a lens that will assist in determining whether the project activities were successful in increasing students’ engagement with mathematics as a result of their work on financial literacy.

Research by Sawatzki, (2014; 2015) indicates that the use of money and financial mathematics embedded into realistic problems contributed to improved student engagement with 10-12 year old children. The combination of engaging pedagogical practices, as described in the FEM, with practical, purposeful and relevant activities relating to financial literacy were the foundation of this research project.
In an engaging mathematics classroom, positive pedagogical relationships exist where:

- students’ backgrounds and pre-existing knowledge are acknowledged and contribute to the learning of others
- the teacher is aware of each student’s mathematical abilities and learning needs
- interaction amongst students and between teacher and students is continuous
- the teacher models enthusiasm and an enjoyment of mathematics and has a strong pedagogical content knowledge
- feedback to students is constructive, purposeful and timely

In an engaging mathematics classroom, engaging pedagogical repertoires mean:

- there is substantive conversation about mathematical concepts and their applications to life
- tasks are positive, provide opportunity for all students to achieve a level of success and are challenging for all
- students are provided an element of choice
- technology is embedded and used to enhance mathematical understanding through a student-centred approach to learning
- the relevance of the mathematics curriculum is explicitly linked to students’ lives outside the classroom and empowers students with the capacity to transform and reform their lives
- mathematics lessons regularly include a variety of tasks that cater to the diverse needs of learners

Students are engaged with mathematics when:

- mathematics is a subject they enjoy learning
- they value mathematics learning and see its relevance in their current and future lives
- they see connections between the mathematics learnt at school and the mathematics used beyond the classroom

**TABLE 1: FRAMEWORK FOR ENGAGEMENT WITH MATHEMATICS (ATTARD, 2014)**

**Research Question**

The research aimed to address the following question:

*Can the use of financial literacy education improve students’ engagement with mathematics within low socioeconomic areas?*

Sub-Question: *What are teacher and student perceptions of financial literacy education?*
The project introduced a financial literacy program to four schools that had no prior experience with a formalised program such as MoneySmart, and a history of low achievement in numeracy and mathematics. All four schools were situated in low-socioeconomic areas within New South Wales. Two schools that were located in greater western Sydney, one school from the Newcastle area and one school from the Riverina area were selected for participation in the project.

Within each school a teacher from Stage 1 (Years 1 and 2), Stage 2 (Years 3 and 4) and Stage 3 (Years 5 and 6) was invited to participate as leaders in the project. The timeline for the project is detailed in Table 2 below.

<table>
<thead>
<tr>
<th>Start date</th>
<th>End date</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>28/11/2014</td>
<td>30/01/2015</td>
<td>• Submit ethics application</td>
</tr>
<tr>
<td>30/01/2015</td>
<td>15/03/2015</td>
<td>• Submit ethics applications to DEC/CEO</td>
</tr>
</tbody>
</table>
| 30/03/2015 | 7/04/2015 | • Phase 1 training day (1 day per school x 3 lead teachers at each school)
| | | • Initial data collection (teacher interviews and student focus groups) |
| 7/04/2015 | 14/5/2015 | • Teacher training days (lead teachers to work with other teachers to prepare for initial unit implementation) |
| 14/5/2015 | 30/6/2015 | • Implementation of MoneySmart units of work |
| 15/7/2015 | 21/7/2015 | • Development of new, context specific units of work by lead teachers
| | | • Lead teachers to work with other teachers to support implementation of new units of work
| | | • Phase 2 Data collection (teacher interviews and student focus groups) |
| 1/8/2015 | 1/11/2015 | • Implementation of new contextualised units of work |
| 15/11/2015 | 30/11/2015 | • Final data collection /debrief with teachers
| | | • Showcase of project to community groups/stakeholders |
| 30/11/2015 | 30/4/2016 | • Write research report |
| 30/4/2016 | 16/11/2016 | • Disseminate findings and units of work via publication, media, conferences etc. |

Table 2: Project Timeline
A major goal of this project was to specifically target schools in low socioeconomic areas with low numeracy achievement with the goal of improving students’ engagement and achievement in mathematics through the vehicle of a financial literacy program that would highlight the relevance of mathematics to children’s current and future lives (Attard, 2012) and position them for success in relation to their future economic lives. The importance and effectiveness of financial literacy education is widely documented (see, for example, ACER, 2014), as are the strong links between financial literacy, numeracy and mathematics (AAMT, 2012). However, there have been no studies to date that investigate how financial literacy education in low socioeconomic areas could be used as a tool to improve student engagement with mathematics.

**Research Design and Methods**

This research utilised case study methodology. Four primary schools from low socioeconomic areas were strategically selected, invited and agreed to participate in the pilot program. Each of the schools had a unique context in relation to its geographical location, and the cultural and social makeup of its population. It was also a requirement that the schools and participating teachers had not previously taught any of the units of work available from the MoneySmart teaching resources. Three teachers from each school, one each from Stage 1 (Grades 1 and 2), Stage 2 (Grades 3 and 4) and Stage 3 (Grades 5 and 6) volunteered to participate in the project.

A participatory action research approach was employed as a way for the schools and teachers to work in partnership with the research team to learn about teaching mathematics through a financial literacy approach, implement and evaluate a MoneySmart unit of work, and then design, teach and evaluate an original unit of work that responded to their students’ needs and interests. The research team consisted of one academic who specialised in mathematics education and a research assistant. The research team provided professional development for the participating teachers specifically in relation to mathematics education and financial literacy education. They assisted in the design of the new units of work, and collected data from the teachers at the start, midpoint and end of the project. The researchers also conducted focus group interviews with small groups of five
to six children who were involved in the project. These also occurred three times during the course of the project. The researchers collected data from the audio-recorded teacher interviews and focus groups, field notes, photographs and student samples of work. All interviews were transcribed verbatim.

Phase 1 of the research commenced during Term 1 of 2015 when the researchers spent a full day at each school to introduce the teachers to financial literacy education. The project funding provided money to release the teachers from their teaching. The professional development aspect consisted of an exploration of student engagement, which included an introduction to the Framework for Engagement with Mathematics (FEM) (Attard, 2014), the Consumer and Financial Literacy Framework (2011) and the MoneySmart program and units of work. Initial teacher interviews were conducted at this time to investigate the teachers’ perceptions of and past experiences teaching financial literacy, including their understandings of how it aligns within the current mathematics curriculum.

The teachers then selected a unit of work from the MoneySmart resources that they would implement in their classrooms prior to the next phase of the research. They were also provided with additional release time to work with other teachers in their schools on the implementation of MoneySmart units of work.

Phase 2 of the project took place during Term 2 of 2015. During this time, the researchers spent two full days at each of the schools. The first day involved an evaluation of the implementation of the selected MoneySmart unit, the second round of individual teacher interviews and the second round of student focus group discussions. The researchers then worked with the teachers to develop and design new units of work that were the result of identified student interests and needs. The teachers were again provided with additional release time to work with other teachers in their schools and assist them in developing their own units of work. Following the two professional development days the teachers then implemented the new units of work.

In the final phase of the project, the researchers returned to the school for one to two days. During this time the teachers evaluated their units of work and in some cases, held
‘showcases’ of their work for the wider community. Final interviews and focus group discussions were held and the research team worked with the teachers to finalise the documentation of their units of work.

**Ethical procedures**

The research methods employed in this project were approved by the University’s Human Research Ethics Committee (approval number: H10907), the NSW Government’s Department of Education (approval number: SERAP-2015068) the Maitland Newcastle Catholic Schools Office and the Wilcannia Forbes Catholic Education Office.

**Research sites**

The four schools that participated in this project are as follows:

**Case 1: Austral Public School**

Austral Public School is located in a semi-rural environment in South Western Sydney. The school supports a community diverse in socio-economic and cultural backgrounds. Enrolment trends indicate a slow decline in number with 352 students in 14 classes. 59% of students are from non-English speaking backgrounds with the predominant language groups being Italian, Maltese and Arabic. The Italian language, heritage and culture are fostered through an Italian community language program. Eighty-three percent of teachers have been employed at the school for over 5 years. Thirty-nine percent of the teaching staff has been at the school for over 16 years. The school participates in the Low SES School Partnerships.

**Case 2: Fairfield Public School**

Fairfield Public School is located in South Western Sydney. The school supports a community diverse in cultural backgrounds and heritage. There are 630 students enrolled with 59% of students from non-English speaking backgrounds. There are 60 languages represented within the school community, with Arabic, Assyrian, Vietnamese, Bosnian and Tongan being the predominant groups. Thirty-five percent of the school’s enrolment includes refugee students, many of whom have a background of torture, trauma and limited prior
educational experiences. School enrolment has been increasing, with about 25% of students being transient. The school’s teaching staff is a mix of highly experienced and early career teachers. The school has participated in the Low SES School Partnerships.

**Case 3: St Columban’s Primary School, Mayfield**

St Columban’s Primary School is located in Mayfield, a north-western suburb of Newcastle, New South Wales. There are 158 students enrolled, consisting of 24 different nationalities, which include African refugees, first generation Australians and a high population of Tongan, Samoan and Asian students. There is some transience in the school population, with increasing enrolment from Mayfield Christian School. Students have diverse pathways once they leave school but there is not always the expectation of university. The closest public schools have larger populations, with approximately 600 students in each. The adjacent Catholic high school caters for Years 7-10 and has approximately 800 students. The large, senior St Francis Xavier Catholic high school is at Hamilton and has 2000 students. There is a public selective high school at Merewether and a public school of Performing Arts at Broadmeadow. The teachers at St Columban’s range in experience from beginning to highly experienced teachers.

**Case 4: St Michael’s Primary School, Deniliquin**

St Michael’s Primary School is located in a southern regional environment in New South Wales, near the Victorian border. The school supports a community diverse in socio-economic background, with 60% of the students coming from the town of Deniliquin and 40% from the surrounding farms, cattle properties and families who are involved with the rice mill and water drilling. Enrolment trends indicate a slow rise in numbers with 140 students, despite a number of surrounding public, private and small country schools. Since 2011, the town and community are reviving from the years of drought and business is consolidating. Few students are transient as more families remain in the community. Students are mainly mono-cultural, although there are students from Sri Lankan, Indian and Aboriginal backgrounds. Most students leave St Michael’s for Deniliquin High School; however, some go to a Catholic high school in Echuca or to Sydney or Ballarat boarding schools.
Participants

At the start of this project three teachers from each school were invited to participate. The project required one teacher from each of Stages 1 to 3 (Years 1/2, 3/4, and 5/6) (Table 3). Participation in the project was entirely voluntary, and in accordance with ethics requirements, all participants were free to withdraw from the project at any time. Two teachers withdrew from the project and so data pertaining directly to them and their class groups is not included in this report. Several of the participating teachers have agreed to use their real names, where others chose to use a pseudonym.

<table>
<thead>
<tr>
<th>School</th>
<th>Teacher name</th>
<th>Grade</th>
<th>Experience Teaching</th>
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</thead>
<tbody>
<tr>
<td>Austral Public School</td>
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<td>6</td>
<td>MC</td>
</tr>
<tr>
<td></td>
<td>Anne</td>
<td>3/4</td>
<td>EC</td>
</tr>
<tr>
<td></td>
<td>Matt</td>
<td>3/4/5</td>
<td>EC</td>
</tr>
<tr>
<td>Fairfield Public School</td>
<td>Amanda</td>
<td>2</td>
<td>EC</td>
</tr>
<tr>
<td></td>
<td>Tiffany</td>
<td>3/4</td>
<td>LC</td>
</tr>
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<td></td>
<td>Jacqui</td>
<td>6</td>
<td>MC</td>
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<td>Steve</td>
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<td>Lauren</td>
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</tr>
<tr>
<td></td>
<td>(Teacher withdrew from project)</td>
<td>5/6</td>
<td>EC</td>
</tr>
</tbody>
</table>

**Table 3: Participating Teachers**

Each of the teachers participated in a semi-structured interview at the start, middle, and end of the project. The interviews were semi-structured and consisted of the following prompts.
Initial Interview:

• Can you tell me about your students and their engagement with mathematics?
• What are the things you do to help your students engage with maths?
• What are your perceptions about financial literacy during the primary years?
• Can you tell me about a time when you have taught your students aspects of financial literacy?
• How do you think your students and the students at this school will benefit from learning about financial literacy?
• Do you expect that teaching mathematics through financial literacy will help students engage with mathematics? Why?

Interim Teacher Interview Prompts

• Can you tell me about what has happened so far in your classroom in relation to teaching and learning about financial literacy?
• Tell me about any challenges you have faced?
• How have you addressed those challenges?
• Can you talk about any surprise outcomes as a result of what you have implemented so far?
• Can you describe any notable changes in the engagement of the students as a result of the financial literacy work?
• When thinking about planning a new unit of work that responds to the needs and interests of your students, how are you planning to integrate some of the mathematics curriculum into your work?
• What are your expectations of the new unit in relation to increasing your students’ engagement with mathematics?

Final Teacher Interview Prompts

• Can you tell me about the unit of work you have designed?
• What were the highlights and challenges for you?
• What were the highlights and challenges for the students?
• Can you talk about any feedback from parents or other members of the community in relation to the financial literacy work that has occurred?
• Can you tell me about how you have integrated the financial literacy work with mathematics?
• Can you talk about any changes in the students’ engagement with mathematics as a result of the financial literacy work?
• What do you think your next steps are in relation to financial literacy and mathematics?
Each of the teachers in the study sent invitations to parents and caregivers of their students an invitation for their child to participate in a focus group discussion. Three focus groups were formed at each of the schools. The groups were compiled with students from each of the participating teachers’ class groups. Each group consisted of between four and six students and was of mixed gender.

The focus group discussions used the following prompts.

Initial Student Focus Group Prompts:
- Tell me about school and mathematics
- What things do you enjoy or dislike about mathematics?
- How do you think mathematics can help you in your lives?
- What do you know and understand about money?
- Can you tell me about a time when you have used money?
- Can you tell me about a time when you have had to save up to buy something special?

Interim Student Focus Group Prompts:
- Lately you have been learning about money and mathematics. Can you tell me about it?
- What sorts of things have you been doing to help you learn about money and mathematics?
- How is what you have learned important in your lives?
- Now that you have learned some things about money, what else would you like to know, or like to be able to do in relation to money and/or mathematics?

Final Student Focus Group Prompts:
- This year you have learned a lot about money. Can you tell me about some of the things you have learned?
- What was the best thing about what you learned?
- How is what you have learned important in your lives?
- What mathematics did you learn or use when you were learning about money?
- What things did the teacher do to help you learn?
- How will you use what you learned?

The findings from this project will first be presented as four separate case studies. Following this, emerging themes across the cases will be discussed followed by recommendations that arise from the study.
Case Study 1: Austral Public School

There were three teacher participants who agreed to take part in this project. However, during Phase 2, one of the teachers withdrew due to heavy work commitments. Data collected from that teacher was destroyed as per ethics requirements. The remaining two teachers, Ann and Matt, both early career teachers, fully participated in the project and their engagement with the project will now be explored.

As detailed in the research design, the project was split into three distinct phases. The data from each phase will be explored separately for each school.

Phase 1

The initial visit to Austral Public School during Phase 1 of the project involved the provision of professional development in relation to the National Consumer and Financial Literacy Framework (2011), financial literacy education in general, and engagement with mathematics. To assist in introducing financial literacy to the teachers, Colleen Blancato, the New South Wales MoneySmart project officer, took part in this aspect of the project in order to assist the researchers to introduce the MoneySmart resources to the teachers. The teachers also had the opportunity to explore the NSW Mathematics K-10 Syllabus (2012) to find links between financial literacy and mathematics.

The teachers also spent some time on the initial professional development day selecting a MoneySmart unit of work to trial in their classrooms. The intention of this, was to familiarise the teachers and students with financial literacy, and to find out what the students’ needs and interests were, in preparation for Phase 2 of the project.

Prior to exploring the data collected from the teacher interviews and student focus groups, a brief description of the context of each class group and teacher is provided.
Matt

Matt is an early career teacher with a composite class made up of children in Years 3, 4 and 5. The students in his class had been identified as high achievers, displaying a range of attitudes towards mathematics and learning. They enjoyed being challenged and according to Matt, were beginning to work well with each other at the time the project started.

Anne

Anne was teaching her first full-time class since qualifying as a primary teacher. The Year 3/4/5 group was composed of mixed ability children, with several who were reported to be disengaged with mathematics.

Teachers’ Perceptions of Financial Literacy Education

Prior to beginning with the project both Anne and Matt held very superficial understandings of what financial literacy is and how it can be embedded in the school curriculum. Anne stated “I would have just put it to understanding how many cents in a dollar”, and Matt said “...my initial thought of financial literacy was looking at coins; looking at notes; looking at money itself, but as a teacher I know what literacy is and so putting those two together I could sort of imply that it was more than that” (Phase 1 interview).

Although Anne had little understanding of financial literacy education at that point, she stated that she had been using a ‘class currency’ as a behavioural tool and incentive system where students could accumulate the currency as rewards and then make purchases at the end of the term. At that point in time Anne did not realise that she could enrich this activity through linking it with the mathematics curriculum. Given Anne’s limited experience in teaching, it is not a surprise that she was unaware of the potential for financial literacy education in her classroom.

Matt, who at the time was in his fifth year of teaching, had unintentionally taught financial literacy skills in a previous year when had taken part in a different University research project based on student engagement. In that project, Matt’s students were given the opportunity to redesign their classroom and were allowed to purchase furniture. They had been provided with a budget of $1000 from their school principal and after much
investigation, selected and purchased new furniture for their ‘learning space’. Consumer literacy had been a large aspect of the students’ learning in that project as the students had been very focused on getting value for their money.

When asked about her expectations for the project, Anne hoped that her students would learn that money is a finite resource, “It’s not something that just comes out of a box in the wall. They need to understand that it will run out and you need to know how to save it.” Anne believed her students had very little concept of money as, which may be expected at their age, their parents gave them money as they needed it or requested it. She also believed her students would engage more with mathematics due to the relevance of financial literacy, with the potential to make mathematics more purposeful.

Matt was optimistic of a positive impact on his school community. He hoped it would assist his students, regardless of socio-economic background, and spoke of his concern over parental involvement and his awareness of the financial difficulties facing some families in the Austral community:

The one thing that I am a bit cautious … how they’re going to respond to their children coming home and talking about this when they’re not confident in it themselves, ...I really hope that parents can see the value in what it means to be financially literate, so I can see it benefiting the school quite significantly (Matt, Phase 1 interview).

**Students’ Perceptions of Financial Literacy Education**

When asked what they knew about money, the children from Austral gave a range of responses that indicated they had some understanding that we need money for basic survival, and that money is represented with notes and coins, and looks different from one country to the next. Typical comments were “If you didn’t have money you wouldn’t be able to buy a house or pay rent for a house or stuff like that” (Year 3/4/5 student, Phase 1 focus group) and “If you have $1,000 you’re rich and if you don’t you’re not rich” (Year 3/4 student, Phase 1 focus group).
All of the children participating in the focus groups at Austral had some degree of experience dealing with money, with many stating that parents were a reliable source: “I like money because my mum and dad always give me money when I ask” and “I ask him and he gives me money when we want to go to K-Mart to buy something” (Year 3/4 children, Phase 1 focus group). All of the children understood that you need to save money in order to make a purchase, and one student had experience in earning money: “I earned some money because I mowed my lawn...and I went to the shops and bought lollies” (Year 3/4 child, Phase 1 focus group).

Although the students at Austral had some understandings relating to money, these understandings were quite basic and perhaps reflected the requirements from the mathematics curriculum. What appeared to be missing was a critical approach to their understanding of money. It might be argued that this is directly related to the teachers’ lack of understanding of financial literacy and missed learning opportunities in the day-to-day classroom activities that were related to financial transactions, such as Anne’s classroom currency or Matt’s previous work on designing a new classroom with new furniture.

At this point in the project the teachers’ perceptions of financial literacy matched their students’ understandings of money, in that they reflected the mathematics curriculum requirements in relation to the content descriptors. What appeared to be missing was a link to the General Capabilities of the curriculum and the Working Mathematically components of the NSW Mathematics Curriculum (the Proficiencies of the Australian Curriculum). The teachers’ perceptions of their students’ engagement with mathematics will now be discussed, followed by the students’ perceptions of mathematics.

**Teachers’ Perceptions of Student Engagement with Mathematics**

When asked about her students and their engagement with mathematics, Anne talked about a range of attitudes amongst her students:

…”my more capable students I find are very engaged; they like to be challenged and they like to engage in maths, however the other side, the not so capable, they sort of dread doing mathematics. It really affects their engagement (Anne, Phase 1 interview).
In an effort to address the needs of her diverse group of students, Anne talked about how she tries to differentiate mathematics activities. She also uses a range of concrete materials to support her students’ understanding of mathematical concepts.

Matt’s students were somewhat of a challenge when it comes to mathematics because of the spread of abilities that occurs in a composite class spanning a three-year age spread. “At the beginning of the year when I got my group of students they were very individual in terms of their wanting to learn about maths.” Matt talked about how the students took some time settling into their composite class. Many of his students saw mathematics as very ‘black and white’, and something that simply required a right or wrong answer. At that point in time he was attempting to address this by introducing open-ended and investigation based tasks, but found it a challenge balancing curriculum requirements with his students’ personal interests.

Neither Anne nor Matt talked in depth about how their students perceive mathematics, and perhaps this was because it was quite early in the school year and they were still in the process of getting to know their students.

**Students’ Perceptions of Mathematics**

The students in Anne’s group had mixed reactions when asked for their thoughts relating to mathematics, “When I do maths it’s a bit hard but it’s a bit more easier” (Year 3/4 student, Phase 1 focus group). Several students displayed overtly negative attitudes towards mathematics, expressing their emotional responses to maths tasks as ‘embarrassing’ and making comments such as “I don’t like it”, relating these feelings to getting answers incorrect. When asked if mathematics is useful to the students in their lives outside school, the Year 3/4 students were unable to make any links between the mathematics they do at school, and the mathematics in day-to-day life. This disconnect between school and home mathematics is a common cause of student disengagement with mathematics (Attard, 2012; Australian Association of Mathematics Teachers, 2009).

Similarly to Anne’s students, Matt’s group had quite mixed feelings about mathematics, with one student claiming “It’s hard but fun at the same time”. In Matt’s classroom, the
students express discomfort and frustration related to learning as having a ‘sweaty brain’. This is Matt’s way of promoting a growth mindset (Boaler, 2016) amongst his students where positive messages about learning are conveyed in order to establish positive attitudes towards mathematics.

When asked their thoughts about why mathematics is important, Matt’s students were able to articulate several examples where mathematics is used in real life. Most of these examples were related in some way to financial literacy with the children referring to shopping and paying bills, for example:

...when you’re at the shops and you’re trying to work out how much this would cost all together...if the person that was at the cash register made you pay more you could go back and realise that you paid more and get the money back (Year 3/4/5 student, Phase 1 focus group).

Another student claimed “maths can make your life more easy”, discussing how having an understanding of mathematics can save you time by not having to ask for help from a teacher. The connections that these students made between mathematics and money were to provide a strong foundation for this project and for engaging these students in, and fostering more positive attitudes towards, mathematics.

Phase 2

Phase 2 began with a two-day session held at Western Sydney University during Term 3 with the teachers and research team. This session occurred three months after the initial visit. During Phase 1 Matt, Anne and the research team discussed the possibility of combining the professional development days with the participating teachers from Fairfield Public School at the University’s Penrith campus. All the teachers felt that it would be beneficial to share the project experiences with other teachers and it would provide opportunities for collaboration between the two schools.

During the three months between Phases 1 and 2 Ann and Matt implemented their chosen MoneySmart units of work. During their interviews they were able to reflect on the units,
their students’ reaction to the units and changes that were occurring in relation to their students’ engagement with mathematics.

**Introducing a MoneySmart Unit of Work**

Anne selected the *Kieran's Coin* unit of work that was based on a fundraising event. At the time of her interview, Anne had not completed the unit due to other school demands. However, she was hoping to continue teaching the unit and was able to discuss her students’ reactions to the work, claiming that it had been very successful to date. However, there were aspects of the unit that she would have liked to have changed. One of these aspects was the length of the discussion leading into every lesson – this was a challenge for some of Anne’s students who found it hard to focus for long periods of time. On the positive side, Anne found it was quite easy to differentiate the activities for the different groups in her class. On reflection, Anne felt somewhat challenged by time restraints. She felt that by teaching the unit, she was missing out on teaching other aspects of the mathematics curriculum, “Time was a challenge and integrating the other things that we’re supposed to integrate as teachers…I personally am feeling like I wasn’t keeping up with my stage because I was doing that (the unit)” (Phase 2 interview).

When asked about her students’ reaction to the work, Anne claimed she was “very surprised with the level of engagement coming from the ones that I was targeting. They absolutely loved it and one of my boys in particular who usually does not like maths activities…he was completely involved” (Phase 2 interview). Anne felt the games that formed part of the unit were an important factor in raising her students’ engagement. Another important factor was the fundraising event that was to be the culminating activity in the unit of work: “…the group was engaged because of the idea of leading up to the fundraising event. They were very excited about that and having that purpose really helped to drive them” (Anne, Phase 2 interview). The relevance and purpose of the mathematics activities, aligning with the Framework for Engagement with Mathematics (FEM) were a critical part of improving these students’ engagement.

The next step in the project was for Anne to design a new, contextualised unit of work to address the identified needs of her students. Anne was hoping to address the challenge of
integrating more of the mathematics curriculum into the new unit “I want to integrate other parts of the syllabus…but it’s going to be money based.”

In Matt’s classroom, the children participated in the unit *How Much Love Can You Fit in a Shoe Box?* Matt’s students also found the discussions that were suggested within the *MoneySmart* unit were not engaging for his students:

> ...the discussion stuff they found a little bit boring...I think it all comes back to the unit not being relevant to them – to their purpose and their context. They found the idea of what we were doing in the unit a little bit abstract for what their level is at the moment* (Matt, Phase 2 interview).

Again, like Anne’s students, Matt’s class enjoyed the games that were integrated into the unit of work, as well as the activities. This highlights the importance of operative engagement and the links between operative and affective engagement where students are enjoying the work and actively participating (Attard, 2014).

Although it appeared that Matt’s students were not substantively engaged with the *MoneySmart* unit, Matt talked about some discussions that occurred as an indirect result of their work on financial literacy. The discussions were focused on land tax, and were the result of one student whose parents were in the process of purchasing a property. “She must have heard them talking about that and then it created this huge discussion...they’re cueing into the conversations that are happening around money at home perhaps” (Phase 2 interview). Matt went on to discuss how the students had increased their awareness of financial literacy even though it was not apparent during their lesson time.

**Financial Literacy and Engagement with Mathematics**

When asked about notable changes in her students’ engagement with mathematics as a direct result of the *MoneySmart* unit, Anne stated that her students were definitely more engaged because the work they were participating in, had purpose. That is, the work was leading up to an actual event as opposed to traditional mathematics work that consisted of learning new concepts and then practicing them without any practical application.
Matt talked about the fact that his students appeared to be discussing money at home with their parents, and took this as a sign of improved engagement: “I guess if they’re talking about it at home, like if they’re picking up things at home well maybe they’re more cognitively engaged than you might have thought”. This aligns with the definition of cognitive engagement as described within the literature review, that is, students being invested in their learning and going beyond the minimum requirements.

When asked about the new unit of work to be designed, Matt understood that it was important to ensure the unit had an authentic purpose. Both he and Anne were hoping to incorporate as much mathematics as possible into the new unit to ensure they were still addressing the demands of the curriculum and keeping up with their grade colleagues “...finding parts of the mathematics syllabus that link in a natural sort of way, not forcing things because I think when you force the fit, it loses the reality and the authentic purpose of it.” By the end of the discussions with Anne and Matt they had decided to create the unit of work together, and to have the class groups collaborate on the same project.

**Students’ Perceptions of MoneySmart Units and Mathematics**

During the second round of focus group discussions the children were asked to talk about what they had learned about money as a result of their work in the MoneySmart units. Not surprisingly, the groups had similar discussions relating to the games that were included in the two units. Anne’s students were not able to discuss the game they referred to in any detail, however when asked about the sorts of things they would like to learn in future, they displayed an interest in different currencies, commenting that as a result of their recent work, children had begun to bring coins from different countries into school. This seemed to spark their imaginations and would prove to be the foundation of the new unit of work designed collaboratively by Anne and Matt.

When reflecting on their financial literacy work, Matt’s students were able to discuss in great detail the game that was incorporated into their unit of work. They articulated the mathematics involved and talked about the fun aspect of the game. It was clear in both groups that the discussions at the start of each lesson, as indicated by Anne and Matt, were not engaging enough for the students to recall. Although the teachers were told they could
adapt the units to suit their needs, neither did this. This may have been a result of time pressure, or could be related to the early career status and a lack of experience amongst the two teachers.

During the focus group discussion, the students talked about what they had learned about money in classroom conversations (not related to the actual unit of work). The children talked about credit cards and spending and the realisation that credit cards created debt that needed to be paid off “I didn’t realise that when you put your card in…I didn’t realise the money would come out of your bank” (Year 3/4/5 student, Phase 2 focus group).

When asked what they would like to know more about in relation to money, Matt’s students talked about several mathematical concepts related to dealing with money. For example, one student indicated he would like to know more about division and related it to a situation when “my dad bought his first car he shared his money with his brothers and sisters”. Another student claimed he wanted to “have more understanding of fractions” and this led to a discussion around percentages and sales. Although all of these questions seem disjointed and unrelated, the fact that the students were now beginning to see the relevance of mathematics in their lives outside school indicated that the teaching of the MoneySmart units had been beneficial, and as a result, the students’ engagement with mathematics appeared to be improving.

In the period of time between Phase 2 and Phase 3, the teachers worked together to design and implement their new unit of work. The final data collection occurred during Term 4.

**Phase 3**

The unit of work designed by Anne and Matt was based upon the design and implementation of a Money Museum (see appendix 2 for full unit). Table 4 provides the rationale for the unit that includes the teachers’ findings from the implementation of the original MoneySmart unit and specific links to the Framework for Engagement (FEM).
**Rationale:** From teaching *The Money Smart* unit we learnt:

- In order to achieve high levels of substantive engagement, the designed learning experiences need to be authentic and relevant to the lives of our students.
- If units have integrated maths strands, deeper learning occurs.

Based on this, we will:

- Make explicit the maths learning purposes of having a major culminating financial literacy event.
- Develop differentiated activities that are inclusive and address the specific needs and interests of our students.
- Continue to develop their knowledge of mathematical concepts, including place value and decimals by designing learning experiences that address the Framework for Engagement with Mathematics (Attard) as well as the National Consumer and Financial Literacy Framework.
- Promote deep understanding of mathematical concepts by allowing children to reflect upon and discuss new learning.
- Develop a multi-stage unit that will promote collaboration between staff and students in relation to the teaching and understandings of mathematics.

**Unit Description:**

- By grouping students to allow for a collaborative approach to learning with mixed ability groups, we are expecting the students from 3/4/5T to mentor students in 3/4G, resulting in a deeper understanding of the mathematical concepts being taught. Teachers involved will be provided with professional learning opportunities through shared experiences relating to the development and delivery of the unit.

**Framework for Engagement with Mathematics:**

- Learning opportunities will encompass highly cognitive, operative and affective experiences, through establishing a Money Museum, resulting in high levels of substantive engagement.
- Students will have a genuine value for the learning that takes place, as they will see its relevance to the development of skills and view exhibits essential for the success of the Money Museum. (Affective)
- The learning experiences involved in planning the museum will promote deep understanding of mathematical concepts, by allowing opportunities for children to reflect upon and discuss new learning. (Cognitive)
- Students will be actively involved by participating in group discussions, practical, relevant activities and collaborative tasks. (Operative)

**Pedagogical relationships:**

- Interaction amongst students and between teacher and students is continuous.
- Teacher models enthusiasm and is aware of each student’s mathematical abilities and learning needs, as well as future goals and directions.

**Pedagogical repertoires:**

- Technology is embedded and used to enhance mathematical understanding through a student-centred approach to learning, using computers and iPads to conduct research and apps to promote the acquisition of mathematical concepts.
- The relevance of the mathematics curriculum is explicitly linked to students’ lives outside the classroom, particularly in regards to the Money Museum and empowers students with the capacity to transform and reform their lives.

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**Table 4: Background Information for Austral Money Museum Unit**

Following the implementation of the unit of work, a detailed evaluation was written by Anne and Matt (Table 5).
Austral PS: Evaluation of Financial Literacy Mathematics Unit

As a result of being involved in the Financial Literacy Project this year, there have been a number of highlights for us as teachers and for our students. One highlight in particular that we have noticed this year is the improvements our students have made in their ability to articulate their thinking in relation to mathematics as well as their ability to negotiate differing roles and responsibilities when working collaboratively as part of a group. We feel that it is also imperative to acknowledge that the official opening of the Money Museum was also a highlight, as it recognised all of the hard work and dedication that our students have demonstrated this year in relation to financial literacy and mathematics. The students were so proud to showcase their knowledge and exhibits with the rest of the school and the community.

One significant challenge that we faced this year while completing this unit of work was the concept of planning to meet the differing needs of all of our students. The students involved in this unit ranged from years 3-5 with a huge variance in ability. To address this, we planned learning experiences to allow groups of students to become “experts” in particular areas, with the responsibility being given to them to then teach this “new learning” to the other students’. A semantic challenge that we faced was the time and location available to set up the Museum.

The feedback that we have received from the wider community has been absolutely fantastic. Everyone who has visited the Museum so far has sincerely acknowledged all of the hard work the students have put in to it, to make it such a huge success. Similarly, there has been a huge interest in the Museum from a large sector of the school community, including the local preschool and neighbouring schools. We have also had conversations with parents who have said that they have had their own children coming home teaching them and their siblings about the importance of money.

The school community really got involved with the setting up of the Money Museum. We had loads of parents and teachers within the school, all wanting to donate artefacts to be displayed at the museum.

At the start of the year there was a large percentage of our students that had a negative attitude and disposition towards mathematics. As a result of learning mathematics this year through having a real life purpose and through us as the teachers taking into account the Attard Framework for Engagement with Mathematics as well as the Consumer and Financial Literacy Framework, students have shown enormous improvements in their attitude and want to learn mathematics. Students want to know about concepts and are asking purposeful and meaningful questions relating to their learning and understanding.

One concept in particular that students’ grasped relatively quickly, that we expected to take a lot longer, was that of data collection and representation. We feel that students understood this concept not only quickly, but in depth also, as they were the ones driving the direction that their learning was going in. That is, they designed the questions; they conducted the research as well as interpreted and analysed data, while always having a real life purpose at the forefront for their learning.

Anne and Matt (Teachers, Austral Public School)

**Table 5: Money Museum Evaluation**
**Integrating Mathematics with Financial Literacy**

Both Anne and Matt found that when implementing their Money Museum unit, there were many aspects of the mathematics curriculum that were covered beyond the obvious money-related mathematical outcomes and this is evidenced within the documentation of their unit of work (Appendix 1). For example, Anne talked about how her students used mapping skills from the Measurement and Geometry strand of the syllabus to design the floor plan for their museum. They were also able to access content from the Statistics and Probability strand when surveying other students at the school about the things they would like to see in a museum.

Similarly, Matt was able to list a significant number of additional mathematics skills and concepts that were integrated into the unit of work including place value, data, length, perimeter, and scale. Matt also discussed how the unit of work had provided rich opportunities for his students to access the processes of mathematics (referred to as Working Mathematically in the NSW curriculum and the Proficiencies in the Australian Curriculum: Mathematics).

In the case of Austral Public school, it could be argued that the use of a real-life context promoted a much deeper and richer mathematical experience, which was an added benefit to the financial literacy aspect of the project, and an important influence on changes in student engagement with mathematics.

**Changes to Student Engagement with Mathematics**

Anne and Matt both reported improvements in their students’ engagement with mathematics as a result of their participation in this project. Anne reported: “I don’t get any more groaning when we start maths...so their attitude towards maths is really positive now” (final interview). Anne believed that the practical and relevant aspects of the financial literacy work were an important factor in re-engaging her students: “they were working towards a goal; there was a reason for them to do it”. Anne also talked about how parents had commented on how engaged the students were during their work on the project.
When discussing the increased engagement in his classroom, Matt talked about how many of his students had begun the year with the expectation that their mathematics lessons would consist of worksheets and rote learning as a result of their previous experiences.

And I suppose the shifts that I’ve seen in those kids in particular has been the valuing of maths and seeing how it is relevant because they had a real life purpose and context that they were working and using maths with…I would be quite confident to say all of them would say yes they do like maths now and I do believe that’s because of the work that we’ve done that they’ve been involved in within the project this year (Matt, final interview).

During their final focus group discussion the students from Austral were able to articulate in more detail the importance of money, its application to real life, and some of the mathematics involved in the project. This increased awareness of mathematics, money and the relevance of learning mathematics is evidence that the students’ cognitive engagement with mathematics had improved as a result of this project. Further, their affective and operative engagement had significantly increased as can be seen in this quote from one of Matt’s students:

Well he made it fun because you don’t really learn, like you do learn, but all the time if you’re just doing sheets and sheets of stuff about money and stuff like that it gets really boring so he made all the work fun with games and activities we do all that as a class and in groups and partners and it was really fun. We actually – you actually were more excited to do it (Phase 3 focus group discussion).
Highlights and Challenges of Implementing a Financial Literacy and Mathematics Unit of Work

Any change in pedagogical practice comes with challenges and highlights. The teaching of financial literacy through a contextual unit of work was no exception for Anne and Matt. For Anne, a major highlight of the project was the improved collaboration amongst the students in her class: “I was seeing them collaborate so beautifully with each person having a role....I felt that I was doing something right” (Phase 3 interview). The improved collaboration could be linked to the contextualising of the learning; making it relevant to the students and providing them with the shared goal of developing an actual Money Museum that would be open to the wider school community.

Anne’s challenge in relation to teaching the unit of work was the limitations of time and the demands of other teaching responsibilities. On reflection, Anne suggested she would do some things differently if she had the chance to repeat the activities. In relation to her students, Anne felt there were challenges that were a result of the wide range of academic abilities amongst her students: “some students had grasped concepts much more quickly”, referring to some of her underachieving students as having “wanted to keep up because they so badly wanted to be as involved” (Phase 3 interview).
Matt talked about several highlights he experienced during the project and in particular, the culmination of the work in the opening of the Money Museum.

...there was such a big build up to that and the amount of work that went in, not just from the students but from the teachers as well, so much put into it and students and teachers valued it so much and saw the relevance in it...us as teachers could see the impact it was having on the students and so obviously that gave us the motivation to keep going...(Matt, Phase 3 interview).

Other highlights for Matt included comments from parents relating to their child’s engagement with the financial literacy unit and the interest from other teachers that was generated as a result of the project. Although the initial goal of the project was to have every teacher in the school attempt some financial literacy work in their mathematics lessons, this did not occur at every school. However, Anne and Matt’s project and the high levels of student engagement did draw the attention of teachers and their students to the financial literacy work and Matt believed that the wider school community would incorporate financial literacy into their mathematics lessons in 2016.

As with Anne, Matt’s challenge related to the differentiation of their planned unit of work to enable all his learners access to the activities, “we may have planned it at a level that was too high or a level that was too low and we had to sort of tweak it on the spot”. Additionally, both teachers taught in composite classes which meant the spectrum of academic ability was much wider than in a typical classroom setting.

Finally, the decision to collaborate with each other to plan one unit of work rather than two different units was a highlight for both Anne and Matt and served as a valuable professional development experience for the two early career teachers, deepening their understandings of mathematics curriculum and pedagogy, and financial literacy education.

...the professional learning that we both got from each other in terms of just simple in the classroom practice and pedagogy and stuff like that has been fantastic and it provides the opportunity for that professional dialogue to happen away from that immediate context with the kids (Matt, Phase 3 Interview).
Case Study 2: Fairfield Public School

Three teachers at Fairfield Public School, Amanda, Tiffany and Jacqui, agreed to participate in this project. Each teacher was at a different stage in their careers (see Figure 3) and all were enthusiastic about participating in this project with their students. Their experiences will now be explored, using the same format as that presented in the case of Austral Public School.

Phase 1

As with Austral Public School, the teachers at Fairfield participated in a full day professional development session to explore financial literacy education and its relevance to the Mathematics curriculum. The New South Wales MoneySmart officer also attended this day to assist in introducing the MoneySmart resources. A brief description of the context of each class group and teacher is now provided.

Amanda
Amanda is an early career teacher with a Grade 2 class. The 21 students in Amanda’s class during the project were highly motivated and engaged with their learning in general, and there was a wide range of abilities amongst the students ranging from students with special learning needs to students with high academic ability. Amanda herself is a very enthusiastic teacher of mathematics.

Tiffany
Tiffany is a late career teacher who was back teaching in the classroom after having five years off class in other teaching related roles and executive positions. Tiffany’s Year 3/4 class of 26 students during the project was full of challenges, and 26% were new arrivals to Australia (many of whom were refugees). The students had a wide range of abilities and did not take risks in their learning. Tiffany’s students had difficulty in applying mathematical skills within problem solving and other contexts.
Jacqui
Jacqui has been teaching for several years and is a passionate teacher of mathematics. She had spent the two years prior to the project working across the school assisting other teachers with their mathematics teaching. Her Year 6 class during the project consisted of 26 students, many of whom came from a non-English speaking background. Her students had a fear of mathematics and experienced high levels of anxiety as a result. Jacqui had been working on building trust with her students to enable her to engage more with their learning. Jacqui and Amanda’s classes were ‘buddy’ classes, which meant that it was possible for them to work together on this project.

Teachers’ Perceptions of Financial Literacy Education
The three teachers at Fairfield Public School had similar perceptions of financial literacy education as the teachers from Austral. Tiffany had considered financial literacy to be connected to understanding basic facts about money relating to the recognition of notes and coins. Interestingly, she thought these basic skills would prepare students to “make informed decisions themselves” (Tiffany, Phase 1 Interview). Tiffany could not recall ever teaching financial literacy beyond the recognition of currency, yet she expected that her and her class’s participation in this project would assist in educating the broader community.

I can see a bit of a flow on effect getting them to go home and discuss their learning at school and if we can have something in place for our parents, I think that’s going to be a really big part of what we’re doing (Tiffany, Phase 1 interview).

Similarly, Jacqui had previously held a narrow view of financial literacy and she recognised, following the input from the MoneySmart officer, that financial literacy is significant in terms of living in the 21st Century. Jacqui talked about her realisation that money has become quite invisible due to technology, and is increasingly becoming an abstract concept that may be a challenge when trying to develop financial literacy skills in students.

When asked about her perceptions of financial literacy, Amanda provided a different response to Jacqui and Tiffany: “...when I heard the words financial literacy I obviously thought about money and the literacy aspect...looking at money where we see it in literacy. So whether it’s in catalogues or brochures...” (Amanda, Phase 1 interview). Amanda’s
conception of financial literacy aligns somewhat to the definitions of financial literacy from literature, for example, the ASIC (2011) and AAMT (2012) definitions that describe the application of concepts in making well-informed financial decisions. Amanda continued to discuss how financial literacy is important in the primary years, where students learn important foundational skills. When asked about previous experiences with financial literacy education, Amanda had gone into more depth compared to the other teacher participants in this project. She talked about a kindergarten class where she looked at identifying coins and notes, but took the learning further than the curriculum requirements when students brought money to school by asking questions like “Why have you brought it today?” and “What are you going to buy with that?” or “What can you buy with that?” Amanda was unintentionally promoting financial literacy prior to her involvement in this project.

All three of the teachers at Fairfield Public School were very aware of the low socio-economic backgrounds of the majority of their students. They talked about how some students discussed how their parents were unable to afford things such as school excursions with Amanda citing typical comments from students as young as Year 2 such as “Oh my mum and dad said I can’t do it because they don’t have the money” (Phase 1 interview). The teachers all believed that participation in the project would be of great benefit to the wider community due to the high refugee population and their lack of experience in dealing with money and living in Australia.

**Students’ Perceptions of Financial Literacy Education**

The students in Amanda’s Year 2 class had typical responses when asked what they knew about money. They understood that there are different notes and coins, and were able to discuss how they had to save money in order to spend it. They also showed an awareness of the importance of money, with this being a typical comment: “…if you’re buying a house you need more money…if money wasn’t there, you wouldn’t have any clothes, you wouldn’t have any food, and you wouldn’t have any jewellery” (Year 2 student, Phase 1 focus group). All of the Year 2 focus group participants had had experience with money; some had earned pocket money by doing chores, others had been given money as birthday gifts and all of the students had experienced spending money at shops. When asked if they knew where money came
from, the students had mixed responses, claiming it came from shops, from the bank, or from a parent’s ‘boss’.

The students in Tiffany’s Year 3/4 class had similar perceptions of money, understanding that there are different notes and coins in our currency. One of the students described a situation when she had been short-changed by a shop assistant, “I had to buy some things for home so then I had to go to the shops. It was $5 so I had $10...I got $4 back so I asked the person to give me $1 back, because I didn’t have enough change” (Year 3/4 student, Phase 1 focus group). Similarly, the children in the Year 3/4 group understood that money has to be earned and as such, believed money came from ‘the boss’ as a result of working hard. The students discussed money being important to pay bills such as water and electricity, however, one student made this comment:

Money doesn’t give you happiness. You can buy a toy from money and that may make you happy but if you didn’t have a family that would be even worse than without a toy, it would be worse because you’ll have to walk on the streets alone and there will be no-one to be beside you. So I think money isn’t important.

The Year 6 children from Jacqui’s class had very similar opinions to the younger students at Fairfield Public School, highlighting an interesting observation that the students did not appear to have increased their knowledge or understanding in relation to financial literacy as they moved through the primary school years. Perhaps this is the result of a lack of formal financial literacy education and limited discussion around financial literacy in the home. Although this group of students had experience with money similar to the experiences of the younger students, their understanding of money had not developed, including their perceptions of where money came from and the importance of money.

During the focus group discussions two out of the three groups of students at Fairfield began discussing money within the context of mathematics, showing an awareness that mathematics is intrinsically linked to financial literacy. The students’ engagement with mathematics will now be discussed.
**Teachers’ Perceptions of Student Engagement with Mathematics**

Student engagement with mathematics differed vastly across the grades at Fairfield Public School at the start of this project. The transient nature of the school population due to the number of refugee students may have contributed to this, as many students had not experienced a stable education and the range of educational and life experiences amongst the students differed significantly.

In Year 2, Amanda saw her students as deeply engaged. Amanda herself is a very enthusiastic and knowledgeable teacher of mathematics and the ability of an enthusiastic teacher who understands mathematics well to engage students, is an important aspect of the FEM (Attard, 2014). It is clear to see from her discussion that Amanda addresses several other aspects of the FEM in her day-to-day teaching of mathematics. She made this comment about her teaching:

> I guess making it relevant so I’m always looking at...our learning goals, why it matters, what we’re looking for to be successful in it, and why we need to be successful in what we’re doing. So linking it back to their everyday life, looking back, this matters because of how they can apply it outside of school (Phase 1 Interview)

Amanda’s philosophy of teaching mathematics lent itself well to the teaching of financial literacy as being relevant to students’ lives outside school. It came as no surprise that she considered her students to be highly engaged with mathematics, saying that she finds most of her students “eagerly wanting to share their thoughts, their reasoning with each other” (Amanda, Phase 1 Interview).

Conversely, in Tiffany’s Year 3/4 classroom the students were reluctant to take risks in their learning and at the beginning of the year, were happy to experience a more traditional approach to learning mathematics through the use of worksheets and lots of arithmetic work: “When we started to work more through the proficiency strands of getting them to reason and use problem solving, they got really frustrated with themselves” (Tiffany, Phase 1 Interview). At the time the project began, Tiffany had been working hard to get her students to apply their skills and knowledge within authentic tasks, so the opportunity to be involved in financial literacy work was timely for this group of students.
In Jacqui’s classroom the students began the year with very negative perceptions and anxiety related to mathematics. As someone who was considered to be a mathematics specialist teacher, Jacqui understood her students’ concerns.

...the kids have always known me as someone who came and did numeracy and maths lessons with their classes, and very quickly they told me that they had this real fear of the fact that if they told me that they hated mathematics that I would hate them. And they were really worried that the mathematics would be too hard (Jacqui, Phase 1 Interview).

Jacqui’s class situation exemplified the importance of building positive pedagogical relationships (Attard, 2014) as a foundation for engagement with mathematics. She did this by making the mathematics interesting and non-intimidating for her students through the use of mathematical magic tricks, and linking mathematics to the students’ interests, such as sport and science. Her students perceived themselves as being bad at mathematics and Jacqui hoped the financial literacy project would assist in addressing this. We now explore the students’ perceptions of mathematics, beginning with the focus group with children from Jacqui’s class.

**Students’ Perceptions of Mathematics**

When asked to talk about mathematics, the Year 6 focus group participants expressed mixed views. One student immediately responded with: “to be honest, I think maths is quite boring because I don’t really understand most of maths” (Year 6 student, Phase 1 focus group), while another responded quite differently.

> For me, maths is my favourite subject. I started liking maths when I was in Year 3. They used to ask me questions and I used to not know it, but then when we used to get into it, they actually teach me some strategy and then now I’m really smart at it (Year 6 student, Phase 1 focus group).

It is clear from their discussions that for these Year 6 students, success in mathematics elicited positive affective engagement, and mathematical challenge that was beyond their reach elicited a negative affective response that influenced their overall engagement with mathematics. When asked whether there was something in mathematics that they enjoyed, the students’ responses aligned well with what their teacher, Jacqui, had discussed in relation to the integration of sports and mathematics. The Year 6 students were able to discuss at
length the importance of mathematics in everyday life. They were able to link the use of money with mathematics, as well as shopping, building, sport, and architecture.

The Year 3/4 students talked about how they sometimes found mathematics to be difficult or challenging: “Maths at Fairfield Public School is very challenging but when you play it in games it’s fun because you, you get to understand a bit more” (Year 3/4 student, Phase 1 focus group). They also talked about how mathematics is fun when they were allowed to work with a partner and this led to a discussion about their affective responses to difficult mathematics tasks, talking about being frustrated when the work was difficult, yet feeling “like I’m going to explode” when something new was mastered.

Unlike the older students, the Year 2 focus group participants had a great enthusiasm for mathematics and, aligning with their teacher, Amanda’s comments, were able to talk about their positive engagement with mathematics at length. The children talked about their love of maths, and in particular, they were able to articulate how their positive affect was directly related to their ability to learn something new. They also talked about being considered smart if they were good at maths: “If you be a mathematician then you get smarter” (Year 2 student, Phase 1 focus group). Interestingly, the students’ lengthy discussions around mathematics focused on computational aspects of mathematics, and the students used terminology such as ‘bridging to 10’, ‘partitioning’ and ‘landmark number’. These terms refer directly to skills from the Number and Algebra strand of the mathematics curriculum (BOSTES, 2012). There was no reference to mathematics in context, or the application of mathematics to solve problems, so unlike the older children, the introduction to mathematics related to financial literacy and embedded within a real life context would be something very new to this group of students.

Phase 2

As detailed in the Austral Public School case, the Phase 2 was held at Western Sydney University during Term 3, with the participating teachers from both Fairfield and Austral Public Schools. Prior to this meeting the teachers had the opportunity to implement a MoneySmart unit of work to familiarise themselves and their students with financial literacy
education. The following section explores the teachers’ and students’ reactions to the units and any resulting changes in student engagement with mathematics. Only two of the three teachers attended the professional learning day – Tiffany was unable to be there and so there is no data relating to Tiffany during Phase 2. However, her students did participate in a focus group discussion.

**Introducing a MoneySmart Unit of Work**

Amanda selected the Pancakes Can Make a Difference unit of work to introduce her students to financial literacy education. She began the teaching of the unit by explicitly explaining the end product to the students. That is, the purpose of the unit was to conduct a fundraising event.

*A lot of my students were not quite sure what it meant, we looked at the story that was provided in the unit and it looked at one child who was fundraising for their school to raise money to afford a camp, and another was raising money to purchase new equipment and resources for their school (Amanda, Phase 2 interview).*

To assist the students in gaining an understanding of fundraising Amanda related the concept to the children’s past experiences of fundraising. At that point they decided to work with their buddy class (Jacqui’s class).

During the teaching of the unit Amanda found she had to differentiate the activities to address the diverse needs of her students, as would be expected in any classroom. When asked about any surprise outcomes that resulted from the unit Amanda talked about a game called Wipe-Out. When introducing the game, which was based on adding coins, Amanda expected it to be quite difficult for her students yet she was impressed by their abilities and their engagement with the game. At that point in time, the game aspect of the unit was more interesting to the students than the topic of fundraising.

When discussing her experience with the MoneySmart program, Jacqui’s experience was less positive. Initially, she selected the Never Too Young to be Moneysmart with Clothes unit, thinking it would appeal to her students who were interested in fashion.
It just didn’t peak their interest at all. They used to be quite disengaged with mathematics in general and so I did a lot of things with sport because they’re quite sporty and assumed the fashion would pick up the other students and it just didn’t (Jacqui, Phase 2 interview).

Jacqui decided to pick and choose activities from a range of MoneySmart units in an attempt to find something that would engage her students. She eventually attempted to teach the It’s Raining Cats and Dogs unit because her students had been asking for a class pet. Jacqui found that the mathematics involved in the design of an animal enclosure was appealing to the students. However, the financial literacy aspect was not. Instead, as a result of student interests, Jacqui had her class design a budget for a fantasy holiday. While doing this Jacqui found some videos about credit cards on the MoneySmart website which she showed to her students. Jacqui was surprised that her students were intrigued by the concept of credit card interest and how the decisions relating to repayments can have long standing repercussions in terms of the total financial cost.

Financial Literacy and Engagement with Mathematics

When talking about her students’ engagement with mathematics as a result of their work with financial literacy, Amanda felt that her students had maintained their engagement with mathematics due to the success of the Wipe Out game that was mentioned in the previous section. Amanda spoke about the new unit of work that she would be developing as a response to her students’ needs and interests, and she expressed a desire to incorporate other areas of mathematics into the unit. Amanda was hoping the new unit would be relevant and was planning to base it around the idea of fundraising for an identified need in order to make the learning purposeful for her students.

Jacqui believed that her students were slightly more engaged in mathematics as a result of their work with financial literacy because they had begun to see its relevance. “I still don’t think they love it but I think they’re more receptive to seeing that it’s useful…there’s a definite shift towards that and they’re definitely more receptive to being challenged” (Jacqui, Phase 2 interview). Jacqui expressed her surprise at how difficult it had been to find something in the MoneySmart resources that appealed to her students and equated this challenge to the students’ perceptions of themselves as mathematicians. “A number of them
have this vision of themselves as really bad at maths when actually they’re quite capable and that’s come through from their education that they’ve had” (Jacqui, Phase 2 interview).

The new unit of work that Jacqui was about to begin designing would aim to address the students’ learning needs and their interests. “I try to find something that they’re interested in and then use that and exploit that as much as possible for as much learning as you can get out of it” (Jacqui, Phase 2 interview). At that point in time, Jacqui’s students had shown interest in designing and running a school café to raise proceeds that they would then donate to a charity (many of these students had had personal experiences as the recipients of charity). She expected the students would be engaged in this work because “it’s come from them and they’re excited by it”.

**Students’ Perceptions of MoneySmart Units and Mathematics**

When asked to discuss what they had learned about money during the MoneySmart units of work, the children in Year 2 and Year 3/4 had similar responses and discussed the various games in the units rather than the overall themes. The Year 2 children spoke about how they were able to combine different coin denominations to make $1, $2 or $5, and claimed it was fun to learn about money. They were also able to apply their knowledge of currency to practical situations.

> It’s important because when you grow up…if you didn’t learn like when you were little about money you might not know how to make – like if you need something for $5 and you don’t have your $5, you will need to know how to make $5 (Year 2 Phase 2 focus group).

In addition to talking about the games and currency denominations, the Year 3/4 students claimed they had learned “how to manage our money” (Year 3/4 student, Phase 2 focus group). They learned this through a game that involved an introduction to budgeting. Although they did not apply this learning to a practical situation, they did talk about the importance of understanding how to add coins in circumstances when they wanted to make purchases at the school canteen.

In contrast, the Year 6 students appeared to have progressed their understanding of financial literacy substantially as a result of the work they had completed with the MoneySmart
resources. When asked to talk about what they had learned, the conversation immediately turned to credit cards and the children were able to explain how credit cards work, to the extent that they were able to discuss interest, bank fees and taxes. One of the students commented on how he had heard about interest rates from watching the news. It appeared that their work at school had made these students much more aware of financial literacy in their lives outside the classroom. This is an important aspect in terms of engagement, and aligns with the Framework for Engagement with Mathematics (FEM) as an important contributing factor for promoting engagement.

The Year 6 students continued the conversation about money, “we’ve been thinking of how to be money smart and how good it would be if we had a budget...Instead of spending over the money and paying more than you borrow” (Year 6 student, Phase 2 focus group). When asked if they could define what a budget is, one of the students provided this example to illustrate his understanding: “like if you go to a restaurant, you spend money but you don’t spend over the amount you have. Otherwise you’ll pay more than you intend” (Year 6 student, Phase 2 focus group).

The students appeared to be fascinated by the concept of credit, and when asked if they thought money is an important aspect of their lives, they discussed how it is required to pay bills. One student made this surprising comment: “we learnt how they can keep a record of your credit...and it’s like a police record but different” (Year 6 student, Phase 2 focus group). This group of students had made a significant shift in their understanding of financial literacy concepts despite being disengaged with the *MoneySmart* units of work.

At this point in time, the three teachers at Fairfield Public School began to work on designing their contextualised units of work for implementation during Term 4.

**Phase 3**

Each of the participating teachers at Fairfield Primary School decided on a fundraising theme for their new units of work. The Year 6 and Year 2 groups worked together as they were buddy classes, and the Year 3/4 group worked on their own. However, the culminating
activity and overall unit, *Three Little (and not so little) Piggies Went to Market*, design for the three classes was a combined Market Day with all three class groups participating, elements of which were broadcast on Channel 7 national television news (Table 6).

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<td>• have students work with real money in a school-based financial literacy event</td>
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<td>• develop the language to discuss financial literacy and maths learning ideas</td>
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<td></td>
<td>• plan with engagement and the Australian Curriculum, Assessment and Reporting Authority (ACARA) General Capabilities at the forefront of our work</td>
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<tr>
<th>3/4M</th>
<th><strong>By teaching the money smart unit ‘Shoebox of Love’ I learnt...</strong></th>
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<td></td>
<td>• student knowledge was limited to the value of coins and notes and limited understanding of the link between place value and money</td>
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<td>• students did not respond or engage in learning they did not value</td>
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<td>• consideration needs to be given to the money and maths interests of the learners when planning financial literacy learning opportunities</td>
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<td>• students need more opportunities to practise new vocabulary</td>
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<td>• students need to further develop their skills to identify and prioritise needs and wants and compare their needs of others to their own</td>
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<td>• students were empathetic towards the needs of other ‘underprivileged’ children and understand the importance of giving back to others</td>
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<td><strong>Based on this I will...</strong></td>
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<td>• develop the appropriate language to discuss financial literacy and mathematical concepts and create learning experiences where students have multiple opportunities to practise using the vocabulary</td>
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<td>• design learning opportunities that encourage the students to see the relevance of mathematics taught in the classroom in their everyday life</td>
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<td>• ensure learning is scaffolded to support the learning of all students</td>
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<td>• have students work with ‘real’ money in a school-based financial literacy event (market day)</td>
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<td></td>
<td>• ensure ACARA General Capabilities - <em>Personal and Social Capabilities and Creative and Critical Thinking</em> and Mathematics Proficiency strands (Working Mathematically) are at the forefront of planning of learning opportunities</td>
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From teaching money smart I learnt that...

● students enjoyed high operative work in a real-life context (e.g. games)
● students did not respond to theoretical work they did not value
● students lacked the vocabulary to participate in learning around financial literacy
● students are more receptive to challenge when they see learning as useful
● finding the affective response to mathematical and financial learning often requires trial and error
● financial literacy learning can benefit from responding to the interests and needs of the learners related to money and maths

Based on this we will...

● have students work with real money in a school-based maths financial literacy event
● develop the language to discuss financial literacy ideas and maths learning concepts and skills
● plan with engagement and the Australian Curriculum, Assessment and Reporting Authority (ACARA) General Capabilities at the forefront of our work
● provide task design for students to be mentors and communicate their knowledge about mathematics and financial literacy
● design relevant learning that encourages students to be less resistant to challenge in mathematics
● design across a range of maths proficiencies and content areas

| TABLE 6: FAIRFIELD PUBLIC SCHOOL COMBINED UNIT RATIONALE |

The experiences of the students and teachers in relation to mathematics and financial literacy will now be explored.

**Integrating Mathematics with Financial Literacy**

As would be expected, the mathematics in Amanda’s Year 2 class unit of work was essentially focused on understanding the denominations within our currency system and being able to exchange amounts of money for goods, aligning with current syllabus requirements. An integral aspect of dealing with money was the requirement for addition, subtraction and multiplication understanding. However, the integration of a real-life activity did provide a need and opportunity for the students to begin to learn about the concept of profit, which is beyond the curriculum expectations for Year 2 students. Amanda commented that it was after the market day, when the children counted the money and deducted the cost of producing the pancakes, that they really began to understand the concept of profit. The practical and engaging nature of the activity promoted understandings beyond expectations.

In the Year 3/4 class, the students were able to incorporate a broad range of mathematics into the financial literacy unit. Although the focus was on money-related content, the very nature of the *Cardboard Box Challenge* (Figure 2) activities provided the opportunity to
address the Working Mathematically process strand and each content strand of the syllabus: Number and Algebra, Measurement and Geometry, and Statistics and Probability.

*We covered part of the measurement strand. I’d really looked at the Working Mathematically side of things because whenever we started it was framed in terms of a problem that needed to be solved and how did you solve that problem. We did that in a log of different ways. Collecting information, putting it into tables and analysing it, and seeing if it worked and when we were, the last one we talked about was, how much the tokens were going to cost* (Tiffany, Phase 3 Interview).

**Figure 2: The Year 3/4 Cardboard Box Challenge**

Although their initial idea was to run a school café, the Year 6 children’s Market Day activities proved to be extremely rich from a mathematical perspective. Rather than one single business, the students split into teams to run a collection of individual businesses on Market Day. To do this, Jacqui required the students to conduct surveys, analyse information, and devise business plans that allowed the students to calculate running costs and break-even points prior to earning a ‘trading certificate’. Amidst all of the mathematics were critical discussions relating to consumer literacy such as the cost of purchasing well-known brands as opposed to generic supermarket brands. On the day of the market the students had to keep track of their sales and their stock to ensure they were able to identify the point at which they were generating a profit.
Each of the participating class groups at Fairfield Public School were also able to address several of the General Capabilities from the curriculum in various ways, due to the real-life nature of the activities they engaged in.

**Changes to Student Engagement with Mathematics**

Changes to student engagement with mathematics were apparent in each of the participating classes at Fairfield. The Year 6 students were particularly engaged because the entire project was a result of their own ideas, and Jacqui, their teacher, had allowed them to drive the learning and the shape of the unit of work.

> So the students came up with the idea to run a market day. It started off with the students actually wanting to run a school café and from there they couldn’t quite come to a consensus about how they wanted it to run or how they best envisioned it, so they put forward a different idea where they would break up into separate teams and run their own smaller businesses and they quoted back at me research that I’d given to them about what effective collaboration is (Jacqui, Phase 3 interview).

Jacqui had shared the control of curriculum and learning with her students, which had a powerful influence on her students’ engagement with mathematics, financial literacy, and learning in general.

> I think they’ve seen that, the maths that we’ve done is useful in helping them. It helps them to be able to be really successful at something they really care about...that thinking hard and working hard can lead to this feeling of achievement for them as people but that then it can give back to a community (Jacqui, Phase 3 interview).
Jacqui’s students believed they had learned a lot about problem solving in mathematics during the experience and spoke about the videos they had viewed to understand how to run a business as one of their favourite features of the unit. The rich context of the project had so much mathematics embedded into it that it was difficult for the students to view their learning as being specifically mathematics based.

When talking about her students’ engagement with mathematics, Tiffany believed the project had made her students more confident: “their cognitive skills in understanding the maths has improved” (Tiffany, Phase 3 interview). She also made the comment that the hands-on nature of the project had improved the operative and affective engagement of her students.

In Amanda’s classroom, although the students were engaged prior to beginning their work in the project their engagement with mathematics improved to the point where they were so absorbed in the activities leading to the Market Day and the activities were so different to their typical mathematics lessons, they didn’t equate the practical activities with learning. “This particular unit and our project made it really relevant to their lives” (Amanda, Phase 3 interview). When discussing the mathematics, the Year 2 students were enthusiastic about recalling how much they had learned and this quote synthesises the feelings of the group: “the best thing I have ever done in my life of school that’s important is maths and exchanging money” (Year 2 student, Phase 3 focus group).

**Highlights and Challenges of Implementing a Financial Literacy and Mathematics Unit of Work**

Each of the teachers at Fairfield experienced challenges and highlights during the project. For Amanda, a significant challenge presented itself when trying to work with her Year 2 class alongside Jacqui’s Year 6 class. The two teachers approached this challenge by having the Year 6 students become experts at certain concepts and then teaching these to the younger students. The concepts relating to budgets and profits were quite challenging for the younger students and Amanda attempted to address this through the use of YouTube clips of lemonade stands and similar ventures.
Although the complexity of the concepts was a challenge for Amanda’s class it was also a highlight of the project because it allowed the students to practice the skills they required to successfully run a pancake stall on the Market Day. They did this through role playing the exchange of money and problem solving in relation to the cost of buying different numbers of pancakes.

When reflecting on the biggest challenge for her and her students, Tiffany talked about the development of a contextualised unit of work: “I think it was a big wake up call. Building in a really authentic learning experience to have it and build, using all three pillars of engagement with the kids” (Tiffany, Phase 3 interview). It was also a significant challenge for her students to work together in collaborative groups and to take risks with their learning.

A significant highlight of the project for Tiffany was the fact that the unit of work progressed beyond the culminating activity of the Market Day. The students had decided to spend the money they had raised on putting together some Shoeboxes of Love, linking to their experiences in the original MoneySmart unit of work. This meant that the financial literacy and mathematical experiences involved in selecting and purchasing appropriate content for the boxes added value to the unit and more importantly, provided the students with a sense of purpose, empathy and social justice.

A highlight of the project for Jacqui was the depth and breadth of learning and the critical numeracy that emerged from the unit of work. The challenges she faced were more practical than focused on the actual teaching and learning. Due to her leadership responsibilities, Jacqui had started the year on class for five days a week, but by the end of the project was only on class for one day per week. This meant the students’ progress with the unit of work was interrupted at times. Jacqui addressed this by utilising a class Edmodo site and was surprised that students would contact her via the site, and outside of school hours, with questions pertaining to their financial literacy work – a true sign of student engagement.
FIGURE 4: CHANNEL 7 NEWS STORY AT FAIRFIELD PRIMARY SCHOOL MARKET DAY
**Case Study 3: St Columban’s Catholic School, Mayfield**

The project began at St Columban’s Catholic School, Mayfield, with three teacher participants: Danielle, Kerri and Steve. As Danielle took on an executive role within the school resulting in less time on class, she did not participate in an interview during Phase 2 of the project. Their experiences, along with their students’ experiences, are now presented.

**Phase 1**

Each of the three participating teachers was highly experienced, and enthusiastic about taking part in this project. As with the other schools, they began with a full day of professional development with the research team. A brief description of their classroom contexts follows.

*Steve*

Steve is a Year 1 teacher who, at the time of the project, had been teaching the same grade for several years. Steve’s class had a wide range of learning needs and they were students who particularly enjoyed participating in hands-on activities as opposed to work-sheet activities. Steve promotes the use of technology in his teaching and had been incorporating an online mathematics program for which he paid a subscription for, from his own money.

*Kerri*

Kerri, another experienced teacher, had a mixed ability Year 3 class that also included a mixture of engaged and disengaged students. Kerri reflected on the fact that many students struggle with literacy, and so also struggle with mathematics as a result. She believes that there is a direct relationship between achievement, engagement and enthusiasm.

*Danielle*

Danielle is a mid-career teacher with a small Year 6 class of students. Danielle commented on how her students had low emotional maturity and almost all of them were behind in their achievement of mathematics learning outcomes. Despite this, Danielle believed her students
liked mathematics although they were reluctant to discuss mathematics in their day-to-day lessons.

**Teachers’ Perceptions of Financial Literacy Education**

When Steve spoke about his perceptions of financial literacy education he indicated some awareness of the need to teach students skills beyond recognising and dealing with currency. As he had been teaching Year 1 for six years, it had been a while since he had taught students who were academically mature enough to learn those deeper concepts. However, he did talk about how he encouraged his young students to recognise the various denominations in our currency and to practice shopping by using play money and a classroom shop.

Conversely, both Kerri and Danielle had taken advantage of opportunities that arose within the school to promote financial literacy with their students. Kerri spoke about a fund raising event that involved a sausage sizzle. The Year 3 students worked out the costings for the sausage sizzle and actually went shopping for the food. They then had to sell the sausage sizzles to other students in the school and were responsible for the collecting and counting of the money. Kerri talked about her students’ lack of experience with handling cash: “I think that for a lot of them at that point, that may be the first time they’d equated the two (money and shopping). I don’t think, at Year 3 level, too many would be let loose with money” (Phase 1 interview).

When discussing her perceptions of financial literacy, Danielle showed an awareness of its importance, particularly in the context of working in a low-socioeconomic area. She spoke about her personal experiences of struggling with money while studying and raising a family and this has transferred to her teaching, where she, like Kerri, sometimes uses opportunities that arise in the day-to-day running of the school to promote financial literacy. She gave several examples of when this had occurred: “In the past I have planned out the Year 6 camp with the class so the kids have worked out why it cost so much to go on a Year 6 camp - $250 a child or whatever it is for three days. So I’ve done a few little things like that. I can’t say I do a lot of it” (Phase 1 interview). Although Kerri and Danielle were teaching their students about money, they were only somewhat aware of the placement of financial literacy within the mathematics curriculum and its links to the General Capabilities, and had not always
purposefully planned those activities – some appeared to occur spontaneously as the opportunities arose.

Each of the teachers at St Columban’s Primary School hoped their students’ participation in the project would reap benefits in the wider community as they identified that financial literacy was a challenge for many parents in the school, which had the potential of affecting their well-being. Kerri gave an example of this:

*We do have a few places where budgeting isn’t well done, like you’ll see kids who come with a full packet of biscuits, and then by the end of the week they’ve got nothing, you know, so people aren’t necessarily able to budget to think, ‘well no, don’t buy the biscuits, buy the loaf of bread and give them a sandwich everyday day’* (Kerri, Phase 1 Interview).

**Students’ Perceptions of Financial Literacy Education**

When asked what they knew about money, the Year 1 students showed a range of understandings. They all knew that money is used to purchase items from food and toys to houses, and most of the children in the focus group understood that money is associated with work. For example, when asked if they ever had to save up for something special, several of the children talked about how they had to do chores to earn enough money to purchase their goal. Understandably, some of the children’s responses were naïve due to their young age. When talking about where money comes from, the responses ranged from the bank, to beaches and fountains.

The Year 3 children showed an awareness of money – just like the Year 1 group, they had all experienced saving up for special items and the group talked about how they often receive money as birthday gifts, which they then used to buy the things they wanted. Some students talked about going shopping with their parents, and one child talked about how she works out how much money to place in the lunch order bags: “…when I do the lunch orders this morning I always write it down and just figure it out in my head just to help me and I got the answers correct” (Year 3 student, Phase 1 focus group). When discussing where money comes from, these students talked about money in relation to the production of currency, rather than how
people source money. Their understandings of financial literacy at the start of the project were quite basic.

The students in the Year 6 focus group showed a much greater understanding of financial literacy, with the first student to speak saying this: “Money is a form of maths, and money is like you have to earn money and when you get money you have to use it wisely otherwise you could run out”. Another child added: “So like for example, you win the lottery and you give a bit to someone but you want them to just keep it and not spend it and they spend it and you get a bit angry with them” (Year 6 students, Phase 1 focus group). This group’s understanding of where money comes from was much more sophisticated than that of the younger groups: “The factories make it in a machine and they give it to the government and the government gives it to all the parents and children who work” (Year 6 student, Phase 1 focus group).

**Teachers’ Perceptions of Student Engagement with Mathematics**

When discussing his students’ engagement with mathematics, Steve articulated several aspects of the Framework for Engagement with Mathematics (FEM) (Attard, 2014). He talked about addressing a range of needs in his class through the use of hands-on activities, group work and games, including the use of an online, competitive mathematics program. When asked about the mathematics activities the students dislike, Steve made this comment: “I’d say, the usual sit-down worksheet and just do your work sort of stuff. They’re definitely not into that as much as manipulating, hands on, doing the group work together.” (Steve, Phase 1 interview). Steve also talked about how his personal motivation influenced the motivation and engagement of his students:

> ...if you’re motivated about it they become a little bit more motivated about it because I think they don’t see the positive sides of it, or the real life side of it where it can be more interesting to them (Steve, Phase 1 interview).

In Kerri’s classroom, the students ranged from being engaged, to quietly disengaged. “There’s probably not too many who would say that they don’t like maths, as such, but there are some that – yeah I’m not sure if they see too much relevance in it.” (Kerri, Phase 1 interview). Kerri talked about how some of her students simply do what they’re asked to do, and no more. In other words, they appear to be on-task, but aren’t ‘in-task’, or substantively engaged. At the
time the project began, Kerri was working on getting her students to talk more during mathematics activities and she worked hard at making the mathematics relevant for her students and making links across the mathematics curriculum.

In Danielle’s Year 6 classroom, students appeared to struggle with their confidence and were hesitant to share their thinking during mathematics lessons. Danielle partially attributed this problem to having only 16 students in the class. However, she did believe her students liked mathematics and she consciously used concrete materials and other resources to enhance their engagement and encourage their active participation in mathematics lessons. Interestingly, Danielle believed that some of the students’ challenges were related to their home backgrounds and experiences. She explained that the students had very limited experiences of life outside the classroom and said this: “…we do a lot of cultural engagement activities here and a lot of incursions to try and broaden their experience of the world”. (Danielle, Phase 1 interview). Their involvement in this project was a timely and important opportunity for the Year 6 children.

**Students’ Perceptions of Mathematics**

The students in the Year 6 focus group reiterated their teacher’s belief that they liked mathematics. However, their discussion of mathematics clearly indicated that they didn’t view mathematics as something that happened outside the classroom – all of their conversations were dominated by discussions about the mathematics that happened at school during their mathematics lessons. The children talked about liking mathematics games and there were several comments that referred to ‘not knowing when you’re doing maths’. This could mean that the mathematics was embedded or hidden in ‘fun’ activities to promote student engagement, or it could be that the students had been told that they do mathematics all the time, and often without realising.

When asked to talk about their perceptions of mathematics the Year 3 children talked about specific strategies relating to the Number and Algebra strand of the mathematics curriculum. This was a similar response to the Year 2 students from Fairfield Public School. Some of these students immediately equated mathematics to the classroom rather than everyday day life.
It can give you a great education and like if you have a test in uni or high school and you need to do it...if you don’t know the answers you would be sitting there the whole entire test going like this, looking around and you might tend to copy someone else’s work (Year 3 student, Phase 1 focus group).

Some students also talked about how they disliked mathematics when they were faced with difficult questions or got the answers wrong, aligning with the FEM framework and the idea that students need to achieve success in order to engage with mathematics. Other students talked about how they enjoyed maths and how helpful it is to be able to perform computations: “...it’s good if you just figure it out quickly in your mind” (Year 3 student, Phase 1 focus group.

During their initial focus group discussion the Year 1 students found it a challenge to talk about mathematics due to their level of maturity. However, they were able to talk about doing ‘hard’ mathematics and some of the students discussed how they liked counting. It is likely that they did not connect their learning to the discipline of mathematics itself. Their conceptions of mathematics were very much related to learning how to count, add and subtract.

**Phase 2**

Phase 2 began at St Columban’s with a two-day visit from the research team during Term 2. Following the team’s initial visit in Term 1, two out of the three teachers implemented one of the MoneySmart units of work. Danielle, the Year 6 teacher, had taken up the role of Acting Principal during that time so had been unable to implement a unit. However, she was still involved in the project and resumed her participation in Phase 3.

As with the other schools, the three teachers from St Columban’s participated in a professional development session relating to the MoneySmart resources which was delivered by the NSW MoneySmart officer. During the two-day session the teachers reflected on the teaching of the units and spent time planning their new, contextualised units of work.
**Introducing a MoneySmart Unit of Work**

To familiarise himself and his students with the concept of financial literacy Steve introduced the *MoneySmart* unit of work, *Kieran’s Coin*. This unit generated a substantial amount of interest amongst his students and resulted in Steve taking a different direction as a result. “There’s been a lot of talk about money and where it’s used, and even how it’s used...so there’s different areas and aspects of the whole trading of money and how people use it in society” (Steve, Phase 2 interview). When teaching the unit, Steve was surprised that the students’ interest led them to bring in coins from home, including one and two-cent coins and a range of old and foreign coins. “I wasn’t really prepared...we sort of went off on a little tangent.” (Steve, Phase 2 interview). In response to these students’ interests, Steve encouraged them to talk to their parents and grandparents about how they used money when they were growing up.

The challenges Steve faced when teaching the unit were related to explaining mathematical concepts that emerged because of the children’s curiosity relating to the redundant one and two-cent coins. Discussions about rounding and consumer literacy occurred: “…about advertising, how $1.99 doesn’t look like $2.00. It might be more appealing, even though you have to pay the $2.00 because in change we don’t have one- and two-cent coins.” (Steve, Phase 2 interview). Although these discussions were seen as a challenge to Steve, when viewed from a financial literacy perspective they can be perceived as a highlight – the opportunity to incorporate deeper mathematical concepts as a result of the children’s interests was an important opportunity in making mathematics relevant – an important aspect of student engagement. Steve also discussed a highlight of the unit being the range of experiences the students brought from home in relation to money. Some students rarely went shopping; some parents used the self-checkout feature at shops, while others used credit cards so no cash was ever exchanged. Some children had experienced purchasing items, while others had not. It was this range of experiences that Steve was hoping to address within the unit of work he was about to design for Phase 3 of this project.

In Kerri’s Year 3 classroom, the students had worked on the *Sal’s Secret* unit. Kerri reported that her students had enjoyed learning about EFTPOS and one particular activity where they had to role play as an actual EFTPOS machine: “…they liked being the EFTPOS machine
because they had to give the money out, so they actually did it with play money” (Kerri, Phase 2 interview). Kerri found that the unit assisted the students in learning computation strategies that they had been learning about previously.

A highlight of the unit of work for Kerri and her students was the culminating activity, a class party. Kerri took her students to the shops and they were able to apply the financial literacy skills they had learned.

...they were very excited. They found all the bargains and had, actually had saved even more money than they thought they would, so we had a bit of a class decision as to what they'd spend the rest of the money on...they came back really excited because they'd found the ice-blocks on sale so they bought two boxes so they could have lots (Kerri, Phase 2 interview).

It could be argued that Kerri’s students were deeply engaged in this activity because it was more than a hypothetical situation. The students actually got to participate in planning, budgeting, shopping and enjoying a class party. This practical application of their learning aligns with the FEM (Attard, 2014). Although the unit was successful, Kerri spoke of the challenge in implementing it. The lessons took much more time than anticipated to allow Kerri to ensure her students understood the mathematical concepts and language, as well as the critical thinking involved in the consumer literacy aspect of understanding what products and prices were the best value. Kerri hoped that the new unit of work she was about to design would continue to generate the same excitement amongst her students.

**Financial Literacy and Engagement with Mathematics**

Both Steve and Kerri noted an improvement in their students’ engagement with mathematics as a result of their work on the *MoneySmart* units. Steve believed that it was his students’ interest in money and its relevance in their lives that improved engagement. Another influence on his students’ engagement was the development of their understandings relating to financial literacy: “At the beginning they didn’t really know why they couldn’t have the things they wanted when they go shopping...and this lesson actually helped them grasp an understanding that money doesn’t grow on trees” (Steve, Phase 2 interview).
One of the indicators of increased engagement amongst Kerri’s students was that some of her quiet students found a voice through the opportunity to role play. Kerri’s class was typically dominated by a small group of students who regularly called out their answers, leaving little opportunity for the quiet students to respond to questions. During the unit the quieter students shone and were able to demonstrate their knowledge on the topic, leading to more positive attitudes towards mathematics and deeper affective engagement.

**Students’ Perceptions of MoneySmart Units and Mathematics**

When asked to talk about what they had learned in relation to money, the Year 1 students talked about being able to identify and count different coins. When asked why those skills are important, the students’ typical response was: “Because if you don’t know how to count money they’re just going to say no and you’re going to be very poor” (Year 1 student, Phase 2 focus group). The Year 1 students’ conversations reflected Steve’s comments about their interest in old coins and the students indicated that they were interested in learning more about money from the ‘olden days’.

In the Year 3 focus group, the students discussed many of the mathematical strategies they had learned during the money unit. The students also talked about their excitement relating to the class party that was the culmination of the unit.

> At first I didn’t think we were actually going to do the party and then everyone was saying we’re ready for the class party. I was like oh, is there an actual class party? An then that’s when I started, so that was half way through the term and that’s when I …got excited and started to do my best (Year 3 student, Phase 2 focus group).

The students’ excitement had translated to a deeper engagement with mathematics and a desire to work hard because they could see a tangible reward at the end of the unit. The nature and quality of the reward was to be determined by their own mathematical thinking, in that the levels of their financial literacy would ultimately determine what and how much food would be available at the class party. When asked what else they would like to learn about money, the Year 3 children indicated a desire to understand how money is made, and a desire to learn more about dealing with money.
Phase 3

During Phase 3 of this project the participating teachers at St Columban’s Primary School each implemented a separate unit of work. In addition, each of the other teachers at the school designed and implemented a unit of work. The three units of work implemented by the participating teachers, Steve, Kerri and Danielle are presented in this section.

The Year 1 unit of work designed by Steve was based upon the development of a class economy. The rationale and background information is presented below in Table 7.

**Rationale:** As a result of implementing the *Moneysmart* unit I realised students were not involved with any financial money matters at home and the use of money in a real life context.

- In my teaching unit students will use maths to design, create and use a financial classroom economy.
- Students will interact and engage in substantial conversations and respond to constructive and purposeful feedback.
- Students will also engage in feedback and response about learned experiences.

**Unit Description:**

Students practice a small scale economy using Australian monies. Students will be able to recognize different monetary values and identify the different types. Students practice exchanging money for goods and services to achieve different wants and needs. Students will also investigate the problems and issues that can occur when dealing with money such as identifying the worth of goods and services, distinguishing between wants and needs and operating a fair economy.

**Framework for Engagement with Mathematics:**

- Assess backgrounds, impact of financial inclusion in home affairs. (Not a high percentage in Year 1). Pedagogical content knowledge
- Feedback both ways from teacher and student, progress evaluation on the class economy
- Challenging ideas/concepts through use of exploration and investigation
- Choice in values and items for purchase and services provided
- Relevance to other math areas and home life participation
- Promote fair use of money and its valued use in society with connections between home and school

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**Table 7: Background Information for St Columban’s Year 1 Class Currency Unit**
Steve provided a brief evaluation of his unit of work (Table 8).

**Class Economy Unit Evaluation:**

- Students took up the idea of money fairly quickly however some students had difficulty learning values as they had little interaction when it came to monetary exchanges.
- Some of the play money coins were varying in different sizes which made it difficult for some students who were solely recognising coins according to their size so emphasis was placed on them checking the value written on the coin.
- More explanation had to be given about the use of plastic cards for money and how values were determined for purchasing.
- Some students were self-motivated to bring in coins from other countries and even coins from before decimal currency was introduced to Australia.
- Students’ experiences varied levels of learning as many haven’t had nor have opportunities to engage in monetary exchanges.
- A great benefit from this unit was students gaining a better understanding that money forms an income and the realisation of the value of money.

**Table 8: St Columban’s Year 1 Unit Evaluation**

The Year 3 unit designed by Kerri was based on a localised version of the famous Monopoly board game.

**Rationale:**

As a result of teaching a MoneySmart unit, I realised that students enjoyed the operative nature of handling money and “got excited about maths.” Students “found it easier because we liked maths more...when we had problems. We used maths to fix them. We worked at our best” (Year 3 Phase 2 Interview).

My teaching unit will give students opportunities to:

- See the purposes of applying maths beyond the classroom, in the real world of the students’ local area
- Develop student voice and control to reflect about their learning in maths and financial literacy and make decisions about learning direction
- Use maths and financial literacy to solve problems and think critically and creatively

**Unit Description:**

In this unit, students will examine the game of monopoly and establish the existing maths and financial literacy aspects of the current Monopoly Game. They will then design their own monopoly style board game called “Mayfield Monopoly – Year 3 Edition.”

The students will adapt the current game to places and locations where money is used in the Mayfield community. They will consider what will be bought and sold, comparing with what is bought and sold in the local community. The students will write problem solving cards using situations that are of interest to them. These will be used as the Chance cards in the game. The children will be given opportunities to decide about the direction their learning will take. They will decide if they want to
design their own monetary system (Columban’s Currency) to use in the game. If so, they will need to consider the values and number of coins and notes. The students will consider the role of the banker in the game and decide whether to incorporate EFTPOS machines in the banker’s role. The students will look at ways of incorporating the use of technology into their board game.

At the end of the unit, the children will play the board game they have created and will invite others to play the game with them.

Throughout the unit the students will be given opportunities to make choices and to vote on options. They will be given time to reflect on their learning during all phases of the unit.

Framework for Engagement with Mathematics: Throughout this unit the classroom teacher will ensure that they have an engaging mathematics classroom, positive pedagogical relationships by:

- The students **background** knowledge is understood, differentiation will appear within the lessons.
- Constant interaction with children will be existing to make sure that tasks are being completed and that knowledge is being gained by students.
- Through being involved in the planning process, the teacher will be **enthusiastic** and engaged in the teaching of this unit.
- Through past experiences with students, the teacher is **aware** of the students’ mathematical abilities.
- Teacher will ensure that there is regular and valuable **feedback** to the students.

**Table 9: ST COLUMBAN’S YEAR 3 MAYFIELD MONOPOLY UNIT BACKGROUND INFORMATION**

In Year 6, the contextualised unit of work, *Sizzling Sausages*, was based upon the children planning a barbeque to raise funds for their end of year excursion. The unit background is provided below in Table 10.

**Rationale:**

As a result of studying a *MoneySmart* unit and planning a class excursion to Sydney, I realised that students were becoming more aware of their own ability to generate funds and save money towards a goal. In my teaching unit students will be given opportunities to:

- Plan a maths/financial literacy project and realise it from start to finish
- Use maths and financial literacy to reason; determine costings and profit
- Co-constrcut the steps necessary to ensure a fund raising sausage sizzle event to assist with the students’ Sydney excursion
- Problem solve in real world situations

Collaborate to do market research, identify market demand, sample other students, quantify and analyse data for action.

**Unit Description:**

Students will be involved in the planning process of organising a fundraiser where the school community will be offered a ‘meal deal’. The profit from this event will go towards the class farewell in December. Students will be involved in a variety of problem solving activities to ensure they are getting best value for money as well as making a maximum profit.
Students will need to use their knowledge of financial literacy as well as skills from other strands of the mathematics syllabus to be able to participate in all activities successfully. Students will be working as a whole class, in pairs and individually throughout the unit and activities will be differentiated to suit the learners need.

**Framework for Engagement with Mathematics:**
Throughout this unit the classroom teacher will ensure that students have an engaging mathematics classroom, positive pedagogical relationships by:

- The students’ **background** knowledge is understood, differentiation will appear within the lessons.
- **Constant interaction** with children will be existing to make sure that tasks are being completed and that knowledge is being gained by students.
- Through being involved in the planning process, the teacher will be **enthusiastic** and engaged in the teaching of this unit.
- Through past experiences with students, the teacher is **aware** of the students’ mathematical abilities.
- Teacher will ensure that there is regular and valuable **feedback** to the students.

**TABLE 10: ST COLUMBAN’S YEAR 6 UNIT DESCRIPTION**

**Integrating Mathematics with Financial Literacy**
As can be seen within the unit of work documentation (see Appendices 5, 6 and 7), all three teachers at St Columban’s Primary School were able to integrate a large range of mathematics into the teaching of financial literacy. In Danielle’s classroom, one of the challenges the students faced was that the mathematics was quite difficult, particularly the content that related to fractions. The topic of fractions was one that the students had previously found difficult. Danielle also talked about other mathematics content that was covered in her *Sizzling Sausages* unit of work.

> We did a lot of practice on adding and dividing and multiplying decimals at the beginning of the unit so that they would be able to handle the maths when it came to breaking down costs and we did a lot of work on working out well if this many children buy a sausage sandwich and we sell it for that much, we’ll make this much, but how far can we go before it becomes too expensive and we shoot ourselves in the foot because we don’t sell enough? (Danielle, Phase 3 interview).

When reflecting on the mathematics integrated into the *Mayfield Monopoly* unit, Kerri talked about how she was able to include concepts relating to measurement and geometry through the design of the board game. Trial and error featured highly during the design phase of the
game, and this linked well to the Working Mathematically process strand of the curriculum. One of the biggest features of Kerri’s unit was the amount of problem solving that occurred as a direct result of the requirement to design every aspect of the board game, including the new ‘Columban’s Currency’.

As would be expected in the Year 1’s classroom economy, Steve’s students focused mostly on the Number and Algebra strand of the mathematics curriculum.

We worked on totalling with using addition and subtraction, that was a daily thing because we totalled up at the end of the day how much we had in our money bags or wallets and that would fluctuate all the time as through the day they had to pay for things and they bought things and sold things and they exchanged services as well. We also set goals where some were saving money for a particular item (Steve, Phase 3 interview).

It is interesting to note that none of the teachers discussed the Working Mathematically components and how these featured within their units, yet it was clear that the students did engage in these processes due to the nature of the tasks they participated in.

**Changes to Student Engagement with Mathematics**

As with the other schools in the project, the teachers and students at St Columban’s found the contextualised units of work improved overall engagement with mathematics. The students in Steve’s classroom were excited that they were able to earn ‘money’ and the
nature of the classroom economy combined with the need to use mathematics in every aspect of that economy was engaging on cognitive, operative and affective levels.

In Kerri’s classroom, the emphasis on problem solving proved to be important in increasing student engagement with mathematics. “They were actually quite excited about solving problems...they’re seeing part of it as being fun. I think because it’s relevant. Yeah, so they’re more inclined to ask questions” (Kerri, Phase 3 interview). Another influence on the students’ engagement with mathematics was the fact that each class in the school was participating in a financial literacy unit of work, which created a common language and interest within the school cohort. Kerri related that this had made her students more excited about the work they were doing in their own classroom.

**Figure 6: Examples of Mayfield Monopoly**
In Danielle’s classroom evidence of improved student engagement could be seen in her students’ behaviour during mathematics lessons: “They were just very engaged with it even when it came to the mundane bits”. She went on to talk about how the students’ improved engagement also resulted in improved perseverance: “they wanted to keep going until they got it right” (Danielle, Phase 3 interview).

In each of the focus groups the students were able to demonstrate their engagement with mathematics by talking about what they had learned and the activities they had participated in during the contextualised units of work. The Year 6 students discussed various aspects of loans and interest rates as a result of having to borrow money from the school principal. The Year 3 students talked about needs and wants, and the need to spend money wisely. The Year 1 students talked about currency and a range of concepts relating to earning money and paying bills, and the importance of saving money. Surprisingly, they also learned empathy:

*What I learned was you need to think about other people when you have money; I mean it – because there’s other people that don’t have money and can’t afford things like food or water* (Year 1 students, Phase 3 focus group).

**Highlights and Challenges of Implementing a Financial Literacy and Mathematics Unit of Work**

One of the major challenges for Steve when implementing his unit of work was, as mentioned earlier, the limited range of students’ prior experiences with money. “A lot of cases were because Mum and Dad either didn’t take them shopping or they were always using credit cards and EFTPOS as a monetary exchange” (Steve, Phase 3 interview). Of course, there were also highlights for Steve when teaching his classroom economy unit. “I think one of the things was the realisation of the value of money, what they decided was fair value”. Prior to the project the students had little or no concept of the value of money.

*…they’d want a million dollars to buy a bike or something like that. Whereas by the end of it they realised they wouldn’t be asking for a million dollars to buy a bike…they’d have a bit more of an idea of the value of things and how much money those things would be worth* (Steve, Phase 3 interview).
An additional highlight of teaching the unit for Steve was that his students’ parents began to ask questions about what the students were learning in class. Steve reported that the parents realised that their use of credit cards were limiting the opportunities to teach their children about money and shopping. It could be argued that as money is becoming increasingly invisible, there is a lesser need to teach children about handling cash. However, invisible money is a very abstract concept, and the concrete manipulation of currency is an important skill, particularly for young children.

One of the biggest highlights of teaching her new unit for Kerri was the cooperative learning and collaboration that occurred. The students were excited about designing their own version of Monopoly and were motivated to work together to achieve their goals. Kerri talked about students who would previously have stood back and not participated, taking an active role. She also spoke about how some of the students would go above and beyond the tasks and would work on them at home, even though this was not a requirement. This was a true indication of cognitive and affective engagement in Kerri’s classroom. In terms of challenges, Kerri found that the amount of time it took to run the unit of work was more than she had originally estimated. Time restraints have appeared to be a common challenge amongst the teachers throughout this project.

The highlight for Danielle in Year 6 related to the significantly improved student engagement. So much so, that at times their enthusiasm had to be controlled to ensure the students were able to take the time to learn important mathematical concepts well. The rich and practical nature of the task promoted high levels of student engagement and this resulted in the students sharing their learning experiences with their parents. Danielle spoke about the positive reactions of parents whose children had been talking about their learning at home and reading about the activities in the school newsletter: “...one of the parents said to me, “at least this stuff is practical” (Phase 3 interview).

A Whole School Approach

At the start of this project it was hoped that in addition to the participating teachers, other teachers in the schools would teach some aspect of financial literacy after hearing about or seeing what the participating teachers and their class groups were experiencing. This strategy
was extremely successful at St Columban’s Primary School, as every teacher in the school designed a unit of work during Phase 3 of the project. The culmination of the whole school approach was a school assembly in which each of the class groups presented their work to the school community, including parents and other family members.

**Figure 7: The Whole School Celebration of the Financial Literacy Project at St Columban’s Primary School, Mayfield**
Case Study 4: St Michael’s Catholic School, Deniliquin

Three teachers at St Michael’s Catholic School, Deniliquin agreed to participate in this project. However, only two teachers, Sally and Lauren, completed the project. The third teacher withdrew from the project as he was unable to complete the project activities. Data from the third teacher and his students will not be included in this section.

Phase 1

Phase 1 of the project began with three teachers participating in a full day of professional development delivered by the project team. Unlike the other schools, the NSW MoneySmart officer was unable to attend the initial day of professional development. However, she did attend during Phase 2 of the project and provided a whole-school professional development session on using the MoneySmart resources to encourage other teachers at the school to participate in the project. A brief description of each class group and their teachers is now provided.

Sally

Sally is a late career teacher with a Year 1 class. Sally described her class as a group of students who enjoy hands-on learning activities and relating mathematics to real-life and/or concrete materials. When their learning becomes too theoretical, Sally’s students tend to become disengaged.

Lauren

Lauren is an early career teacher who, at the time of the project, was in her first year of teaching. Lauren’s Year 3 class consisted of 30 students. Lauren’s mathematics focus was to increase the use of concrete materials and to provide mathematics activities that took the students out of the classroom. Lauren was also interested in increasing the amount of technology used in her classroom. Lauren and Sally’s experiences, along with their students’ experiences within this project will now be explored.
**Teachers’ Perceptions of Financial Literacy Education**

Similarly to other Stage 1 (Years 1 and 2) teachers in this project, Sally’s lessons relating to money were generally aimed at understanding the Australian currency system. As per curriculum requirements, her students required learning about whole numbers and place value, and so any learning related to money was directly related to those concepts. When asked about how she perceived the idea of financial literacy, Sally stated that her understanding is that financial literacy is about money and how it fits in our world. Prior to her work within this project Sally had not taught any aspect of financial literacy in the context of the real world. Sally’s expectations of this project and the introduction of financial literacy to her students was that it would be good to focus on financial literacy, and she was looking forward to incorporating some children’s literature relating to financial literacy.

When asked about her perceptions of financial literacy, Lauren claimed she could see a place for it within the school curriculum. However, she did admit to having little knowledge about financial literacy and talked about how she struggled to manage her finances.

*When I was in school I knew nothing about money but that continued into high school...the only thing I ever saved for was my car which was two grand, which wasn’t that much at the time and I think that’s transcended to me now where I can’t save at all (Lauren, Phase 1 interview).*

Lauren’s challenges with her own financial situation provided the potential for her to learn alongside her students, who she expected would benefit from their participation in this project.

**Students’ Perceptions of Financial Literacy Education**

The Year 1 students’ perceptions of financial literacy at St Michael’s Primary School were slightly more sophisticated than those of other young students in the project. They understood that money is required to make purchases, and were able to talk about shopping, bank accounts, and earning money. Most of the students in the group earned pocket money, and had experience saving for items and spending money at the shops. They were able to describe various notes and coins, and could add different amounts of money.
When asked what they knew about money, the Year 3 students’ responses were very typical to the responses of the similarly aged children from each of the other schools. They understood money was required for survival yet were quite insightful in terms of how they viewed money, with one child stating: “If you have a lot of money, it’s not important. If you have no money, it is important” (Year 3 student, Phase 1 focus group). Some of the students talked about charity, and how people can donate money to help others – this stems from their school’s mission days, where the entire school raises money to donate to charity.

All of the students in Year 3 had experienced spending money and had saved for something special, and several of them earned pocket money by doing chores. The students had very vague ideas about where money comes from.

**Teachers’ Perceptions of Student Engagement with Mathematics**

When asked about their students’ current engagement with mathematics, both Sally and Lauren considered them to be engaged, particularly through the use of concrete materials. Sally talked about the use of games, group activities and the use of technology as practices she promotes to enhance her students’ engagement. She also believes in setting achievable goals for her students to enable them to achieve success, which is an important factor that influences students’ affective engagement.

Likewise, in Lauren’s classroom, the use of technology is a feature to promote student engagement. When asked about her students and their engagement, Lauren spoke more about the activities they participate in, than their attitudes and behaviours, which may be because at that point, Lauren had only been teaching for a few weeks and was still settling into her role as a beginning teacher. However, she did understand the need to provide challenge for her students: “...if they don’t have that little bit of challenge they’re going to get bored but if there’s too much, it’s too hard for them” (Lauren, Phase 1 interview).

**Students’ Perceptions of Mathematics**

The Year 1 students were very enthusiastic when asked to talk about mathematics. Their perceptions matched those of their teacher, Sally, and they discussed how they enjoy using concrete materials: “we have like these special teddy bears and we put them in rows and then
we knock them down to see how many there is” (Year 1 student, Phase 1 focus group). Several students talked about how they love doing ‘plusses and takeaways’. The students also spoke about how they feel happy and proud when they learn something new in mathematics lessons.

The Year 3 students had mixed reactions to mathematics, with some stating they enjoy it, while others felt they didn’t enjoy it because they weren’t good at it. This is a fairly typical reaction to mathematics if some degree of success is not experienced (Boaler, 2016). Overall, the Year 3 students’ reactions to mathematics was reasonably positive and they were able to talk about some of the mathematics they do in class, which mostly related to computation. It seems that almost all of the students in this project viewed mathematics as computation and very little else. Many of the students also related money to mathematics, which suited the context of this project.

**Phase 2**

As with the other schools in this project, Phase 2 began at St Michael’s Primary School with a two-day session in which the teachers reflected on their use of a MoneySmart unit. As was mentioned earlier, the NSW MoneySmart officer, attended the two days and provided a professional development session for the entire teaching staff at the school. During the two days the teachers began the development of their new, contextualised unit of work.

**Introducing a MoneySmart Unit of Work**

Sally introduced the Bertie’s Socks unit of work, which includes concepts relating to shopping and identification of Australian coins. Sally’s reflection of the unit itself was quite positive: “It was very well detailed, very scripted, which was great, but some of the time allowance, given that age group, we could get through it quite quickly” (Phase 2 interview). Sally’s comment on the time required to teach the lessons conflicted with the experiences of other teachers in the project, who thought the units needed more time in order to teach the mathematical concepts well. As would be expected, Sally made adjustments to the unit to suit the needs of her class and the resources available to her. She also found there were some mathematical concepts, such as rounding prices, that her students were not ready to learn or understand.
The highlight for Sally and her students when teaching this unit was the incorporation of game-based activities.

The Year 3 students at St Michael’s were introduced to the Sal’s Secret unit of work, which focused on the idea of saving for a class party. Lauren set aside her mathematics lesson each Friday to teach the unit and at the time these data were collected, had not reached the end of the unit where the class was to have saved money, gone shopping, and held a class party. She attributed this to a series of disruptions to her allocated mathematics time. Lauren saw the structure of some of the unit activities as a challenge as they were presented as worksheets: “there were a few worksheets and we’re trying to step away from the worksheet and find a way to make it practical, but still show that working out and things like that” (Phase 2 interview). This indicated Lauren’s awareness of how practical activities can influence student engagement with mathematics.

Some of the content within the Sal’s Secret unit of work was a challenge for Lauren’s students. She found that they needed to actually use money (the school had plastic replicas of Australian currency) as it was difficult to complete computations using only pictorial representations of coins. Another outcome of the unit was the realisation that her students did not have a great deal of knowledge about money and commented that many of them were used to EFTPOS rather than cash. Lauren made this comment: “…just sort of explaining that it’s the same money and ATMs and stuff, they got a bit confused on that” (Phase 2 interview).

**Financial Literacy and Engagement with Mathematics**

When asked if she had noticed any changes in her students’ engagement as a result of the MoneySmart unit, Sally made this comment: “for a lot of them it is still a mystical cloud, the shopping experience. They like the shopping experience but it’s not always related to them handling the money” (Phase 2 interview). Sally found that her students had very little experience in handling money and as a result, the unit of work was too abstract and removed from their life experiences for her students at that point in time. This would influence Sally’s design of the new unit of work, where she hoped to take her students to the local grocery
store to provide some real life experience and make links between school mathematics and the real world, an important aspect of student engagement.

Similarly, Lauren did not have anything to report in relation to any improvement in her students’ engagement following the MoneySmart unit. It is possible that the reason for this was that the delivery was disjointed – the students only worked on it once a week, and in those times they experienced disruptions. The unit was not completed, so the practical activity of actually budgeting, saving and having a class party did not occur. Lauren was hoping that the new unit of work would be more practical and therefore engage her students.

**Students’ Perceptions of MoneySmart Units and Mathematics**

When the Year 3 students talked about their experiences during the MoneySmart unit they talked about how they had learned to add coins through games and worksheets, and had recently participated in hypothetical situations that involved money: “Well yesterday we got $10,000 in fake money and we got to choose somewhere to go on a holiday, and we had to get a flight, but not actually booking it” (Year 3 student, Phase 2 focus group). This activity did not seem to be related to the unit of work, however the students did appear to be enthusiastic about it. Most of the conversation during the focus group discussion centred around activities that were worksheet based and the students’ understandings about money were still very similar to what they were prior to the unit implementation.

The children in the Year 1 focus group gave great detail about the activities they had experienced during the Bertie’s Socks unit. This comment synthesises a significant portion of the conversation: “We’ve been doing sheets about money and we’ve been making, guessing how much the size is, of the money and how heavy it is and what colour” (Year 1 student, Phase 2 focus group). The children were able to recall several of the activities from the unit and the mathematics involved, which is an indication that they were indeed engaged at some level. The students also spoke about some of their personal experiences in relation to money and shopping, so were beginning to make links between their classroom experiences and their life experiences. It is interesting that their teacher, Sally, did not appear to be aware that her students had been so engaged in the activities and were making links between home and school. Rather, her focus was on the technical aspects of the mathematics that was covered.
Following the two-day session, the teachers were left to work on the design of their new units of work, which were to be taught prior to Phase 3 of the project.

**Phase 3**

The two participating teachers, Sally and Lauren, designed individual units of work that were to address the specific needs and interests of their students. Although the entire staff of the school were exposed to professional development relating to financial literacy, only one other staff member decided to implement a small unit of work alongside the participating teachers. At the time of the final visit by the research team, Sally had completed teaching her unit of work and Lauren’s unit was in its final stages.

**Sally’s unit, Learning through Fundraising (Table 11).**

<table>
<thead>
<tr>
<th>Rationale:</th>
<th>As a result of teaching the MoneySmart unit I realised that for embedded learning to take place students need to be directly engaged in the money transactions for goods and services. The financial/mathematics unit I will create will have:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● a variety of experiences with money being exchanged for goods and services.</td>
</tr>
<tr>
<td></td>
<td>● purposeful Stage 1 Mathematics outcomes that will also enrich other relevant KLA outcomes programmed for this time.</td>
</tr>
</tbody>
</table>

| Unit Description: | This unit focuses on fundraising. Students will read (or be read) a big book story about fundraising and will be motivated to implement their own fundraising project. They will work through a range of engaging activities in order to explore the concept of fundraising and the important role that it plays in our society. Students will develop skills and values necessary to learn about fundraising and the benefits this may contribute to the development and wellbeing of society. They will explore the purpose and language of fundraising, the process and development of a fundraising product and the attributes of Australian coins. The class will plan and implement a small fundraising event to be held on Mission Day, (Friday of week 2, term 4, 2015) |

<table>
<thead>
<tr>
<th>Framework for Engagement with Mathematics:</th>
<th>High level of operative learning experiences will drive cognitive growth and affective learning based on the usefulness of tasks that will give them genuine value. Positive pedagogical relationships will result from the teacher’s enthusiastic modelling. Pedagogy will include task design that is:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● challenging</td>
</tr>
<tr>
<td></td>
<td>● differentiated so that all children achieve a level of success</td>
</tr>
<tr>
<td></td>
<td>● relevant to school’s current focus</td>
</tr>
</tbody>
</table>

**Table 11:** St Michael’s Deniliquin Year 1 Unit Description
Lauren’s unit, *Making Cents of Building* (Table 12).

### Rationale:
As a result of teaching the *MoneySmart* units I realised my students need more purpose and results from learning, and my students need more explicit links between aspects of maths and money.

In my own financial literacy unit I will: Provide activities that challenge and allow hands-on learning; Explicitly show the links between money and maths: Give purpose and results to their learning; Reflect with the children on their growth and understanding of money and maths; and Allow discoveries and constructive learning through inquiry tasks.

### Unit Description:
*Making Cents of Building* looks at the cost of creating something out of durable materials. This unit looks at design, costing, sourcing, and comparing to enable children to deepen their understandings of financial literacy, multiplication, measurement, data collection, and time. By the end of the unit students are able to create connections with the processes used for construction in real world scenarios and how financial literacy is required when deciding to construct or build something.

### Framework for Engagement with Mathematics:
- Interaction amongst students and between teacher and students is continuous through discussion and questioning techniques, particularly in the procedure of building and design process.
- The teacher models enthusiasm and an enjoyment of mathematics and has a strong pedagogical content knowledge particularly showing enthusiasm in the creation of the item and how this can demonstrate a positive message for the school.
- The teacher is aware of each student’s mathematical abilities and learning needs and styles and caters to these needs through supporting learning and catering to different learning styles to ensure engagement.
- Feedback to students is constructive, purposeful and timely through verbal and written feedback, as well as peer feedback through presentations and discussions on designs, graphs, and budgets.
- There is a substantial conversation about mathematical concepts and their application to life which is achieved through the links to building and designing within a real world context. The smaller scale design is then discussed and compared to building something larger like a house or skyscraper.
- Students are provided an element of choice through the student led unit and inclusion of surveying, discussing and designing all aspects within reason.
- Technology is embedded and used to enhance mathematical understanding through a student-centred approach to learning through the use of Google Apps for budgeting and researching elements of the unit.
- The relevance of the mathematics curriculum is explicitly linked to students’ lives outside the classroom and empowers students with the capacity to transform and reform their lives which is evident in the links between building things within the community. It also shows them the impact they can have in the school community by creating a buddy bench to help the children who need a friend.

### Table 12: St Michael's Deniliquin Year 3 Unit Description

**Integrating Mathematics with Financial Literacy**

Sally’s unit of work involved a trip to the local supermarket (Figure 8), and she was surprised at its success.
We had a great time when we visited the supermarket. They did some quite general research, finding things on shelves, and afterwards I realised we could have had twice as many questions. They were able to find things really quickly and the prices and that sort of thing (Sally, Phase 3 interview).

Sally’s unit integrated a range of mathematics in addition to the obvious content from the Number and Algebra strand. She talked about how she had integrated measurement through practical activities that were linked to the idea of fundraising “we were doing stretch the snake, and also tear the Minty”. These activities were highly engaging for the students and had purpose, as they were deciding on what activities they would use on Mission Day to raise money.

**Figure 8: Year 1 Students at the Supermarket**

In Year 3, Lauren was able to integrate a broad range of mathematics into her *Making Cents of Building* unit, which required her students to decide on a building project, then plan and build an object. “It included making surveys and finding interest levels and then working out how much we have to spend and what we’re going to design and then actually building” (Lauren, Phase 3 interview). The design aspect of the activities promoted the use of measurement and geometry, while the initial survey activities addressed content from the Probability and Statistics curriculum areas (Figure 9).

We talked a lot about budgeting and how to compare stores as well, so Mitre 10 versus Bunnings, and I think they had Masters and stuff and like talking about well we’re in a small town so why can’t we go to a Bunnings, because there isn’t a Bunnings around here. We have to get shipping costs and things, and talking about the limits and the comparisons and things
of: would it be worth getting something shipped from Bunnings when we could get it at Mitre 10, even though it's more expensive at Mitre 10? So for them, money wise, that opened their eyes a lot too-what challenges there is in different places? (Lauren, Phase 3 interview).

As with the other schools, the teachers at St Michael’s limited their discussion of the mathematics in their units to content, rather than a combination of content and processes.

Figure 9: Student Work Samples, Year 3, St Michael’s

Changes to Student Engagement with Mathematics

Although Sally’s Year 1 unit resulted in a successful Mission Day fundraising stall, Sally found it difficult to discuss any improvements in her students’ engagement with mathematics. However, she did talk about how her students enjoyed role playing and handling play money in preparation for the Mission Day activity. Although the students were able to raise money on the day they held their Bash the Jaffa stall, they did not get the opportunity to count the money they had raised as Sally believed the mix of denominations would have been a challenge for her students to count. Sally did comment on how the entire day’s activities were engaging for her students as they were able to spend their own money at stalls run by other students at the school. The learning they had via this financial literacy project would have enhanced that particular experience.
Interestingly, Sally’s students again appeared to have been more engaged than she realised. During their focus group the children were able to talk about many of the activities that took place during the unit. They talked about how parents had come into the school to help them learn about money and were able to articulate mathematical content they had learned, such as: “When there’s a dot in between the prices of the money that means that the end is cents and the start of it is dollars” (Year 1 student, Phase 3 focus group). The students also talked about participating in those activities had helped them to learn how important money is.

When asked about changes in the engagement of her students, Lauren talked about the practical nature of the unit and how that had given her students an opportunity to apply the mathematics they had learned earlier in the year. She also attributed increased engagement to her evolving methods of teaching.

*I think it comes down to my teaching. I’m doing a lot more hands on so the kids are more into it. I used their maths books I think once a week, if that, to actually write things down, and just the way, they’re more engaged because they know it’s not going to be boring. They know there’s different ways to learn* (Lauren, Phase 3 interview).

The culminating activity of Lauren’s unit was the construction of a ‘buddy bench’ for the school playground that students who could sit on, if they were feeling lonely. The intention was that other students’ would then talk to the student who had sat down, to promote inclusivity at the school. Lauren’s students indicated improved engagement as they discussed the various activities in the unit of work with comments such as these: “I liked surveying the other classes to see what they thought about the buddy bench” and “We got a big budget to spend. That was my favourite bit about making the buddy bench” (Year 3 students, Phase 3 focus group). The students were also able to apply their financial literacy learning to their own lives: “When you get older you have to make sure you can learn what’s a budget, how many dollars it is, how to save and how to trade” (Year 3 student, Phase 3 focus group).

*Highlights and Challenges of Implementing a Financial Literacy and Mathematics Unit of Work*

As always, there are highlights and challenges in any unit of work. In Year 1, Sally found it
hard to compare prices as part of her unit due to the size of Deniliquin and the limited choices for shopping. She also felt that there were aspects of her unit that would have been better suited to students in Year 2. On the other hand, Sally was impressed with how her students coped with the practical activities that took place at the supermarket, as described earlier. At the end of the project Sally indicated that if she was to replicate her work in future years, she would teach financial literacy towards the end of the year, when students were more likely to have the required skills.

As for Lauren, there were many highlights when teaching her unit of work. As a beginning teacher, this was the first opportunity Lauren had to design a mathematics unit that integrated content from various parts of the mathematics curriculum. It was also an opportunity to move away from the traditional teaching practice of using worksheets and teacher-centred activities.

The kids were really engaged, as soon as we talked about that we’re actually going to go and build something and actually went to go and measure the places and make surveys and things they realised it was actually happening, and that sparked a lightbulb off in them. So that was really good and it was good to see it all come together to be honest (Lauren, Phase 3 interview).

The biggest challenge Lauren experienced was in raising money to build the buddy bench: “that was a bit of a challenge to start with, to work out how we could still teach them the money aspect” (Lauren, Phase 3 interview). Luckily, Lauren had some funds left over from her class budget and was able to use this towards the cost of building materials, paint, etc. For Lauren, the highlights definitely outweighed the challenges, and the following quote illustrates the success of her unit of work from teaching and learning perspectives.

Seeing their faces, when they saw the buddy bench finally come in, and they’re asking so many questions: Can we paint it today? Is this how it’s going to look? What’s that for? What’s all this? and they were just so excited. Like I think the highlight for them would have been actually seeing it all come together and it’s not just a teacher saying oh we’re pretending to build this (Lauren, Phase 3 interview).
OVERALL RESULTS

The objectives of this study were to investigate if the use of contextualised financial literacy units of work could:

- Improve students’ engagement and achievement in mathematics; and
- Provide a foundation of financial literacy that will positively impact children’s lives, providing them with a more critical perspective of the importance of financial literacy in relation to well-being and life opportunities.

Four schools, each functioning within a unique, low-socioeconomic context, participated in the study and the findings have been presented as four separate case studies. This section will now present a synthesis of the findings across all four schools, including a reflexive account of the effectiveness of the financial literacy program that was the focus of the study. The results of the program, including developments in perceptions of financial literacy education and changes in student engagement with mathematics are now presented.

Changing Perceptions of Financial Literacy Education

Teaching

At the start of this study almost all of the participating teachers held a very shallow view of what financial literacy, as it related to primary school students, involved. For most, financial literacy related to understanding how to recognise and deal with our Australian currency system. Although our NSW K-10 Mathematics Syllabus (Board of Studies, 2012) includes aspects of money that are also linked to the General Capabilities, it does not provide any further detail to assist teachers in conceptualising the teaching of money and mathematics through a vehicle of financial literacy.

The ASIC MoneySmart teaching resources played an integral role in this study as it provided a foundation for the teachers to base their understandings of the place of financial literacy in the primary school curriculum. The inclusion of a professional learning session from the NSW MoneySmart officer along with the introduction of the National Consumer and Financial
Literacy Framework (ASIC, 2011) and the Framework for Engagement with Mathematics (FEM) (Attard, 20124) assisted greatly in orienting the teachers towards viewing financial literacy as an important tool to engage their students with mathematics.

One of the biggest challenges for the teachers at the start of this project, and arguably for most primary teachers, is the struggle to address the many components of the mathematics curriculum within the confines of their daily timetables. This struggle arises from the common perception that every outcome (in NSW) or Content Descriptor (from the Australian Curriculum) must be addressed as an individual topic. This often results in mathematical concepts being taught in an isolated manner, without any real context for students. A result of this is a negative impact on student engagement (Attard, 2014). Students fail to see how the mathematics relates to their real lives and how it is applied to various situations. They also fail to see the connections amongst and within the mathematical concepts.

This project allowed the participating teachers to explore how the curriculum could be delivered in a different way. By designing units of work that were directly responding to their students’ needs and interests, and taking advantage of their unique contexts, the teachers were able to see how mathematics could be taught in a more meaningful and engaging manner. After teaching and evaluating their units of work, the teachers’ perceptions of financial literacy had changed dramatically from the start of the project. Most of the teachers had never considered teaching money concepts through a financial literacy focus. They now understood the benefits of financial literacy education, embedded and acknowledged within mathematics teaching and learning. Matt, Kerri and Danielle, who had unintentionally incorporated some aspects of financial literacy through opportunities that arose incidentally could now see how they could document this incidental learning and align it with many aspects of the mathematical curriculum. The benefits of this approach that become apparent to the teachers in this project included:

• The ability to integrate mathematical concepts in a much more meaningful and purposeful way;
• A working smarter, not harder approach to teaching mathematics;
• Purposeful and active learning that improved students’ engagement with mathematics;
• Mathematics activities that were driven by student’s needs and interests resulted in students being more invested in their learning, and therefore were more willing to work harder; and
• Students were able to see the links between the mathematics they learned in the classroom, to their lives outside the school.

The project provided an important opportunity for the teachers to collaborate in order to plan their units of work. This enabled them to unpack the frameworks relating to financial literacy and engagement but also afforded them a rare opportunity for sustained collaboration due to the structure of the project and the time away from their classrooms that was allocated within the project funding. The teachers were able to support each other and provide important critical feedback throughout the duration of the study, allowing them to deepen their understanding of financial literacy education and mathematics.

Learning
Like the teachers, their students also developed different perceptions of financial literacy as a result of their participation in this project. At the beginning of the project, almost all of the focus group participants had a very narrow view of money and financial literacy that reflected how their teachers had taught money concepts. The one exception to this were the children from St Michael’s Primary School in Deniliquin, who seemed to have a deeper understanding of the importance of money and the power of money to influence life circumstances. The reason for this could be that several of the children came from farming families and actively worked with their parents on the family properties. Many of those children were also earning pocket money by completing household chores.

A common understanding amongst all of the children was that money is important for survival, that is, to pay for food, water and shelter. They also showed some understanding of the concepts of poor and rich. Another, perhaps more significant commonality amongst all of the participants was that they were all very interested in the topic of money and were able to link their discussions to their own lives. By the conclusion of the project, almost all of the children displayed a much more sophisticated understanding of money and financial literacy as a direct result of the contextualised units of work.
These units provided real-life experiences that required a much deeper interaction with money and mathematics, and therefore exposed the students to more complex concepts relating to financial literacy, money, and other curriculum areas. The activities experienced by the students within the project varied widely, and each of the units resulted in a culminating activity that had purpose and provided hands-on experience with a wide range of mathematical concepts.

**Financial Literacy and Mathematics**

During the initial student focus group discussions, the students were asked why mathematics is important. In every case, the children cited circumstances relating to the exchange of money as one of the main reasons that mathematics is important. It is interesting to note that although money is almost always the first thing that children appear to think about in relation to mathematics, the teachers in this project, and perhaps teachers in general, do not take advantage of students’ obvious interest in money to promote financial literacy as a way to access the wider mathematics curriculum.

This project provided an opportunity for the participating students and teachers to use financial literacy education as a tool to access mathematical concepts, critical thinking, and understandings of our currency system beyond the stated curriculum requirements (Appendix 1). These understandings included but were not limited to concepts relating to:

- Value for money
- Lending and borrowing
- Budgeting
- Profit and loss
- Interest rates
- Credit cards
- Mortgages
- Fundraising
- Production and manufacturing of currency
- Protection against counterfeit currency

As stated earlier, at the start of the project, the majority of participating teachers had only taught the very basic mathematics relating to money. That is, identification of our currency, computation with money, and other basic curriculum requirements. The units of work that
were designed required the students, in most cases, to access a much broader range of mathematical concepts that spanned across all three curriculum content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. Not only did the students learn more about money and financial literacy, they were able to learn and apply skills across the mathematics strands with purpose. This learning was further enhanced because it also addressed the General Capabilities from the curriculum.

One further observation was made in relation to the teaching of mathematics through financial literacy. In this study, when the teachers spoke about the mathematics their students had learned, the focus of each conversation was on the content aspects of the mathematics curriculum. There was little or no mention of the processes within the curriculum, the Working Mathematically components (proficiencies); problem solving, communicating, reasoning, understanding, and fluency. However, there was evidence that the units of work emphasised and promoted these processes and this was a significant contributing factor to the success of the units.

**Changes to Student Engagement with Mathematics**

Although the levels of engagement of the participating students varied widely at the commencement of this project, it is clear from the data gathered from the teachers and their students on completion of the project that their engagement towards mathematics improved as a direct result of their involvement with the contextualised units of work. The teachers attributed this improved engagement with the change in pedagogical practices required to teach units of work that were student-centred and focused upon the students’ needs and interests. Many of the units of work were focused on problem based learning which is in direct contrast to a traditional approach to teaching mathematics where content is taught in a teacher-centred manner.

The Framework for Engagement with Mathematics (Attard, 2014) proved to be a useful tool in supporting student engagement. The teachers used the Framework to assist in developing their units of work and as a tool for reflection and evaluation. During her final interview, Anne from Austral Public School made this statement that was representative of the general views
of all the teachers in the project: “A lot of what we did related directly to the Framework and that’s where I was getting such high levels of engagement...I was seeing an improvement and they wanted to learn these mathematical concepts” (Anne, Phase 3 interview).

From a research perspective, the Framework provided a useful lens for analysis to determine if the project had been successful. The following section is an alignment between several aspects of the FEM and this project and has been divided into two sections, Positive Pedagogical Relationships and Engaging Pedagogical Repertoires, reflecting the two critical foundations for engagement with mathematics. Examples are provided from the project to illustrate the ways that this project improved student engagement.

**Positive Pedagogical Relationships**

*Students’ backgrounds and pre-existing knowledge are acknowledged and contribute to the learning of others*

Throughout the project, students’ backgrounds and pre-existing knowledge played a critical role. This was particularly evident at Austral Public School, where the culminating event was the opening of a Money Museum, which came about as a direct result of the students’ interests. Very early in the project the students began to bring a range of foreign currency and old coins to school. Learning about money from other cultures and times had captured their imaginations and this interest eventually evolved into the unit of work based on developing and running an entire Money Museum. This interest was enhanced by a visit to the Money Museum run by the Reserve Bank of Australia in Martin Place, Sydney.

*The teacher is aware of each student’s mathematical abilities and learning needs*

An important activity in this project was the initial implementation of a MoneySmart unit of work to familiarise the teachers with financial literacy education. By implementing and evaluating these units, the teachers in the project were able to identify students’ learning needs and mathematical abilities in relation to money and financial literacy. The requirement to implement a MoneySmart unit of work had several benefits for all participants. First, it
provided professional learning for the teachers. Next, it gave the teachers an indication of students’ needs and interests. Finally, it gave some of the teachers a range of ideas that contributed to the design of their new, contextual units of work.

Interaction amongst students and between teacher and students is continuous

The very nature of the units of work and the move away from content driven mathematics lessons to context driven lessons promoted continuous interaction. An example of this occurred at Fairfield Public School where the Year 6 teacher Jacqui talked about the students regularly contacting her via email to discuss their work, in which they were developing a small business for their culminating activity, Market Day. The excitement generated by the many project activities at each of the schools also promoted interaction within the participating classrooms, amongst non-participating classrooms, and with the broader school communities.

The teacher models enthusiasm and an enjoyment of mathematics and has a strong pedagogical content knowledge

The requirement to design a unique, contextualised unit of work combined with the provision of time for teachers to work on the units away from class and the assistance of the research team resulted in a deeper level of commitment, enjoyment and enthusiasm to the teaching of financial literacy and mathematics. The students’ enthusiasm and engagement with the tasks ensured the teachers sustained their enthusiasm. The professional development that was provided and the opportunity and time to teach something new contributed to the development of the teachers’ pedagogical content knowledge in mathematics.

Engaging Pedagogical Repertoires

There is substantive conversation about mathematical concepts and their applications to life

This element of the FEM was evident in each of the participating classrooms because of the very nature of financial literacy and students’ awareness of the role of money in their lives. This was particularly important for the students in this study as the schools were all situated
in areas of low socioeconomic status. The project provided opportunities at each of the schools to develop deeper understandings of financial literacy and mathematical concepts. These opportunities were not typically present prior to this project because the teachers had not been exposed to financial literacy education and only viewed money in terms of the syllabus content descriptions.

*Tasks are positive, provide opportunity for all students to achieve a level of success and are challenging for all*

After introducing the *MoneySmart* units of work, several of the participating teachers in this study commented on how different aspects of the units did not meet the needs of their students in relation to either the content or the pedagogies. When implementing units of work that have been designed by others, it is usually an expectation that teachers will adapt aspects of the unit to suit individual needs. This being so, a unit of work that has been designed by the classroom teacher specifically for the unique group of students in that teachers’ class, should almost always have a greater impact on students’ learning and engagement. The data gathered from the teachers in this project indicate that their new units were challenging, and often addressed content beyond the curriculum requirements for the particular grade levels.

*The relevance of the mathematics curriculum is explicitly linked to students’ lives outside the classroom and empowers students with the capacity to transform and reform their lives*

This aspect of the FEM was perhaps the most influential contributor to the project’s success. Each of the units of work resulted in some type of action that required the students to handle money in some form. In several of the units, money was raised either to contribute to an event where the students would benefit, or to contribute to a charity. Some of the students participating in this study came from refugee backgrounds and/or were experiencing poverty. The opportunity to give back to the community was particularly empowering for this group of students.
The final summarising statement of the FEM clearly synthesises the results of this project in terms of the success of financial literacy as a tool to increase students’ engagement with mathematics and increase life opportunities.

Students are engaged with mathematics when:

- mathematics is a subject they enjoy learning;
- they value mathematics learning and see its relevance in their current and future lives; and
- they see connections between the mathematics learnt at school and the mathematics used beyond the classroom.

**Project Challenges**

With any project there are challenges, and this was no exception. The project began with three participating teachers at each of the schools. Unfortunately, at two of the schools, only two teachers remained in the project for the entire duration. One teacher from Austral decided to withdraw from the project due to heavy work commitments, and a teacher from St Michaels remained in the project but did not complete any of the activities and as a result no data could be collected from him or his students.

Another challenge related to the consistency of participation and commitment from the teachers involved in the project, particularly in relation to documenting the new units of work. As a result, the units that are published in the Appendices of this report are varied in the degree of detail and their format. One unit, from Fairfield Public School was not submitted although details of the class involvement are included in the school overview as the culminating activity was the combined Market Day, where all three class groups participated.

One of the initial plans of the project was that the participating teachers would work with other teachers in their schools to replicate the project activities on a smaller scale. It was hoped that a whole school approach would be adopted as a result. Unfortunately, this only occurred in one of the schools, St Columban’s Primary School at Mayfield, Newcastle. In this
school, every classroom teacher designed a new unit of work that was celebrated at the end of the project with a whole-school presentation to the wider community. At St Michael’s, Deniliquin, one other teacher designed and implemented a unit of work. At the remaining two schools, Fairfield and Austral Public Schools, the only new units of work were designed and implemented by the participating teachers. However, the culminating activities of the participating teachers did involve the whole school communities. At Fairfield, the entire school attended the Market Day, and at Austral, the entire school visited the Money Museum.

A final challenge faced by the research team was the difficulty in gaining useable data from the very young students in Years 1 and 2 who participated in the project. Students at that young age often find it difficult to articulate their thoughts and it was a challenge to conduct focus group discussions with such young students. It was also a challenge to implement financial literacy concepts beyond the mathematics curriculum requirements as students in Years 1 and 2 need to focus on basic understandings such as those prescribed in the syllabus document (Appendix 1). Although there is evidence that the students did benefit from their participation in the project, it is suggested that future projects on financial literacy be focused on students in Year 3 and upwards to gain maximum benefit.

**Dissemination**

One of the priorities of this project was to reach as many people as possible, and in this, it was successful. Aspects of the project were and are still being disseminated on a national scale. As detailed in Tables 13, 14, 15 and 16, each school directly disseminated information relating to the project in different ways. The numbers provided relate to the audience numbers that physically participated in the project events. The researcher also disseminated the project at a national level through social, television and radio media, as well as print media (Table 17).
### Austral Public School

**Direct Participants**
- Teachers: 2
- Students: 50

**Participants in Money Museum**
- Students (Austral): 300
- Teachers: 12
- Pre-School students and staff: 45
- Community members: 50

**Dissemination Strategies**
- School Newsletter (Appendix xx)
- Professional development videos on MoneySmart national website
- Conference Presentation Matt Thompson & Catherine Attard (MANSW K-8 Conference, 2/4/16)

**Table 13: Austral Public School Project Dissemination**

### Fairfield Public School

**Direct Participants**
- Teachers: 3
- Students: 63

**Participants in Market Day**
- Students: 483
- Teachers: 30
- Community members (approximate): 30

**Dissemination Strategies**
- Videos on MoneySmart national website

**Table 14: Fairfield Public School Project Dissemination**
### St Columban’s Catholic School

<table>
<thead>
<tr>
<th>Direct Participants</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>13</td>
</tr>
<tr>
<td>Students</td>
<td>152</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants in School Presentation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>150</td>
</tr>
<tr>
<td>Teachers (from neighbouring secondary school)</td>
<td>2</td>
</tr>
<tr>
<td>Community members (approximate)</td>
<td>30</td>
</tr>
</tbody>
</table>

**Dissemination Strategies**
- School Newsletter (Appendix xx)
- Article in Diocesan Newsletter

**Table 15: St Columban’s Catholic School Project Dissemination**

### St Michael’s Catholic School

<table>
<thead>
<tr>
<th>Direct Participants</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>2</td>
</tr>
<tr>
<td>Students</td>
<td>45</td>
</tr>
</tbody>
</table>

**Dissemination Strategies**
- School Newsletters (Appendix xx)
- Article in *Pastoral Times 5/5/2015* (Appendix xx)

**Table 16: St Michael’s Catholic School Project Dissemination**
**Dissemination via Researcher (Catherine Attard)**

<table>
<thead>
<tr>
<th>Blog posts published on Engaging Maths (engagingmaths.co)</th>
</tr>
</thead>
</table>

**Media:**
ABC Radio: Teaching Your Children About Money (Linda Mottram). 18th March 2015
Weekend Sunrise, Channel 7. 26th April 2015. Live interview with Andrew O’Keefe and Monique Wright.
Channel 7 News, 5th December, 2015, interviewed by Helen Wellings, featuring Fairfield Public School Market Day.
Professional Development Videos on MoneySmart website

**Conferences Presentations (to date):**

**Table 17: Researcher Dissemination (to date)**
CONCLUSIONS AND RECOMMENDATIONS

This pilot research project investigated whether students’ engagement with mathematics would improve if financial literacy education was integrated into the teaching and learning of mathematics within primary classrooms. This report has presented evidence that student engagement with mathematics and awareness of the importance of financial literacy for wellbeing and life opportunities did improve amongst the project participants.

The use of contextualised units of work, combined with teacher professional development in the areas of financial literacy, mathematics and student engagement resulted in a range of relevant and purposeful learning activities that appeared to have multiple benefits. Students were able to recognise the relevance of mathematics and its real life applications, and both students and teachers increased their knowledge and understanding of financial literacy. There were additional, unexpected benefits that included the teaching and learning of a much broader range of mathematical concepts that naturally integrated into the financial literacy units. The Working Mathematically components and the General Capabilities featured heavily in each of the contextualised units of work. However, the students gained much more than knowledge in this project; they improved their collaborative skills and gained a sense of agency by being able to use money they had earned or raised to assist other, more vulnerable members of their communities.

This pilot research project involved four unique school communities, each from a low socioeconomic area and although findings are limited to these schools, they may be useful to teachers working in similar contexts. Further projects that incorporate a larger number of targeted school communities would be beneficial, particularly in the middle years of schooling (Years 5 to 8), where students tend to disengage from school mathematics. To maximise community awareness of financial literacy education, expanding the research to schools from a range of socioeconomic areas would be beneficial and would provide important information relating to student perceptions of financial literacy and differences between students of high and low socioeconomic backgrounds.
RECOMMENDATIONS

• Financial literacy should play a more prominent role in school classrooms, to both improve engagement with mathematics and improve financial literacy. It would be beneficial if it was explicitly embedded into school curricula.

• The National Framework for Consumer and Financial Literacy should be promoted more widely in schools as a useful planning tool for teachers.

• The development of resources that specifically promote the benefits of financial literacy education through rich, real life tasks and from a mathematics curriculum perspective (depth and breadth of curriculum covered) is highly recommended.

• The MoneySmart resources require a critical review to ensure the pedagogies and topics reflect contemporary teaching and learning expectations, particularly in relation to timing of discussions, integration of practical activities and the incorporation of mobile technologies.

• It is recommended that this research project be replicated with a focus on the middle years of schooling (Years 5 to 8) as this may have a bigger impact on participating students in relation to both money and mathematics due to the students having more access to money and the more complex curriculum demands relating to money and financial mathematics.

• Future iterations of this project should promote collaboration between teachers at participating schools with off-site meetings as this was beneficial to the Sydney-based teachers in this pilot project.
REFERENCES


Human Capital Working Group, Council of Australian Governments.


APPENDICES

APPENDIX 1: Financial Literacy in the Mathematics Curriculum

FINANCIAL LITERACY IN THE CURRICULUM

NSW K-6 Syllabus (BOS, 2012)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Sub Strand and Outcome</th>
<th>Content relating directly to money/financial literacy and General Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>✨ Literacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>📘 Personal and social capability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>🌐 Intercultural understanding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>🧠 Critical and creative thinking</td>
</tr>
<tr>
<td></td>
<td>Other areas identified by BOSTES as important learning:</td>
<td>Work and enterprise</td>
</tr>
</tbody>
</table>

| ES1   | Whole Number MAe-4NA counts to 30, and orders, reads and represents numbers in the range 0 to 20 | • use the language of money  
• use the language of money in everyday contexts, e.g. coins, notes, cents, dollars ✨  
• recognise that there are different coins and notes in our monetary system ✨  
• exchange money for goods in a play situation (Problem Solving) 🌐  |

| S1    | Whole Number MA1-4NA applies place value, informally, to count, order, read and represent two- and three-digit numbers | Part 1  
• recognise, describe and order Australian coins according to their value (ACMNA017)  
• identify, sort, order and count money using the appropriate language in everyday contexts, e.g. coins, notes, cents, dollars ✨  
• recognise that total amounts can be made using different denominations, e.g. 20 cents can be made using a single coin or two 10-cent coins  
• recognise the symbols for dollars ($) and cents (c)  
Part 2  
• count and order small collections of Australian coins and notes according to their value (ACMNA034)  
• use the face value of coins and notes to sort, order and count money ✨  
• compare Australian coins and notes with those from other countries, e.g. from students' cultural backgrounds (Communicating) 🌐  
• determine whether there is enough money to buy a particular item (Problem Solving, Reasoning)  
• recognise that there are 100 cents in $1, 200 cents in $2  
• identify equivalent values in collections of coins and in collections of notes, e.g. four $5 notes have the same value as one $20 note |

98
<table>
<thead>
<tr>
<th>S2</th>
<th>Addition and Subtraction MA2-5NA uses mental and written strategies for addition and subtraction involving two-, three-, four- and five-digit numbers</th>
<th>Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• represent money values in multiple ways and count the change required for simple transactions to the nearest five cents(ACMNA059)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• calculate equivalent amounts of money using different denominations, e.g. 70 cents can be made up of three 20-cent coins and a 10-cent coin, or two 20-cent coins and three 10-cent coins, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• perform simple calculations with money, including finding change, and round to the nearest five cents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• calculate mentally to give change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Part 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• solve problems involving purchases and the calculation of change to the nearest five cents, with and without the use of digital technologies (ACMNA080)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• solve addition and subtraction problems involving money, with and without the use of digital technologies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• use a variety of strategies to solve unfamiliar problems involving money (Communicating, Problem Solving)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• reflect on their chosen method of solution for a money problem, considering whether it can be improved (Communicating, Reasoning)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• calculate change and round to the nearest five cents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• use estimation to check the reasonableness of solutions to addition and subtraction problems, including those involving money</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3</th>
<th>Addition and Subtraction MA3-5NA selects and applies appropriate strategies for addition and subtraction with counting numbers of any size</th>
<th>Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• create simple financial plans (ACMNA106)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• use knowledge of addition and subtraction facts to create a financial plan, such as a budget, e.g. organise a class celebration on a budget of $60 for all expenses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• record numerical data in a simple spreadsheet (Communicating)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• give reasons for selecting, prioritising and deleting items when creating a budget (Communicating, Reasoning)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>S2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fractions and Decimals MA2-7NA represents, models and compares commonly used fractions and decimals</td>
</tr>
<tr>
<td></td>
<td>• use one of the symbols for dollars ($) and cents (c) correctly when expressing amounts of money, i.e. $5.67 and 567c are correct, but $5.67c is not (Communicating)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fractions and Decimals MA3-7NA compares, orders and calculates with fractions, decimals and percentages</td>
</tr>
<tr>
<td></td>
<td>• solve word problems involving the addition and subtraction of decimals, with and without the use of digital technologies, including those involving money</td>
</tr>
</tbody>
</table>
### Australian Curriculum: Mathematics

**Sub-Strand: Money and Financial Mathematics**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Content Description</th>
<th>Elaborations and General Capabilities</th>
</tr>
</thead>
</table>
| 1     | ACMNA017 Recognise, describe and order Australian coins according to their value | • showing that coins are different in other countries by comparing Asian coins to Australian coins  
**Literacy, Numeracy, Critical and creative thinking, Intercultural understanding, Asia and Australia’s engagement with Asia**  
• understanding that the value of Australian coins is not related to size  
**Numeracy**  
• describing the features of coins that make it possible to identify them  
**Literacy** |
| 2     | ACMNA034 Count and order small collections of Australian coins and notes according to their value | • identifying equivalent values in collections of coins or notes, such as two five-cent coins having the same value as one 10-cent coin  
**Literacy, Numeracy, Critical and creative thinking**  
• counting collections of coins or notes to make up a particular value, such as that shown on a price tag  
**Literacy** |
| 3     | ACMNA059 Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents | • recognising the relationship between dollars and cents, and that not all countries use these denominations and divisions (for example Japanese Yen)  
**Critical and creative thinking, Intercultural understanding** |
| 4     | ACMNA080 Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies | • recognising that not all countries use dollars and cents, eg India uses rupees  
**Literacy, Intercultural understanding, Asia and Australia’s engagement with Asia**  
• carrying out calculations in another currency as well as in dollars and cents, and identifying both as decimal systems  
**Literacy, Numeracy, Information and communication technology capability, Critical and creative thinking** |
| 5     | ACMNA106 Create simple financial plans | • creating a simple budget for a class fundraising event  
**Literacy, Numeracy, Critical and creative thinking, Personal and social capability**  
• identifying the GST component of invoices and receipts  
**Literacy, Numeracy** |
| 6     | ACMNA132 Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies | • using authentic information to calculate prices on sale goods  
**Literacy, Numeracy** |
APPENDIX 2: AUSTRAL UNIT OF WORK *Money Museum*
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Financial Literacy Framework</th>
<th>Learning Experience</th>
<th>Assessment</th>
<th>Resources</th>
</tr>
</thead>
</table>
| Uses appropriate terminology to describe, and symbols to represent, mathematical ideas | - Explain some different forms that money can take.  
- Identify different forms of income.  
- Discuss some options for paying for goods and services such as: cash, debit card, credit card and direct debit | **What is money all about?**  
As a whole class, introduce the concept of what money actually is by watching the following video:  
http://www.britishmuseum.org/channel/kids/young_explorers_videos/video_a_history_of_money.aspx | Collect student work samples to determine student understanding of place value in relation to money. | ICT availability  
YouTube Clips  
Wordle Program |
| Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions | | | |
| Applies place value to order, read and represent numbers of up to five digits | | | |
| Orders, reads and represents integers of any size and describes properties of whole numbers | | | |

What is money all about?

As a whole class, introduce the concept of what money actually is by watching the following video:


After viewing the video, elicit discussion with students about what their definition of money actually is. Allow students approximately 5 minutes to discuss this in groups of 2-3 students. Share back thinking together as a class.

Discuss what students know about money and collate this information using a ‘Wordle’ that will be used as a reference point for future lessons. It is very important to ensure that students are provided with the opportunity to discuss the physical characteristics of money, different denominations that money has, how money is obtained and what money is used for.

Using their own devices students will visit the reserve bank of Australia website and using the link below will investigate the currency that is used in Australia:


Working in groups of 2-3 students, allow them time to explore the specific features of the Australian bank notes.

Explore students’ understanding of a ‘cashless society’ in which money is transferred electronically between various accounts and via systems such as EFTPOS – using credit or debit cards. It should be pointed out that ‘credit’ is not your money.

Revise the concept of **place value**, and demonstrate the link between place value in number and in money. Name and record some examples, such as:
What strategies did students use to partition the money amounts into each place value amount?

How is partitioning money similar to/different from working with numbers? What calculations were involved?

Compare and contrast the suggestions for what could be bought for the different amounts.

How reasonable were students’ suggestions?

Discuss the benefit of being able to rename amounts of money when calculating. For example: $13.25 \times 4$ can be handled mentally as $(10 \times 4) + (3 \times 4) + (20c \times 4) + (5c \times 4)$

1. Rewrite the following amounts to show the true value of each digit.
   The first one has been done for you.
   $78.35 = 70 + 8 + 30c + 5c$
   $27.85 = $
   $127.15 = $
   $30.45 = $
   $204.95 = $
   $103.05 = $

Uses appropriate terminology to describe, and symbols to represent, mathematical ideas

MA2-1WM

Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions

- Identify, explain and prioritise different needs and wants.
- Demonstrate awareness that family, community and socio-cultural values and customs can influence consumer behaviour and financial decision-making.

**Needs and Wants**

Revise the range of coins in the Australian currency using real/play money. Discuss how many of each are required before they can be traded for a coin of higher value—for example, five 20c coins can be traded for a $1 coin; four 5c coins can be traded for a 20c coin.

Discuss the concept of ‘small change’ and the disadvantages of carrying large quantities of coins in purses and pockets.

Explain that some people empty their small change into a jar every night as a method of saving.

Teacher models how to play the coin trading game. (Taken from *Money Smart* Teaching Unit: “Kieran’s Coin”)

**After the game**: Discuss whether the game relied on skill or chance.

✓ What does a player need to roll on the die to get to 2 dollars with the fewest number of throws?
✓ What coins would they collect and trade?

Collect work samples to determine students’ understanding and justification of different needs and wants

Anecdotal records/observations of students’ interactions while taking part in game.

**Bank Items**

Rep from Commonwealth Bank

Cardboard for Needs and Wants Poster

Coin Trading Game resources

iPads
<table>
<thead>
<tr>
<th><strong>MA3-1WM</strong></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Uses mental and written strategies for addition and subtraction involving two-, three-, four- and five-digit numbers</td>
<td>✓ How does this compare to what a player needs to throw to get to 2 dollars in the greatest number of throws?</td>
<td></td>
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<td></td>
<td>✓ How might the game change if the winner were the first student to collect $1.50 or 3 dollars?</td>
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<td></td>
<td>✓ Explain the benefit of trading multiple small denominations of currency for fewer, larger denominations.</td>
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<td></td>
<td>✓ Ask students to give examples of when this might occur in real-life situations.</td>
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<tr>
<td></td>
<td>✓ Shop assistants are trained to minimise the number of coins given in change to customers.</td>
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<tr>
<td></td>
<td>✓ Ask students to suggest why this might be.</td>
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<tr>
<td></td>
<td>✓ Did students recognise when to trade their coins?</td>
<td></td>
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<tr>
<td></td>
<td>✓ How well could students articulate what they were doing?</td>
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</tr>
</tbody>
</table>

There are many things that we would like to buy but we have to make some choices before we can spend our money. Explain to students that thinking about the difference between what we need and what we want can help us make good spending decisions.

Begin a class discussion on students’ understanding of the terms ‘needs’ and ‘wants’.

✓ Ask them to write a definition of each.
✓ Ask students to explain the types of things that they need and want.
✓ Create a simple ‘Needs and wants’ chart, and record students’ responses.

Ask students the question, what is an income? Identify some of the different sources of income that families have e.g. work. Ensure to include income not earned through working, e.g. pension, unemployment benefits, etc.

Is income the same each week or does it vary? E.g. weekly, fortnightly or monthly pay. Use teacher examples to clarify understanding. Discuss the different situations that can occur and the implications of these. Most
families have to plan carefully to not overspend or to have money left over (savings) after paying for everything they need.

Show students real life examples of bank card, bank statements, cheque book etc. Discuss student’s understandings of these items and clarify any misconceptions that children may have.

Ask kids to brainstorm a list of ways that people can keep their money safe? Ensure the term ‘bank’ is included in this list. Students write a simple description of what they think a bank account is and how it keeps money safe.

At the conclusion of this learning experience ensure to film kids talking about their understandings of money using the iPads (This will be archived to use at the opening of our very own money museum in Week 7 of Term 4)

Selects and uses appropriate mental or written strategies, or technology, to solve problems

Selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations

Checks the accuracy of a

| **Paid/Unpaid Work** | **Warm Up Activity:** Year 4/5 Six in a Row (Follow on from Experience one as well as helping in development of decimals)  
Year 3 – Six in a Row modified version

Vocab Focus – Allowance, spending money, paid work, unpaid work

Elicit discussion with students about what it actually means to be paid/unpaid? What are some examples of jobs/things people do to earn money/do on a voluntary basis?

Use the following questions to elicit discussion taken from, Money Cents: Lower Primary: Using Money, 2009

✓ What is pocket money? Does it have any other names? e.g. allowance, spending money.
✓ Is spending money the same or different to pocket money / allowance? Should you save some of the money?
✓ Often pocket money / allowance has a savings component built in while spending money is just that, for spending.
✓ Does everyone get pocket money / allowance? Note: Less than | Six in a Row Game sheet  
3 x 10 sided die per pair
Pencils
Paper
iPads |
Statement and explains the reasoning used **MA2-3WM**

Gives a valid reason for supporting one possible solution over another **MA3-3WM**

Applies place value to order, read and represent numbers of up to five digits **MA2-4NA**

Orders, reads and represents integers of any size and describes properties of whole numbers **MA3-4NA**

<table>
<thead>
<tr>
<th><strong>MA2-3WM</strong></th>
<th><strong>MA3-3WM</strong></th>
<th><strong>MA2-4NA</strong></th>
<th><strong>MA3-4NA</strong></th>
</tr>
</thead>
</table>

- half of all young people get some form of regular small payments from their parents.
- Who pays this money?
- Where does this money come from?
- How often do you think pocket money / allowance is paid? How often is spending money paid?
- Do children get money from anywhere else besides pocket money / allowance? e.g. gifts, being allowed to keep the change when buying something for their parents.
- What do they do with this money?
- What happens when someone doesn't have enough money to buy what they want?
- How do you think you could save for something that costs more than your regular allowance?
- The concept of saving for a sum larger than they receive regularly is an important one.
- Where and how could you safely keep the money you get?

At the conclusion of this learning experience ensure to film kids talking about money using the iPads (This will be archived to use at the opening of our very own money museum in Week 7 of Term 4)

**Museum Discussion**

**Vocab Focus** – Museum, Mint

Ask questions to emphasise that some people enjoy collecting coins:

- Why do some people collect coins?
- Why can coins from different countries be interesting?
- What do we call a person who collects coins? (a numismatist)

Students develop their understanding of museums. Record student Observation/Anecdotal records of students’ participation in discussion/group work.

Access to ICT Cardboard for list iPads
responses to the following three questions so that they can be referred to later on. If there are no responses to the following questions, explain and explore the concept of a museum. For example, exploring the Smithsonian Panoramic Virtual Tour
mnh.si.edu/panoramas/

Ask students the following questions and conduct a discussion with them:

✓ Who has been to a museum?
✓ What did you see at the museum you visited?
✓ What were the people who worked there doing?
✓ What did you do there?
✓ Why would someone visit a museum?

Refer to the recorded responses as students focus on the idea of a Money Museum.

✓ What might people see if they visited a Money Museum?
✓ What sort of information might visitors want to know about the money they see?

Some people work or volunteer at a museum. Can you think of the jobs that they do? Assist students to consider these jobs by reminding them of relevant recorded responses from above. Keep a list of responses to this question, either on cardboard or using a website like linoit.com (free registration required). If you are writing on cardboard, leave some space between each job, as the skills involved in each job will be added later. The advantage of using the website is that you can move information around as needed.

Your list should include the following examples:

✓ Collecting money from visitors
✓ Explaining the exhibits to the visitors
✓ Organising advertisements to encourage people to visit the
museum.

For each job on the list, ask: What skills will you need in order to do this job at our fundraising event? Make sure that the following skills are included:

✓ finding the value of a collection of coins and notes
✓ adding amounts of money together
✓ swapping coins and notes for other coins or notes
✓ calculating change
✓ calculating the total cost when buying more than one of an item.

Annotate your list with responses to these questions. This ‘Jobs and skills’ list will be referred to throughout the unit.

Read this list back to the class, explaining that they will have a chance to acquire this knowledge and develop these skills throughout the unit.

Re-cap with students that over the last couple of weeks we have been talking a lot about what money is and where money comes from. Tell the students that there has been another class in the school doing the same thing (3/4G; 3/4/5T). In week 7 of next term 3/4/5T and 3/4G are going to be opening an interactive Money Museum.

Inform them that students from Fairfield PS are doing lots of work around money and they are going to be opening up a school café in week 5 of next term. Establish links between both schools.

Inform kids at the conclusion of this lesson that we are in actual fact going on an excursion with the students from Fairfield PS to the Australian Mint in Sydney as well as with some other special guests/visitors.

At the conclusion of this learning experience ensure to film kids talking about money using the iPads (This will be archived to use at the opening of our very own Money Museum in Week 7 of Term 4)

<table>
<thead>
<tr>
<th>Uses appropriate terminology to describe, and</th>
<th>Create simple budgets for specific purposes</th>
<th>Loans</th>
<th>Collect student work samples to use to assess students’ skills</th>
<th>Access to ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus Group Summaries</td>
<td></td>
<td>Vocab Focus – Loan, interest, repayments, profit, budget, cost sheet, invest: Discuss these terms together as a class.</td>
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<tr>
<td>symbols to represent, mathematical ideas</td>
<td>MA2-1WM</td>
<td>Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions MA3-1WM</td>
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<tr>
<td>Checks the</td>
<td></td>
<td>Selects and uses appropriate mental or written strategies, or technology, to solve problems MA2-2WM</td>
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<td></td>
<td>• Accurately complete simple financial forms, including for online transactions • Order and discuss reasons for spending preferences • Apply consumer and financial knowledge and skills in relevant class and/or school activities such as student investigations, charity fundraising, business ventures and special events • Exercise a range of enterprising behaviours through participation in relevant class and/or school activities. • Use money to buy basic goods and services in ‘real-life’ contexts • Identify consumer and financial matters that are part of daily life such as earning money, spending, saving, paying bills, making donations • Use money to buy basic goods and</td>
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<td></td>
<td>Give students a substantial amount of time to research and investigate what is actually involved in setting up and running a Museum? Guide students by asking the following questions: ✓ How much money are we going to need to set up our museum? ✓ Where are we going to get the money to set it up from? ✓ Who are we going to borrow the money from? So we are going to be taking out a loan? ✓ What is this money going to be used for? Make connections to “Who else in society loans/borrows money?” “Who do these people go to, to get this money?” Get students to write a letter asking the principal to borrow money in the form of a loan to support the establishment of our class Museum. Organise for the principal to initially decline the request to borrow money. Get principal to inform the students that she cannot lend money without having all of the necessary documentation to support the application. Students will need to provide the following for the loan to be approved: ✓ Budget – How is the money going to be spent? ✓ Data/Graph – Showing how much people might be willing to spend to enter the museum? ✓ The purpose/reason why a museum needs to be established in our school community? Before we ask to borrow money we need to have a budget and data behind us so that the lender (Principal) will feel confident in lending us the money, because banks need to be sure that you will be able to pay back the money confidently. Show students the following YouTube clip and reinforce how banks/loans work. Allow students the opportunity to ask questions/clarify meaning/understandings.</td>
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<tr>
<td>Accuracy of a statement and explains the reasoning used</td>
<td><strong>MA2-3WM</strong></td>
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<tr>
<td>Gives a valid reason for supporting one possible solution over another</td>
<td><strong>MA3-3WM</strong></td>
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<tr>
<td>Uses mental and written strategies for addition and subtraction involving two-, three-, four- and five-digit numbers</td>
<td><strong>MA2-5NA</strong></td>
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<tr>
<td>Selects and applies appropriate strategies for addition and subtraction with counting numbers of any size</td>
<td><strong>MA3-5NA</strong></td>
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<tr>
<td>Uses mental and informal written strategies for multiplication and</td>
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<tr>
<td>services in ‘real-life’ contexts</td>
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<tr>
<td>• Explain how money is exchanged in return for goods and service.</td>
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<tr>
<td>• Identify, explain and prioritise different needs and wants</td>
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<tr>
<td>Make connections between banks/loans and the Principal being the bank manager, the person who is going to lend us money. Discuss as a whole class.</td>
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<tr>
<td>Division MA2-6NA</td>
<td>MA3-6NA</td>
<td>MA1-17SP</td>
<td>MA3-18SP</td>
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<tr>
<td>Selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation.</td>
<td>Identify simple ways the consumer decisions of individuals may impact upon themselves, their families, the broader communities and/or the environment.</td>
<td>Uses appropriate methods to collect data and constructs, interprets and evaluates data displays, including dot plots, line graphs and two-way tables.</td>
<td>Surveying the school Surveys: target audience, customers, sample, data</td>
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<td></td>
<td>Apply consumer and financial knowledge and skills in relevant class and/or school activities such as student investigations, charity fundraising, business ventures and special events.</td>
<td>Student analysis of data, including reflection and the creation of a graph.</td>
<td>As a class, have a discussion about the different exhibits the children observed/engaged in at the Currency Museum. Ask:</td>
<td></td>
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<tr>
<td></td>
<td>Demonstrate enterprising behaviours through participation in</td>
<td>Students survey questions</td>
<td>✓ What was your favourite exhibit?</td>
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<tr>
<td></td>
<td></td>
<td>Student analysis of data, including reflection and the creation of a graph.</td>
<td>✓ What did you like about it?</td>
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<tr>
<td></td>
<td></td>
<td>Access to ICT Surveys Pens/pencils</td>
<td>✓ How can we use this to help us to develop our museum?</td>
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</tr>
<tr>
<td></td>
<td>Prompt children to think about their target audience and who they are (peers from K-6, teachers and parents).</td>
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<td>✓ How can we make sure that our customers enjoy our museum?</td>
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<tr>
<td></td>
<td>Develop survey questions, for example:</td>
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<tr>
<td></td>
<td>✓ What would you like to see in a Money Museum?</td>
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<tr>
<td></td>
<td>✓ What would you find interesting in a Money Museum?</td>
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<tr>
<td></td>
<td>✓ What would you like to know about money?</td>
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<td></td>
<td>Have children discuss how they will interact with people when they are</td>
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</tbody>
</table>
### Conducting the survey and practising if necessary

Students then go in small groups to survey a sample of five children per class, as well as the classroom teacher. They read the survey results and record any common responses into categories, for example, money from different countries may be suggested five times, so record it with five tallies.

As a whole class, children share some common responses and these are recorded as categories on the board. Use a tally system to represent the results. Transfer the data into a Microsoft Excel spreadsheet. Have students identify and discuss any patterns they can observe in the data, including the most and least popular outcomes.

Use the results to represent the data in the form of a column graph, referring to the x and y axis and the importance of labelling these clearly. Analyse the data looking at the three most popular responses. Discuss and reflect:

- What does this mean for our Money Museum?
- How can we use this information to develop our exhibits?
- Where to from here?

### Order spending preferences and explain reasons for their choices

**Budgets**

Discuss what a budget is? What are they used for? How do we go about setting one up?

Explain the following:

- A **budget** is important as it helps us to know how much money we have.
- A **cost sheet** helps us to know how much each item costs.
- Together, the budget and cost sheets helps us to work out what we can afford to buy, and to plan efficiently and effectively.

Demonstrate how students can use the budget sheet and the cost sheet to calculate what they can buy/include in their Museum

Using an enlarged copy of the budget sheet, show students how they can use the sheet to keep a tally of their spending. This could be done on an

### Collect student budget proposals to determine their understandings of working within a budget and budgeting with a selected amount of money.
With students’ input, demonstrate one way the $1,000 could be spent. Show how the budget offers choices, and demonstrate how to keep within a budget by keeping track of the total as they go.

Have students select the facilities that they need for the Museum to take place and complete their own budget sheet within their group, ensuring that they can afford everything they want to include. Remind them that budgeting is important as it enables them to:

- make choices about what they can afford to buy
- not overspend
- be informed about their spending
- appreciate that everything has a value
- understand that the money they have can be used to achieve certain goals
- be smart with money.

In their collaborative learning groups, have students share how they spent their money to purchase things for our class Museum.

Discuss and brainstorm what we will need to buy based on the data from the surveys. Research prices of any resources required using the internet and again collate into a table, documenting the item, price, quantity and location. Calculate total expenditure as well as anticipated profit margin to ensure the budget is economically sound.

**Budgets Continued**

Model how to play the ‘Budgeting and saving’ game as a class activity (Money Smart Teaching)

| Interactive whiteboard. | Collect student work samples to determine students’ abilities to make accurate calculations and to modify the budget appropriately. |

| ✔ make choices about what they can afford to buy
| ✔ not overspend
| ✔ be informed about their spending
| ✔ appreciate that everything has a value
| ✔ understand that the money they have can be used to achieve certain goals
| ✔ be smart with money. |
Discuss whether the game relied on skill or chance. Talk about the results, particularly whether students were able to pay for their needs and acquire some savings.

- What decisions did students have to make?
- How important was it to earn enough to cover their needs?
- Share students’ outcomes to compare savings totals and earnings totals.
- What were the disadvantages of not having savings?
- Discuss the benefit of having savings as a buffer when unexpected expenses occur.
- What are some examples of unexpected expenses?
- Were students able to enter the appropriate numbers in their budget?
- How well did they articulate the link between earnings, paying for needs and the potential for saving?

Could students explain the advantages of including a savings component in a budget?

Reflect further on the game. You might like to discuss the difficulty of
Focus Group Summaries

Managing money when income fluctuates. There may also be an opportunity to discuss probability.

Whole group Sharing
Come back together as two classes and share the experiences from the data collection process and reflect on what the outcomes are, and where we need to move to next.

Convert the data into tables and graphs and analyse what these data mean. Come to a conclusion based on the data, record findings and conclusions in maths journals.

Discuss what we need to do, based on these findings. How will we cater to our target audience? How much will this cost?

Reflection (Capture with Video for Museum artefact)

<table>
<thead>
<tr>
<th>Working Mathematically:</th>
<th>Using the Classroom Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses appropriate terminology to describe, and symbols to represent, mathematical ideas <strong>MA2-1WM</strong></td>
<td>Ask the students to consider the space of the spare classroom. Discuss whether or not they think there will be sufficient space for the museum to be set up.</td>
</tr>
<tr>
<td>Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions <strong>MA3-1WM</strong></td>
<td>✓ How are we going to ensure that all of our agreed exhibits will fit into the designated space?</td>
</tr>
<tr>
<td><strong>Apply consumer and financial knowledge and skills in relevant class and/or school activities such as</strong> student investigations, charity fundraising, business ventures and special events</td>
<td>✓ What do we need to know how to do, in order for this to be a success?</td>
</tr>
<tr>
<td><strong>Demonstrate enterprising behaviours through participation in relevant class and/or school activities</strong></td>
<td>✓ Will we be using furniture, if so what will we use?</td>
</tr>
<tr>
<td><strong>Apply consumer and financial knowledge and skills in relevant class and/or school activities such as</strong></td>
<td>Invite students to think about how they will arrange the room into a museum and what they need to do in order to use the space to its maximum potential. Discuss different units of measure.</td>
</tr>
<tr>
<td>Collect student maps to assess student understanding of measurement concepts</td>
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</tbody>
</table>


Observation/Anecdotal records of students’ participation in discussion/group work.
| Selects and uses appropriate mental or written strategies, or technology, to solve problems **MA2-2WM** | Selects and applies appropriate problem solving strategies, including the use of digital technologies, in undertaking investigations **MA3-2WM** |
| Checks the accuracy of a statement and explains the reasoning used **MA2-3WM** | Gives a valid reason for supporting one possible solution over another **MA3-3WM** |

**Length:** Measures, records, compares and

| student investigations, charity fundraising, business ventures and special events | these on the map (birds eye view). Students also document measurements of tables and any other furniture that may be used in the exhibit. |
| Exercise a range of enterprising behaviours through participation in relevant class and/or school activities | Students investigate the best way to organise the room and furniture in order to meet the needs of the museum (i.e., maximum display space, whilst also ensuring enough room for the guests to move comfortably around the exhibits). When children feel they are happy with the layout, they add this to their sketch. Have children justify why this is the best possible layout for the museum. |

**Position:**
Explain to children that they will be developing maps of the museum for the visitors to take upon entry. Discuss the importance of using a scale and how this makes the map more accurate. Provide children with grid paper and explain that they will be transferring their sketches onto the grid as a map with a grid reference. They draw the spare classroom and the furniture as it will appear for the museum (year 4 and 5 to use a 1cm=1m scale).

Ask the students:
- Do we want a specific route that visitors to the museum need to take?
- What do other museums do?
- Why do they have their museum set up in this way?

Children will use the columns and rows to add a grid reference to their maps. Using these, children will write instructions for visitors to follow a specific route when they attend the museum.
estimates lengths, distances and perimeters in metres, centimetres and millimetres, and measures, compares and records temperatures

**MA2-9MG**

Selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length

**MA3-9MG**

Area:
Measures, records, compares and estimates areas using square centimetres and square metres

**MA2-10MG**

Selects and uses the appropriate unit to calculate areas, including
areas of squares, rectangles and triangles **MA3-10MG**

**Position:**
Uses simple maps and grids to represent position and follow routes, including using compass directions **MA2-17MG**

Locates and describes position on maps using a grid-reference system **MA3-17MG**

<table>
<thead>
<tr>
<th>Developing Exhibits</th>
<th>Collect student designed exhibits (posters, interactive activities that students design for museum)</th>
<th>Observation and anecdotal records of student reflections</th>
<th>Butchers paper</th>
</tr>
</thead>
</table>
| ▪ Recognise common symbols and terms used on a variety of Australian coins and notes  
▪ Recognise that different countries use different currencies |  |  | iPads |
| **How Australian Banknotes Are Made**
Show children the video ‘Making Plastic Money’ and discuss. Brainstorm any relevant words into a list titled ‘Banknotes’ on some butchers paper and discuss their meanings. Allow students to watch the video a second time and add to the brainstorm.

Reflect on the steps in the money making process and discuss these using the new terminology, referring to topic words. Explain to children that they will be documenting some information that will support them to develop an exhibit on how banknotes are made. In pairs, discuss the steps involved. Children write the steps using the ‘How Banknotes Are Made’ flowchart. |  |  | Making plastic money- video [https://www.youtube.com/watch?v=YTggA4jVPj0](https://www.youtube.com/watch?v=YTggA4jVPj0) |
| **How Banknotes Are Made** |  |  | How Banknotes Are Made- Worksheet |
|  |  |  | Making Money [http://www](http://www) |

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Play and pause the video, while they are recording the information.

Students are allowed time to type the information into a flowchart on Microsoft Word and research images, in order to develop posters for the Money Museum.

How Australian Coins Are Made
Show children the video ‘Making Money’ and discuss. Brainstorm any relevant words into a new list on the butchers paper, entitled ‘Coins’. Repeat the process from above using the ‘How Australian Coins are Made’ worksheet.

Money from Different Countries
Use Google images to show children pictures of money from specific countries, depending on the cultures of the students within the class. Discuss differences between currencies and how they work. Students choose a country of their interest to focus on and complete KWL charts, recording what they know about that country’s currency and what they would like to know. Children will research money from their chosen country and record any new learning on their charts. Students will be allocated ONE of the following topics.

- How are Australian Banknotes made?
- How are Australian coins made?
- Money from different countries

Roles and responsibilities
Students will work in groups of 3-5 to research and develop a range of displays collaboratively, in response to the identified interests of our target audience.

Topics for research may include:

- Coin design competition (optional-prize for the winner)
- Banknote design competition (optional-prize for the winner)
- Spot the difference activity (between a real and counterfeit note)
<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money from the past (timeline)</td>
<td></td>
</tr>
<tr>
<td>Aboriginal trade systems</td>
<td></td>
</tr>
<tr>
<td>Security features of money (use Reserve Bank of Australia website)</td>
<td></td>
</tr>
</tbody>
</table>

Students negotiate their roles and responsibilities within their groups e.g. research, scribe, draw, proofread and design features of their displays. They will research using an iPad, computers, texts, documents and images and organise their ideas on butchers paper, before composing their final displays on posters.

- Describe how advertising can influence consumer choices.
- Identify and explain how some influences, such as advertising and peer pressure, can affect what you buy.
- Identify key features of a range of advertisements

### Promoting the Event

Use the following questions to prompt student discussion around advertisements:

- What is the purpose and audience of the advertisement? How do you know?
- What sound effects or music does the commercial use? Do the sounds make it more exciting?
- Do you think the product could make you happy or popular?
- Consider why the particular actors were chosen for the advertisement. Do you think they really use the product?
- Does the product look bigger or better on TV than in real life?
- Does it work in the same way at home as it did on the commercial?

Help students to identify what gimmicks / tricks, the advertiser chose to match the purpose of the advertisement to its audience—for example, humour, promises, special offers, exaggerations, quotes, abbreviations, rhetorical questions.

Groups present their ideas back to the class. Children have the opportunity to revise their mind maps and add any new information to the mind map in a new colour.

Have students think about ways to encourage the community to attend the museum. Invite them to think of a time when they went to an event (school disco, concert, party). How did they find out about the event? (School newsletter, website, school biz app, word of mouth).

<table>
<thead>
<tr>
<th>The teacher to collect the students’ Mind map sheets and advertisements (posters) and assess the students learning.</th>
<th>Range of event advertisements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butchers paper</td>
<td>Textas</td>
</tr>
<tr>
<td>Event planning template</td>
<td></td>
</tr>
</tbody>
</table>
How will we promote the museum?  
What is the best way for this to happen?  
What is going to have the most impact on students/parents?  
What do we need to know to develop the most successful advertising campaign?

In groups, students analyse a range of event advertisements to ‘steal’ ideas and discuss the techniques/strategies used to persuade people to attend the event. They will create a mind map on butchers paper including all the things they have found that an advertisement needs, to be successful (date, location, event information, purpose of fundraiser, persuasive language, colourful imagery).

Groups present their ideas back to the class. Children have the opportunity to revise their mind maps and add any new information in a new colour.

Students to create poster billboards to advertise the Money Museum, taking into account all of the learning they encountered around the concept of advertising and persuading.

Some students to be responsible for advertising to the community – create advertisement for the fortnightly newsletter, talking to office staff to upload reminders on the school website as well as on the school app.

| Addition and Subtraction: Uses mental and written strategies for addition and subtraction involving two-, three-, four- and five-digit numbers MA2-5NA | Selects and applies | Getting ready for the opening day: Use this session to help students complete all the aspects of this unit of work. Explain that they need to be ready for the grand opening of their Money Museum in the next session

The Money Museum will be open for one week with the opportunity for all students in the school to attend.

Students will be responsible for taking classes through the museum, explaining, sharing and communicating to them, the different aspects of the museum. They will also be responsible for getting classes involved in the different activity stations set up, with the purpose of getting them Observation and anecdotal records of students’ interactions during the opening of the museum to assess student learning and understanding of what they have learnt by completing this unit. |
### Multiplication and Division:

- Uses mental and informal written strategies for multiplication and division *MA2-6NA*
- Selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation *MA3-6NA*

### Behaviours through participation in relevant class and/or school activities

- **Exercise a range of enterprising behaviours through participation in relevant class and/or school activities**

### Talking about money and seeing the importance that money plays in our lives.

Throughout the museum being open, students will participate in a range of games and activities involving money, including addition and subtraction with coins, concepts about banking, problem solving and dice games.

### Unit Evaluation Questions

- What have been the highlights of this unit?
- What have been the challenges faced in this unit?
- What feedback has been received from students/parents/the wider community in relation to this unit?
- What improvements have been made to students’ engagement with mathematics?
- Where there any unexpected outcomes in relation to the mathematics taught?
- What strategies were addressed in relation to student diversity, in regards to students’ needs?
- What have been some useful tools/resources used throughout the unit?
APPENDIX 3: FAIRFIELD PUBLIC SCHOOL COMBINED UNIT OF WORK Year 2 Three Little (and not so little) Piggies Made a Market

Project Name: Financial Literacy Mathematics Unit - Three Little (and not so little) Piggies Made a Market

Goal: Run a market day that helps us develop skills in consumer and financial literacy and mathematics where the profits are donated to charity.

Rationale for combined unit

<table>
<thead>
<tr>
<th>2H</th>
<th>By teaching the MoneySmart unit ‘Kieren’s Coin’ I learnt...</th>
<th>Based on this I will...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● students enjoyed high operative work in a real life context</td>
<td>● have students work with real money in a school-based financial literacy event</td>
</tr>
<tr>
<td></td>
<td>● more capable and confident students became experts to other</td>
<td>● create learning experiences and opportunities to practise using mathematical skills</td>
</tr>
<tr>
<td></td>
<td>students which assisted all in understanding challenging</td>
<td>and vocabulary in a fun and supportive environment</td>
</tr>
<tr>
<td></td>
<td>mathematical concepts</td>
<td>● provide opportunities for my students to be mentored by a buddy class which has</td>
</tr>
<tr>
<td></td>
<td>● students did not respond to theoretical work they did not value</td>
<td>greater understanding of mathematics and financial literacy</td>
</tr>
<tr>
<td></td>
<td>● financial literacy learning can benefit from responding to the money</td>
<td>● design relevant learning that encourages students to be immersed in</td>
</tr>
<tr>
<td></td>
<td>and maths interests of the learners</td>
<td>mathematical experiences that enable them to see the relevance of school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mathematics in their everyday life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● develop the language to discuss financial literacy and maths learning ideas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● plan with engagement and the Australian Curriculum, Assessment and Reporting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Authority (ACARA) General Capabilities at the forefront of our work</td>
</tr>
</tbody>
</table>

| 3/4M | By teaching the MoneySmart unit ‘Shoebox of Love’ I learnt... | Based on this I will... |
|      |----------------------------------------------------------|------------------------|
|      | ● student knowledge was limited to the value of coins and notes and | ● develop the appropriate language to discuss financial literacy and mathematical |
|      |    limited in understanding the link between place value and money |    concepts and create learning experiences where students have multiple |
|      | ● students did not respond or engage in learning they did not value |    opportunities to practise using the vocabulary |
|      | ● consideration needs to be given to the money and maths interests  | ● design learning opportunities that encourage the students to see the relevance of |
|      |    of the learners when planning financial literacy learning     |    mathematics taught in the classroom in their everyday life |
|      |    opportunities                                              | ● ensure learning is scaffolded to support the learning of all students |
|      | ● students need more opportunities to practise new vocabulary   | ● have students work with ‘real’ money in a school-based financial literacy event |
|      | ● students need to further develop their skills to identify and  |    (market day) |
|      |    prioritise needs and wants and compare their needs of others to their own |
|      | ● students were empathetic towards the needs of other           | ● ensure ACARA General Capabilities - Personal and Social Capabilities and Creative |
|      |    ‘underprivileged’ children and understood the importance of giving|    and Critical Thinking and Mathematics Proficiency strands (Working |
|      |                                                             |    Mathematically) are at the forefront of planning of learning opportunities |
From teaching *MoneySmart* I learnt that...
- students enjoyed high operative work in a real-life context (e.g. games)
- students did not respond to theoretical work they did not value
- students lacked the vocabulary to participate in learning around financial literacy
- students are more receptive to challenge when they see learning as useful
- finding the affective response to mathematical and financial learning often requires trial and error
- financial literacy learning can benefit from responding to the interests and needs of the learners related to money and maths

Based on this we will...
- have students work with real money in a school-based maths financial literacy event
- develop the language to discuss financial literacy ideas and maths learning concepts and skills
- plan with engagement and the Australian Curriculum, Assessment and Reporting Authority (ACARA) General Capabilities at the forefront of our work
- provide task design for students to be mentors and communicate their knowledge about mathematics and financial literacy
- design relevant learning that encourages students to be less resistant to challenge in mathematics
- design across a range of maths proficiencies and content areas

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### Financial and consumer literacy links

<table>
<thead>
<tr>
<th></th>
<th>2H</th>
<th>3/4M</th>
<th>6T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and</td>
<td>• recognise Australian money</td>
<td>• explain some different forms that ‘money’ can take</td>
<td>• explain how financial transactions can involve using more than notes and coins</td>
</tr>
<tr>
<td>Understanding</td>
<td>• identify and describe the differences between needs and wants</td>
<td>• identify, explain and prioritise different needs and wants</td>
<td>• explain how money can be borrowed to meet needs and wants and there may be a cost involved</td>
</tr>
<tr>
<td>Competence</td>
<td>• use money to buy basic goods and services in ‘real-life’ contexts</td>
<td>• use money to buy basic goods and services in ‘real-life’ contexts</td>
<td>• use a range of methods and tools to keep financial records in ‘real-life’ contexts</td>
</tr>
<tr>
<td></td>
<td>• identify consumer and financial matters that are part of daily life</td>
<td>• create simple budgets for specific purposes</td>
<td>• create simple budgets for a range of purposes</td>
</tr>
<tr>
<td></td>
<td>• compare the cost of similar items</td>
<td>• classify and compare goods and services</td>
<td>• evaluate the value of a range of goods and services in a variety of ‘real-life’ situations</td>
</tr>
<tr>
<td></td>
<td>• describe how advertising can influence consumer choices</td>
<td>• identify key features of a range of advertisements</td>
<td>• identify key features used in advertising, marketing and social media to influence consumer decision making</td>
</tr>
<tr>
<td>Responsibility</td>
<td>• apply consumer and financial knowledge</td>
<td>• apply consumer and financial knowledge and</td>
<td>• apply consumer and financial knowledge and</td>
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</table>
Engagement - Year 2
This unit of work addresses the following aspects of substantive engagement:

*High cognitive challenge*: Students are cognitively challenged throughout this unit by high expectations, the navigation of teamwork and social skills, making choices, utilising the abilities of their peers and high level reflection practices. Students regularly reflect on how challenging learning is, what they are learning, how they feel with particular tasks and what the teacher can do to better support their learning needs.

*Highly operative*: Students are “in-task” as they chose the culminating event of holding a market day, collaborate with others, researched their product, designed advertisements as well as having chosen where to donate their money. Students value learning in mathematics as the skills and understanding needed to be successful at the market day are now necessary to help them achieve their goals.

*High affective response*: This unit of work is designed around student interest, as being provided choice and agency in learning leads to high affective responses in learners. Students deeply value the opportunity to give back to others in need, and as such, care deeply about their work. Students are encouraged to embrace risk-taking as a pivotal part of learning, and these moments are regularly celebrated as part of daily classroom culture.

Stage 1 Outcomes:

**Mathematics**
- Communicating: MA1-1WM describes mathematical situations and methods using every day and some mathematical language, actions, materials, diagrams and symbols
- Problem Solving: MA1-2WM uses objects, diagrams and technology to explore mathematical problems
- Reasoning: MA1-3WM supports conclusions by explaining or demonstrating how answers were obtained
- Whole number: MA1-4NA applies place value, informally, to count, order, read and represent two- and three-digit numbers
- Addition and Subtraction: MA1-5NA uses a range of strategies and informal recording methods for addition and subtraction involving one- and two-digit numbers
● **Multiplication and Division:** MA1-6NA uses a range of mental strategies and concrete materials for multiplication and division

● **Fractions and Decimals:** MA1-7NA represents and models halves, quarters and eighths

● **Data:** MA1-17SP gathers and organises data, displays data in lists, tables and picture graphs, and interprets the results

**English**

● **EN1-1A** communicates with a range of people in informal and guided activities demonstrating interaction skills and considers how own communication is adjusted in different situations

● **EN1-2A** plans, composes and reviews a small range of simple texts for a variety of purposes on familiar topics for known readers and viewers

● **EN1-3A** composes texts using letters of consistent size and slope and uses digital technologies

● **EN1-4A** draws on an increasing range of skills and strategies to fluently read, view and comprehend a range of texts on less familiar topics in different media and technologies

● **EN1-6B** recognises a range of purposes and audiences for spoken language and recognises organisational patterns and features of predictable spoken texts

● **EN1-8B** recognises that there are different kinds of texts when reading and viewing and shows an awareness of purpose, audience and subject matter

● **EN1-10C** thinks imaginatively and creatively about familiar topics, ideas and texts when responding to and composing texts

● **EN1-12E** identifies and discusses aspects of their own and others’ learning

**Science**

● **Working Scientifically:** ST1-4WS investigates, questions and predicts by collecting and recording data, sharing and reflecting on their experiences and comparing what they and others know

● **Working Technological:** ST1-5WT uses a structured design process, everyday tools, materials, equipment and techniques to produce solutions that respond to identified needs and wants

● **Products:** ST1-16P describes a range of manufactured products in the local environment and how their different purposes influence their design

**HSIE**

● **SSS1.7** Explains how people and technologies in systems link to provide goods and services to satisfy needs and wants

**PDHPE**

● **DMS1.2** Recalls past experiences in making decisions.

● **INS1.3** Develops positive relationships with peers and other people.

● **PSS1.5** Draws on past experiences to solve familiar problems.

● **SLS1.13** Recognises that their safety depends on the environment and the behaviour of themselves and others.
<table>
<thead>
<tr>
<th>Year</th>
<th>Learning goal / intended outcome</th>
<th>Outcomes</th>
<th>Assessment</th>
<th>Overview of Learning Experience</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 and 6</td>
<td>I explain what fundraising is, why people want to fundraise and what happens when people donate money.</td>
<td>EN1-1A INS1.3</td>
<td>Reflection: What is fundraising? Discuss with a thinking partner and record responses on a mini whiteboard, sharing with the whole class. (Were students able to clearly explain fundraising?) Frayer Model work sample (Year 6)</td>
<td>Watch Kid President video and discuss: “What can we do that’s “awesome”? How can we help other people?” Explain that one possible way of helping others is to provide, either by donating or fundraising. Students work with a thinking partner to research what fundraising and donating mean (using at least two different sources and synthesising the information) and complete a frayer graphic organiser using Google Docs and iPads. Discuss the benefits of fundraising. Watch Starlight Foundation video and discuss: What happens to people who fundraise? How does it make them feel? What happens for the people who benefit from donation? How does it make them feel?</td>
<td>Kid President - How To Change The World: <a href="https://youtube/4z7gDsSKUmU">https://youtube/4z7gDsSKUmU</a> Starlight video: <a href="https://youtube/yt0aulSMuUo">https://youtube/yt0aulSMuUo</a> iPads, Google Doc shared with students</td>
</tr>
<tr>
<td>2 and 6</td>
<td>I share ideas about how we could fundraise. I share my ideas about an organisation I would like to contribute to, justifying</td>
<td>EN1-1A INS1.3</td>
<td>How do students communicate? How do they support others in their groups? Do they negotiate, compromise and problem solve?</td>
<td>Brainstorm ideas - what could we do to raise money and who could we raise money for? <em>(Refer to MoneySmart program - Pancakes can make a difference. Activity 7 Let’s plan our event)</em> Students investigate and propose an appropriate fundraising event for the class to develop. They explore the main purpose of, and cause for the fundraiser and elements such as product, event, price and target.</td>
<td><a href="https://www.everydayhero.com/au/blog/">https://www.everydayhero.com/au/blog/</a></td>
</tr>
<tr>
<td>2 and 6</td>
<td>I think critically about the ideas gathered, considering the feasibility of each idea and how much I care about each one.</td>
<td>EN1-1A ST1-5WT INS1.3</td>
<td>How do students communicate? How do they support others in their groups? Do they negotiate, compromise and problem solve?</td>
<td>Analyse ideas from brainstorm - which are you most passionate about? Which are the most feasible to carry out at school (with the space and resources we have available to us?) Decide upon an idea. ** (allow for student interest. At our school, students came to the idea of having a market day where they would run small businesses, selling a variety of products or services with all proceeds going to charity).</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I share my ideas during a group brainstorm. I plan for appropriate food items to be sold at our market day.</td>
<td>MA1-1WM MA1-3WM MA1-17SP EN1-1A EN1-12E ST1-5WT INS1.3</td>
<td>Do students pose suitable questions that will elicit categorical answers and gather the data? Use tally marks to assist with data collection (Communicating)</td>
<td>(Refer to MoneySmart program - Pancakes can make a difference. Activity 7 Let's plan our event) Read ‘Ava makes a difference’. Explain that the purpose of the text is to help students learn more about fundraising and how the class decided to raise money through selling pancakes. Emphasis how the opportunity to run their own fundraising event helped to develop the students’ necessary skills and values to do so. In small groups, students brainstorm possible food products that they could make and/or purchase that would be practicable in running their market stall, taking into consideration conflict of interest with products already sold from the school canteen. Students report back to the class making their suggestions and recording their ideas on the IWB. Make a tally of products that are mentioned more than once to identify the most popular.</td>
<td></td>
</tr>
<tr>
<td>2 and 6</td>
<td>I explain why market</td>
<td>MA1-1WM</td>
<td>Watch excerpt from My Kitchen Rules episode of School Lunch challenge and discuss:</td>
<td>MKR episode link <a href="https://www.youtube.com/watch?v=MKR_episode_link">https://www.youtube.com/watch?v=MKR_episode_link</a></td>
<td></td>
</tr>
</tbody>
</table>

[Digital book - Ava makes a difference](https://s3-ap-southeast-2.amazonaws.com/mst-resources/ava-makes-a-difference/index.html) 
[Paper Pencils Canteen menu](https://www.youtube.com/watch?v=MKR_episode_link)
| Research is important and share some questions that I need to ask | MA1-17SP, EN1-1A, ST1-5WT | “Were all teams successful in selling their products? Why were some teams a more popular choice than others? What was included in their product advertising? Why was one particular team not successful? What suggestions could you follow to make sure your group is successful?”

Introduce the notion of market research and product testing. Refer back to MKR episode and discuss the need to test assumptions and gather data to make informed choices regarding their market stall.
- once you have an idea, you need to ask some questions to test its validity
- design a survey and gather data to find out

| I determine what data to gather in order to investigate the favourite food product from our proposed list. I collect data about our market day through questioning. I use tally marks to assist with data collection. | MA1-1WM, MA1-3WM, MA1-17SP, EN1-1A, ST1-5WT, ST1-16P, DMS1.2, SLS1.13 | Are students active participants in conversations? Do they actively listen, question, contribute ideas, clarify meaning, develop supporting arguments and share evaluations? Did students appropriately record down responses to collect their data?

Which of our food items are likely to be most successful?
Jointly construct a survey to gather data from customers (students and teachers) to finalise which of the products we will make.

Discuss:
- What information is needed from our customers? (preferred business name, favourite food product)
- When and how will we collect our data?

Use role-play to practise the act of surveying - explaining the purpose of our project, asking questions, counting and recording down votes, collating tally marks, interpreting the data.
Finalise the questions to be asked, type up in a Word document, print out the survey and divide students into 7 groups with each group assigned to a grade.

| I represent data in a picture graph. | MA1-1WM, MA1-3WM, MA1-17SP, EN1-1A, ST1-5WT, ST1-16P, DMS1.2, SLS1.13 | 2. What did our data reveal?
Have each group report their survey responses to the class. Record the most popular food choice from each class’s response in a table on Microsoft Word.

Survey

Survey

Completed surveys

Completed surveys

Grid paper

Completed surveys

Completed surveys

Completed surveys
I describe data displayed in simple tables and picture graphs created by other students.

I analyse our data and draw conclusions by using my skills in: collaborating, critical thinking, questioning.

I use success criteria to improve the quality of my work and help the work of my peers.

---

| 2 | I work cooperatively to research and explore different sources of | EN1-1A  
EN1-2A  
EN1-8B  
ST1-5WT  
SSS1.7 | Use a double entry journal and add to growing KWL chart | Money, money, money!  
a). Student’s brainstorm everything they know or want to know about money by recording this information on a K-W-L chart.  
b). After researching they will fill in the last column writing what they have learned. | Butchers paper  
Non-fiction books on money  
iPads  
MA1-17SP  
EN1-1A  
ST1-5WT  
ST1-16P | own work.  
Student’s representation of the data displayed in picture graphs.  
Do students interpret data to identify the most popular choice from their target market? | Support students in analysing these data, drawing conclusions about:  
• What are the most popular food choices overall?  
• What did we discover from this survey process?  
• Are there any recommendations we would make for next time?  
• What will we do as a result of our data?  
• How else can these data be represented?  
Support students in representing data in a picture graph  
• What information do graphs need, to increase how easily others can make meaning from them?  
  • Create a success criteria for creating graphs and use this to self and peer assess the graphs  
• How do graphs help us communicate information we have gathered?  
Present picture graphs to Year 6 buddy class and inform them what we discovered from surveying the school about our possible food choices.  
From our list of most popular food choices, narrow down the list to one food item we can make, taking into consideration:  
  - the preparation of the food (ingredients, method, utensils, electrical appliances, supervision required)  
  - the ability to easily make large quantities of the food product |  
Rulers  
Pencils |
In small groups, students use non-fiction books from the library and iPads to research websites (as shown in the resources list) to find the answers to some of the questions brought up in the discussion about what they want to know about money.

Some focus questions may include:
- What is money and where does it come from?
- How does money work?
- What are the different forms of money we use?
- What’s the difference between a need and a want?
- Why is money “charged” for things?

What kind of money will we be working with on Market Day?

Have students then share their ideas to the class, outlining what they already know and what they wonder about money. Record these ideas on butcher’s paper and display in the classroom.

| 2 | I engage in conversations and discussions, using active listening behaviours, showing interest, and contributing ideas, information and questions. | I use my estimation skills and the information | **Formative assessment** | **Planning for the fundraiser event:**

**Identifying materials**
In small groups students consider what they will need to make their chosen product and record their ideas on mini whiteboards.

Drawing on the information they have gathered from listening and observing, select students to identify what will be needed.

List the materials that will be required, confirming what students have listed and identifying anything that might have been missed (research recipe to check ingredients). For example, selling pancakes, they will need:
- pancake ingredients (self-raising flour, caster sugar, eggs, milk, vanilla essence)
- butter
- maple syrup
- serviettes

**Setting a price**
Next, help students estimate the cost of each of the items required to make the fundraising product and from this information work out a realistic price for selling the product. | EN1-1A  
EN1-3A  
ST1-5WT  
ST1-16P  
SLS1.13  
MA1-1WM  
MA1-2WM  
MA1-3WM  
MA1-4NA  
MA1-5NA  
MA1-6NA  
MA1-7NA |
| **Mini whiteboards** | **Woolworths online website** | **http://encyclopedia.kids.net.au/page/au/Australian_dollar**  
Focus Group Summaries

Provided to offer a reasonable selling price.

<table>
<thead>
<tr>
<th>2 and 6</th>
<th>I explain what we've been learning in a way my buddy can understand.</th>
<th>EN1-1A</th>
<th>What have we been learning in our own classes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>What have we been learning in our own classes?</strong></td>
<td></td>
<td>Have students work with the buddies to discuss what they've been learning about, noting down ideas on mini whiteboards. Small groups share back to the whole group, particularly focussing on food safety standards, locations, time, space and equipment available at school.</td>
</tr>
<tr>
<td>2</td>
<td>I use my problem solving and maths skills to work out how much we need to borrow to be able to launch our business.</td>
<td>MA1-1WM MA1-2WM MA1-3WM MA1-4NA MA1-5NA MA1-6NA MA1-7NA EN1-1A</td>
<td>How do we work out how much money we need to borrow?</td>
</tr>
<tr>
<td></td>
<td><strong>How do we work out how much money we need to borrow?</strong></td>
<td></td>
<td>Explain that as we have finalised what our product/service will be for Market Day, we now need to work out how much money we need to borrow so we can run our business. As a business, we want to go to Market Day with a high likelihood of making profit, and, if we plan effectively, we can increase our chances of being able to contribute to a charity by making profit.</td>
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<td></td>
<td></td>
<td></td>
<td>Have students look back on the list of ingredients and items needed to make pancakes. Revise estimated total cost to make pancakes and the intended selling price. Invite the teacher’s aide who runs Breakfast Club to talk to the class about her experience with making pancakes as one of the options for</td>
</tr>
</tbody>
</table>

- Use the Woolworths website to help estimate costs of the items. Look back at the pancake recipe and identify how many pancakes are made using the quantities of ingredients. Divide the total cost of the ingredients by the amount of pancakes to be made, to get an estimation of how much 1 pancake costs. Factor in the extra costs as well such as maple syrup, butter and serviettes to add to this total cost.
  - How much does it cost to make 1 pancake?
  - How much can you reasonably sell each pancake for?
  - Introduce the term ‘profit’

**Setting a target**
Discuss the likelihood of who will buy the pancakes. Will it be other students in the school, teachers, and/or parents?
- Estimate how many people might buy a pancake and therefore what the target would be for the fundraiser, i.e. how much money do we plan to make?

2 and 6 I explain what we've been learning in a way my buddy can understand.
<table>
<thead>
<tr>
<th>2</th>
<th>I collaborate with my group to create advertisements to persuade people to purchase from our market stall.</th>
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<tbody>
<tr>
<td><strong>EN1-4A</strong>&lt;br&gt;<strong>ST1-5WT</strong>&lt;br&gt;<strong>ST1-16P</strong>&lt;br&gt;<strong>SLS1.13</strong></td>
<td>Breakfast, how she estimates the quantities needed to make enough pancakes for students and the cost of purchasing the ingredients.&lt;br&gt;<em>Teacher’s aide to purchase our list of ingredients and cook the pancakes for us on Market Day utilising the BBQ facilities.</em>&lt;br&gt;From the above information - ask students how they can use this information, combined with the market research, to work out:&lt;br&gt;● how much money they think they need to borrow and why&lt;br&gt;● how many pancakes they should aim to make and why&lt;br&gt;● estimate/predict how many pancakes they think are likely to sell&lt;br&gt;● what the selling price might be</td>
</tr>
<tr>
<td><strong>Promoting the event</strong>&lt;br&gt;<strong>What is advertising? What makes a good advertisement?</strong>&lt;br&gt;Refer to Activity 12: Advertising the event from Ava makes a difference.&lt;br&gt;Gather advertisements from the local community, shopping brochures and television advertisements to use as examples of how a persuasive poster works.&lt;br&gt;As a class, discuss what students could do to make sure that the school knows about their fundraising event. Brainstorm ways that they could do this. Using the big book as a prompt, have students explore how the class in the big book promoted the pancake event.&lt;br&gt;- Remind students that the purpose of the fundraiser is to persuade people to give money to a cause in order to make a difference. As a class, jointly construct a poster including important information such as the date, time, cost and purpose of the fundraising event. If you have access to an interactive whiteboard, use this to construct your poster and demonstrate the use of different fonts, colours, etc.&lt;br&gt;- Ask the class to brainstorm a list of phrases they would use to engage the audience to want to come to the fundraiser. Consider rhymes, jingles and raps to engage the target audience. Discuss what important information should be presented and jointly construct success criteria.</td>
<td></td>
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<tr>
<td><strong>A range of advertisements</strong>&lt;br&gt;Digital book - Ava makes a difference&lt;br&gt;<a href="https://s3-ap-southeast-2.amazonaws.com/mst-resources/ava-makes-a-difference/index.html">https://s3-ap-southeast-2.amazonaws.com/mst-resources/ava-makes-a-difference/index.html</a>&lt;br&gt;Art paper&lt;br&gt;Crayons&lt;br&gt;Textas&lt;br&gt;Pencils&lt;br&gt;iPads</td>
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</table>
|   | Do they communicate clearly? | - In small groups, students design a poster for the class fundraising event. Prompt students to think about who will see the posters and what students want them to think when they read it.  
- Consider the purpose and audience, forms of media - posters, digital films.  
- Each group present their poster to the class. The posters can be displayed around the school in the lead up time to the fundraising event.  
- In the lead up to the fundraising event, students in their small groups make a digital advertisement using the iMovie app on iPads to promote the Market Day event and have this shared on the whole school messaging system. |  
|---|---|---|---|
| 2 | **I contribute to the plan for Market Day, discussing all the things we need to consider to successfully run our business.** | **Success criteria**  
* I think carefully about Market Day, imagining it from the time school starts until we go home for the day.  
* I contribute ideas to the class about how Market Day will run  
* I listen carefully to the ideas of others  
* I consider the different type of roles we will take and how this contributes to working as a team. | **How can we organise ourselves for success?**  
Remind students of the reason they are running their business and brainstorm all the things that they need to do in the lead-up to Market Day. This may include promoting their product, customer service skills, setting up, packing away, what they are going to wear, how they will decorate their stall, etc. Discuss safety and planning considerations. Use the following points to support this discussion.  
- Who will help on the day of the event?  
  Who will attend to the cooking of the pancakes and supervise money exchange? Teacher’s aide to attend to the making of pancakes and use of electrical appliances and cooking on the bbq. Teachers to supervise the exchange of money and service of pancakes.  
- How will the money be collected?  
  Orders will be placed with cashier, cashier to exchange money and relay order to students serving the pancakes.  
- Will change be needed before you start selling?  
  What is a float? Why is it needed? What do we need in our float?  
- How will we ensure our products meet food safety standards?  
  - tongs  
  - note home regarding allergies  
  - students identified as having an allergy wear wrist-band at the event  
- Is everyone clear what their role on the day will be?  
  Design a roster to organise the roles and responsibilities of students on the day. Roles include: cashiers, serving of pancakes and rovers to allow for a break time and to visit other stalls set up for Market Day.  
Planning sheet to record down answers |
| 2 and 6 | I support my buddy in practising for Market Day by role-playing positive and negative experiences as a business owner. | EN1-1A MA1-1WM MA1-5NA | Year 6 and Year 2 students work together to role play Market Day:  
- Greeting and looking after customers  
- Making the product at the moment of sale  
- Attracting customers if you don’t have any  
- Mentally calculating change |
|---|---|---|---|
| 2 | MA1-1WM MA1-2WM MA1-3WM EN1-1A EN1-12E ST1-5WT ST1-16P DMS1.2 INS1.3 PSS1.5 SLS1.13 | Market Day Eve!  
Organise everything needed for Market Day. You may like a checklist of equipment needed, a run sheet of timing and specific jobs, organise business uniforms (chef hats) and decorations and practice “what to do if…” scenarios. | Roster / job roles  
A4 paper - 2 per student to make chef hats |
| 2 | MA1-1WM MA1-2WM MA1-3WM | Market Day!  
Students run Market Day. | --- |
<table>
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<th></th>
<th>3WM MA1-5NA MA1-6NA EN1-1A ST1-5WT ST1-16P DMS1.2 INS1.3 PSS1.5 SLS1.13</th>
<th>How much profit were we able to make? Provide students with information regarding their money, shopping receipts and float details.</th>
</tr>
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<tr>
<td>2</td>
<td>I explain the most efficient way to count the money we earned by using efficient strategies. I jointly contribute to calculating and explaining how much profit our team made for charity.</td>
<td>Sitting in a circle, display the money on the floor and ask students to estimate how much money they think is in front of them and also have students estimate how much profit they think they’ve made. Provide post it notes for students to record down their mathematical thinking.</td>
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<td>MA1-1WM MA1-2WM MA1-3WM MA1-4NA MA1-5NA MA1-6NA EN1-12E</td>
<td>Randomly select two students at a time to count each coin individually, by strategically placing them for efficient counting to take place (e.g. skip counting can be used to count several coins of the same denomination; fives for 5c coins and 20 cents in stacks of five to allow counting by the dollar). This also allows other students to easily check their calculations, and, is the most efficient way to calculate their earnings. Have another student record on a mini whiteboard the total for each denomination. Then add all the amounts together to get the overall total.</td>
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<td>In small groups, students work together to add all the denominations together to get the total amount of cash presented. Groups reports back to the class and work together to check the mathematical thinking and to confirm the answer.</td>
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<td></td>
<td>Next, students jointly share their problem solving strategies to subtract the float and the cost of ingredients from the total cash presented.</td>
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</table>
Students to check their post it notes to see if anyone was close in their estimations.

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<thead>
<tr>
<th></th>
<th>Activities</th>
<th>Students</th>
<th>Notes</th>
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<tbody>
<tr>
<td>2</td>
<td>I share my reflections regarding Market Day, justifying my opinion by using a range of sources of evidence.</td>
<td><strong>Reflections</strong>&lt;br&gt;Were we successful?&lt;br&gt;Analysed the running of our stall on Market Day.&lt;br&gt;Discuss questions such as:&lt;br&gt;● How do you feel about what you achieved?&lt;br&gt;● What did you learn about fundraising and running a business?&lt;br&gt;● How did this project help you see that mathematics is a useful thing to know about?&lt;br&gt;● How did it feel to raise money so that you could give back to someone else?&lt;br&gt;● What would you do differently if you were to be involved in another Market Day business?&lt;br&gt;● What are you most proud of?</td>
<td><strong>Giving back to charity</strong>&lt;br&gt;Provide students the opportunity to decide where they wish to donate their funds and why. In this case, students chose to donate all their profit to the Cancer Council. We emailed the charity to explain what we had been involved in, why we decided to raise funds, how we had selected their charity to donate our money raised and to find out what was the most effective way to give them the money raised.</td>
</tr>
<tr>
<td>2</td>
<td>I plan how to spend our money raised towards a charity event.</td>
<td></td>
<td>Cancer Council website</td>
</tr>
</tbody>
</table>
### APPENDIX 4: FAIRFIELD PUBLIC SCHOOL UNIT OF WORK Year 6 *Three Little (and not so little) Piggies Made a Market*

The introductory information pertaining to this unit is presented within the Year 2 unit (Appendix 3)

**Engagement - Year 6**

This unit of work addresses the following aspects of substantive engagement:

*High cognitive challenge*: Students are cognitively challenged by this unit of work through high expectations, work of high intellectual quality, the navigation of teamwork and social skills, making choices, utilising the abilities of their peers and high level reflection practices. Students regularly reflect on how challenging learning in, what they are learning, how fluent they feel with particular tasks and what the teacher can do to better support their learning needs.

*Highly operative*: Students are “in-task” as they chose the culminating event of holding a market day, chose teams, designed products and services as well as having chosen where to donate their money. Students value learning in mathematics as the skills and understanding needed to be successful at market day are clearly shown to be necessary to help them achieve their goals.

*High affective response*: This unit of work is designed around student interest as being provided choice and agency in learning leads to high affective responses in learners. Students deeply value the opportunity to give back to others in need, and as such, care deeply about their work. Students are encouraged to embrace frustration and mistake-making as a pivotal part of learning, moments that are regularly celebrated as part of daily classroom culture.

**Stage 3 Outcomes:**

**Mathematics**

- **Communicating**: MA3-1WM describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
- **Problem Solving**: MA3-2WM selects and applies appropriate problem solving strategies, including the use of digital technologies, in undertaking investigations
- **Reasoning**: MA3-3WM gives a valid reason for supporting one possible solution over another
- **Whole number**: MA3-4NA orders, reads and represents integers of any size and describes properties of whole numbers
- **Addition and Subtraction**: MA3-5NA selects and applies appropriate strategies for addition and subtraction with counting numbers of any size
- **Multiplication and Division**: MA3-6NA selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation
- **Fraction and Decimals**: MA3-7NA compares, orders and calculates with fractions, decimals and percentages
- **Area**: MA3-10MG selects and uses the appropriate unit to calculate areas, including areas of squares, rectangles and triangles
- **Mass**: MA3-12MG selects and uses the appropriate unit and device to measure the masses of objects, and converts between units of mass
- **Data**: MA3-18SP uses appropriate methods to collect data and constructs, interprets and evaluates data displays, including dot plots, line graphs and two-way tables
English
- EN3-1A communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features
- EN3-2A composes, edits and presents well-structured and coherent texts
- EN3-5B discusses how language is used to achieve a widening range of purposes for a widening range of audiences and contexts
- EN3-7C thinks in ways that are imaginative, creative, interpretive and critical
- EN3-9E recognises, reflects on and assesses their strengths as a learner

Science and Technology
- Working Scientifically: ST3-5WT plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints
- Products: ST3-16P describes systems used to produce or manufacture products, and the social and environmental influences on product design

PDHPE
- DMS3.2 Makes informed decisions and accepts responsibility for consequences
- INS3.3 Acts in ways that enhance the contribution of others in a range of cooperative situations
- PSS3.5 Suggests, considers and selects appropriate alternatives when resolving problems
- SLS3.13 Describes safe practices that are appropriate to a range of situations and environments

Learning Program - Year 6

<table>
<thead>
<tr>
<th>Year</th>
<th>Learning goal / intended outcome</th>
<th>Outcomes</th>
<th>Assessment</th>
<th>Overview of Learning Experience</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 &amp; 6</td>
<td>I explain what fundraising is, why people want to fundraise and what happens when people donate money.</td>
<td>EN3-1A INS3.3</td>
<td>Reflection: What is fundraising? Discuss with a thinking partner and record responses on a mini whiteboard, sharing with the whole class. (Were students able to clearly</td>
<td>Watch Kid President video and discuss: “What can we do that’s “awesome”? How can we help other people?” Explain that one possible way of helping others is to provide, either by donating or fundraising. Students work with a thinking partner to research what fundraising and donating mean (using at least two different sources and synthesising the information) and complete a frayer graphic organiser (see the following table) using Google Docs and iPads Discuss the benefits of fundraising. Watch Starlight Foundation video and discuss:</td>
<td>Kid President - How To Change The World <a href="https://youtu.be/4z7gDssKUmU">https://youtu.be/4z7gDssKUmU</a> Starlight video: <a href="https://youtu.be/ytoauiSMuUo">https://youtu.be/ytoauiSMuUo</a> iPads, Google Doc shared with students</td>
</tr>
<tr>
<td>2 &amp; 6</td>
<td>I share ideas about how we could fundraise. I share my ideas about an organisation I would like to contribute to, justifying why.</td>
<td>EN3-1A INS3.3</td>
<td>Frayer Model work sample</td>
<td>What happens to people who fundraise? How does it make them feel? What happens for the people who benefit from donation? How does it make them feel?</td>
<td>Brainstorm ideas - what could we do to raise money and who could we raise money for? (Refer to MoneySmart program - Pancakes can make a difference. Activity 7 Let's plan our event) Students investigate and propose an appropriate fundraising event for the class to develop. They explore the main purpose of, and cause for the fundraiser and elements such as product, event, price and target.</td>
</tr>
<tr>
<td>2 &amp; 6</td>
<td>I think critically about the ideas gathered, considering the feasibility of each idea and how much I care about each one.</td>
<td>EN3-1A ST3-SWT INS3.3</td>
<td>How do students communicate? How do they support others in their groups? Do they negotiate, compromise and problem solve?</td>
<td>Analyse ideas from brainstorm - which are you most passionate about? Which are the most feasible to carry out at school (with the space and resources we have available to us?) Decide upon an idea. ** (allow for student interest. At our school, students came to the idea of having a Market Day where they would run small businesses, selling a variety of products or services with all proceeds going to charity).</td>
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</tbody>
</table>
| 6 | I share my ideas during a group brainstorm. I contribute positively to my group by: | EN3-1A EN3-9E ST3-SWT INS3.3 PSS3.5 | What do you know about running a business? What skills and knowledge as a mathematician do | **What businesses can you imagine?** Use design thinking / ideation processes from [http://notosh.com/lab/come-up-with-great-ideas/](http://notosh.com/lab/come-up-with-great-ideas/) Someone facilitates the room and keeps time.  
- everyone stands up  
- Provide a large sheet of paper to write on  
<table>
<thead>
<tr>
<th>Focus	Group	Summaries</th>
<th>you need when running a business?</th>
<th>Explain the rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>* listening to the ideas of others&lt;br&gt;*sharing my ideas&lt;br&gt;*justifying my opinion&lt;br&gt;*compromising to support my group&lt;br&gt;*ask clarifying questions&lt;br&gt;*think positively about the ideas of my peers&lt;br&gt;*help people in my group feel good about their work</td>
<td>(Using a double-entry journal, ask students to write down all the things they currently know about running a business. As new learning occurs, add to the 2nd column, having students explain what they’ve learnt, providing examples and specifics.)</td>
<td>(a) Write everything down in a numbered list&lt;br&gt;(b) You only have 10 minutes, so work fast&lt;br&gt;(c) Do not discuss the ideas just get them recorded</td>
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</table>

Look at the ideas created. As an individual, give each team member five stickers to vote on the ideas they personally prefer, and see if any team favourites emerge.

As a group, rank each of the stickered items a score out of 10 for feasibility, uniqueness and personal passion to further shortlist ideas.

Share back with the class, seeking feedback and further suggestions.

### 2 & 6

I explain why market research is important and share some questions that I need to ask

| MA3-1WM<br>MA3-18SPEN3-1A<br>ST3-5WT | Watch excerpt from My Kitchen Rules episode of School Lunch challenge and discuss:  
“Were all teams successful in selling their products? Why were some teams a popular choice than others?, What was included in their product advertising?, Why was one particular team not successful?, What suggestions could you follow to make sure your group is successful?”  
Introduce the notion of market research and product testing.  
Refer back to MKR episode and discuss the need to test assumptions and gather data to make informed choices regarding their market stall.  
• once you have an idea, you need to ask some questions to test its validity  
• design a survey and gather data to find out | MKR episode link [https://www.youtube.com/watch?v=OBVs1Sm3hQI](https://www.youtube.com/watch?v=OBVs1Sm3hQI) |

### 6

I think logically and strategically about

| MA3-1WM<br>MA3-3WM | Are students active | 1. Which of our ideas are likely to be most successful?  
Students design a survey to gather data from their customers to finalise which |
the data I need to collect and how I will collect it. This will help me ensure I am likely to make a profit so that I can contribute to my chosen charity.

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<th>Focus</th>
<th>Group</th>
<th>Summaries</th>
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<td>142</td>
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</table>

I analyse our data and draw conclusions by using my skills in: collaborating, critical thinking, questioning, and synthesising.

I explain which form of graph best suits our data set and why. I use success criteria to improve the quality of my

| MA3-18SP | MA3-1WM | MA3-3WM | MA3-18SP成功criteria of graphs and application in own work |
| ST3-5WT | ST3-1A | EN3-1A | ST3-1WM |
| ST3-16P | ST3-5WT | MA3-18SP | DMS3.2 |
| DMS3.2 | SLS3.13 | MA3-1WM | SLS3.13 |

of their products and services to continue working on.

Discuss:
- What information is needed from our customers?
- Who will collect our data from?
- How can we think strategically (like mathematicians) to ensure our data are not skewed?
- Where, when and how will we collect our data?

Finalise the questions to be asked and the strategic plan for data collection (e.g. 6 people from each year group, 3 male and 3 female plus 6 teachers during lunch on Tuesday using a Google Form) and create the survey.

<table>
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<th>of their products and services to continue working on.</th>
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<tbody>
<tr>
<td>Discuss:</td>
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<td>- What information is needed from our customers?</td>
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<td>- Who will collect our data from?</td>
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<tr>
<td>- How can we think strategically (like mathematicians) to ensure our data are not skewed?</td>
</tr>
<tr>
<td>- Where, when and how will we collect our data?</td>
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2. What did our data reveal?

Convert data from Google Form into an excel spreadsheet. Demonstrate how to analyse data and convert information in a spreadsheet into graphs as well as applying formulas to calculate totals. Support students in analysing their own data, drawing conclusions about:

- What conclusions can we draw from our data?
  - What did we discover?
  - What recommendations would we make?
  - What will we do as a result of our data?
- What information do graphs need to include, to increase how easily others can make meaning from them?
  - Create success criteria for creating graphs and use these to self and peer assess graphs
- What graph is the best visual representation of our data and why?
  Compare the various graphs that can be created from a spreadsheet such as a pie graph, column graph and dot plot, discussing the

<table>
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<td>Focus</td>
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<td>-------</td>
</tr>
<tr>
<td><strong>143</strong></td>
</tr>
</tbody>
</table>
| **work and help the work of my peers.** | **positives and negatives for each representation** | **3. What do we need to know about running a business?**
Using reciprocal teaching, students work in small groups to read an excerpt from "Money: How to make it, save it and spend it". Have students discuss the text and explain how this information may be useful to them as entrepreneurs.

Brainstorm possible problems they may encounter as business partners and how they may handle them. Create success criteria for working in a business partnership that all students agree upon and have students sign as a contract. This can be built upon and used to support students in refocusing attention on learning and the challenge on hand.

Use expert jigsaw to research about food safety standards, and, what our constraints are (time, financial, equipment, space) to share with Year 2 buddies.

Finally, brainstorm a business name. |
| **I use information in the text I have read and the information provided by my peers to explain what I need to know about running a business.** | **Are students using “an integrated range of skills, strategies and knowledge to read, view and comprehend text”?**
Do students contribute to success criteria? Do they use criteria to enhance own work? | **4. What exactly is money?**
Students divide into expert groups to work on a chosen area of interest, researching using a shared Google Doc to come to a shared conclusion about what money is. Mini focus questions could include:
  - What is money and where does it come from?
  - How does money work?
  - What are the different forms of money we use? Which are most convenient, most open to theft, etc.?
  - Why is money “charged” for things?
  - What’s the difference between a need and a want?
  - How can money be borrowed?

What kind of money will we be working with on Market Day? |
| MA3-1WM MA3-3WM EN3-1A ST3-SWT ST3-16P DMS3.2 SLS3.13 | | **“Money: How to make it, save it, spend it”, reciprocal teaching proforma**

http://www.abc.net.au/btn/story/s3840215.html
http://www.abc.net.au |
<table>
<thead>
<tr>
<th></th>
<th><em>other people make meaning from the information I provide</em></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 &amp; 6</td>
<td>I explain what we’ve been learning in a way my buddy can understand.</td>
<td>EN3-1A</td>
<td>What have we been learning in our own classes? Have students work with the buddies to discuss what they’ve been learning, noting down ideas on mini whiteboards. Small groups share back to the whole group, particularly focusing on food safety standards, locations, time, space and equipment available at school.</td>
</tr>
<tr>
<td>6</td>
<td>I use my problem solving and maths skills to work out how much we need to borrow to be able to launch our business.</td>
<td>MA3-1WM MA3-2WM MA3-3WM MA3-4NA MA3-5NA MA3-6NA MA3-7NA EN3-1A EN3-3A ST3-5WT ST3-16P SLS3.13</td>
<td>Student work samples - are they able to work out how much money they need and justify why they are using data from their research? Can they work out how many of each item they need, a cost price for their product and a reasonable selling price? 1. How do we work out how much money we need to borrow? Part A Explain that as we have finalised what our product/service will be for Market Day, we now need to work out how much money we need to borrow so we can run our business. As a business, we want to go to Market Day with a high likelihood of making a profit, and, if we plan effectively, we can increases our chances of being able to contribute to a charity by making this profit. Have students list all of the individual items they need for each product. For example, if I was making milkshakes, I would need milk, ice-cream, flavouring, cups, straw, ice-cream scoop, blender and food hygiene gloves. I would also need fridge space, freezer space and access to a power point. Students list each item and research price and size options. Ask students how they can use this information, combined with the market research, to work out: • how much money they think they need to borrow and why • how much of each item they think they need and why • estimate/predict how many items they think they are likely to sell • what they’re selling price might be 2. How do we work out how much money we need to borrow? Part B Having looked at student work samples from previous lesson, respond</td>
</tr>
<tr>
<td>6</td>
<td>I apply my skills in: problem solving</td>
<td>MA3-1WM MA3-2WM</td>
<td>Do students use the co Example of cost analysis</td>
</tr>
</tbody>
</table>

Example of cost analysis
This matters because a detailed costing increases our likelihood of success on Market Day and our ability to give back.

Students were encouraged to estimate first. Then, students used the nutritional label to try to work out the answer to their problem before using the concrete materials to check their thinking.

Explain to students that the detailed analysis is the sort of plan we need, to be successful at Market Day. Brainstorm what we need to work out and how we might do it. In our case, students worked out how big a serving size would be for every paying customer. Students then work on a number of problems in small groups and using the jigsaw structure, share their learning and the process they undertook in expert groups. The problems were things such as:

- How many serves of corn do you get from a 1kg bag? How much does one serve cost? What other expenses are there?
- How many serves of smarties per bag? How much does one serve cost? What other expenses are there?
- How many serves of sprinkles per bag? How much does one serve cost? What other expenses are there?
- How many serves of sour lollies per bag? How much does one serve cost? What other expenses are there?
- How many serves of soft drink per bottle? How much does one serve cost? What other expenses are there?

Provide students with a detailed cost analysis and an example that is similar to those students produced (see table below). Ask the students to examine both examples and list the similarities and differences between them. Share back with the whole class and list their ideas, adding any others as required.

Students were encouraged to estimate first. Then, students used the nutritional label to try to work out the answer to their problem before using the concrete materials to check their thinking.

### Table

<table>
<thead>
<tr>
<th>Work sample</th>
<th>Grid paper</th>
<th>Range of objects for comparison of surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>as above</td>
<td>as above</td>
<td>as above</td>
</tr>
</tbody>
</table>

3. **How do we work out how much money we need to borrow? Part C**

_Having looked at student work samples from the previous 2 lessons, respond according to areas of need. In this case, students needed to apply their learning to their own business and finalise their costings. It was also revealed we needed_
| 6 | I explain our advertising plan and how it will encourage people to purchase from our business. | EN3-2A EN3-5B EN3-7C EN3-9E | What do students know about advertising already? Analyse work samples to determine course of action and areas for improvement. | How can we promote our businesses? | As a class, discuss what students could do to make sure that the school knows about their fundraising event. Brainstorm ways that they could do this. Discuss how they could promote their individual business and brainstorm ideas. Students work together to plan 2 advertisements - one for Market Day, highlighting the purpose and range of available products and costs and the other for their business. Share plans with the class. | area |
| 6 | I refine our advertising plan and explain how it is more effective and therefore more likely to encourage people to purchase from our business | EN3-2A EN3-5B EN3-7C EN3-9E | Do students use the constructed success criteria and apply that to enhance their own work? Do students use language and | What makes a successful advertisement? Are ours likely to be effective? | Gather a range of advertisements and analyse the various techniques used to persuade consumers. Have students analyse the techniques they see in accordance with published adverts as well as their own. Create a class success criteria. In groups, have students discuss what they could do now to improve their advertisements as well as the advertisements of another group, providing constructive feedback. Students work on responding to the feedback they were provided, enhancing | A range of advertisements and information regarding advertising strategies |
visual features to persuade a target audience? Do they communicate clearly? Do they think creatively to solve problems?

their advertisements to more appropriately appeal to their audience. In the lead up to the event, student advertisements are posted on the school messaging system to share across the school.

|   | I create a presentation that convinces an audience to provide me a business loan. I include: *persuasive techniques *visuals that enhance my presentation *justification (data from market research and detailed costing) *clear communication of ideas | MA3-1WM MA3-2WM MA3-3WM EN3-1A EN3-2A EN3-5B EN3-7C EN3-9E INS3.3 | Do students use: *persuasive techniques? *visuals that enhance presentation? *justification (data from market research and detailed costing)? *clear communication of ideas? *feedback from others to improve their work? | Applying for our small business loan Students use the information they have from their market research, cost analysis and other work to apply for their business loan. Students create a short presentation in their business teams. Students need to be prepared to formally apply for their loan by detailing their business idea, their market research, advertising and other things they feel will enhance their presentation. Students share their presentation with another group who offers feedback. Students respond to feedback. Once complete, students book an appointment time to formally apply for their loan. | Business loan proforma |

|   | I visualise Market Day, listing all the things I need to consider. I share my ideas with my business colleagues and make a plan for Market Day. | MA3-1WM MA3-2WM MA3-3WM EN3-1A EN3-9E ST3-5WT ST3-16P DMS3.2 | Success criteria *I think systematically about Market Day, imagining it from the time school starts until we go home for How can we organise ourselves for success? Remind students of the reason they are running their business and brainstorm all the things that we need to do in the lead-up to Market Day. This may include promoting their product, customer service skills, setting up, packing away, where and when they will get equipment, how they will decorate their stall, etc. Discuss safety and planning considerations. Use the following points to support | | |
the day.
*I explain how I imagine Market Day will work to my peers
*I listen carefully to the ideas of others
*I consider an assembly line as a production method
*I use our cost analysis, budget, business loan, product information and advertising to help me prepare all the things we need

this discussion.

• Who will help on the day of the event?
  Who will attend to the cooking and who will help organise the other teams? How will you supervise the exchange of money?
• How will the money be collected?
  Orders will be placed with cashier, cashier to exchange money and relay order to teammates.
• Will change be needed before you start selling?
  What is a float? Why is it needed? What do we need in our float?
• How will we ensure our products meet food safety standards?
  - latex free hygiene gloves, note home regarding allergies, students identified as having an allergy wear wrist-band at the event, students create warning sign for their products with allergens it may contain
• Is everyone clear what their role on the day will be?
  Design a roster to organise the roles and responsibilities of students on the day, negotiated within business teams
• How will they identify themselves as a business team?
• What will your uniform be?
• Where will you have your logo and advertisement?
• How will you keep track of what products you’re selling and when you start making profit?
• Students design a tracking sheet
• Map of event - draw a scaled map that details where each store will be placed

I support my buddy in practising for Market Day by role playing positive and negative experiences as a business owner.

EN3-1A MA3-1WM MA3-5NA

Year 6 and Year 2 students work together to role play Market Day:

• Greeting and looking after customers
• Making the product at the moment of sale
• Attracting customers if you don’t have any
• Mentally calculating change

Did students know about cost

Let’s spend our approved loan!
Take the students shopping to the local supermarket with their approved loan costings, loan approval, signed permission slips
<table>
<thead>
<tr>
<th></th>
<th>Focus Group Summaries per unit labelling? Were they able to use this information to make informed decisions?</th>
<th>and budget sheet. Discuss with students how to read pricing labels, in particular the benefit of “cost per unit” information. Use this information to make comparisons between product choices and select those which will best meet the needs of the student business and support them in having low start-up costs.</th>
</tr>
</thead>
</table>
| 6 | MA3-1WM MA3-2WM MA3-3WM EN3-1A EN3-9E ST3-5WT ST3-16P DMS3.2 INS3.3 PSS3.5 SLS3.13 | **Market Day Eve!** Organise everything needed for Market Day. You may like a checklist of equipment for each group, a run sheet of timing and specific jobs, required paper work, organise business uniforms and decorations and practice “what to do if...” scenarios.

Present trading certificates. |
| 6 | MA3-1WM MA3-2WM MA3-3WM MA3-5NA MA3-6NA EN3-1A ST3-5WT ST3-16P DMS3.2 INS3.3 PSS3.5 SLS3.13 | **Market Day!** Students run Market Day |
| 6 | I explain the most efficient way to count the money we earned by | **How much profit were we able to make?** Provide students their money, business loans (with receipts) and float details. Have students reconcile the amounts they owed, having someone check their counting before signing off that their business loans and floats have been |
| 6 | I share my reflection regarding market day, justifying my opinion by using a range of sources of evidence. | MA3-1WM MA3-2WM MA3-3WM MA3-4NA MA3-5NA MA3-6NA EN3-1A EN3-9E ST3-5WT ST3-16P | **Were we successful?** Analyse the different cost-profit margins, sales, number of customers, etc. of the various businesses. Discuss questions such as:  
• Which businesses ran well? Why? What was their organisation like and how was that different to yours?  
• Which business had a large profit margin? Why? How was it different to your company?  
• What would you do differently if you were to open your business again?  
• How do you feel about what you achieved?  
• What did you learn about running a business?  
• How did this project help us see that mathematics is a useful thing to know about?  
• How did it feel to raise money so that you could give back to someone else?  
• What are you most proud of?  
• Who in your company are you proud of and why? |
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>I plan how to spend</td>
<td>MA3-1WM</td>
<td><strong>Giving back to charity</strong></td>
</tr>
</tbody>
</table>

Thinking logically and systematically, I calculate and explain how much profit our team made for charity.

Have students estimate how much profit they think they’ve made.

Allow students to count their money and discuss how they can count it in ways that enable other people to easily check their calculations, and, is this, the most efficient way to calculate their earnings.

Questions, such as the following could also be investigated:

- How much does our money weigh?
- How long would it be if we laid it end to end?
- If I had to exchange all of $2 for $0.20, how many more coins would I have? And, how much more would they all weigh?
Focus Group Summaries

| our profits, working with my team to finalise our choices. | MA3-2WM MA3-3WM MA3-5NA MA3-6NA EN3-1A ST3-5WT ST3-16P DMS3.2 INS3.3 PSS3.5 SLS3.13 | Provide students the opportunity to decide where they wish to donate their funds. In this case, students chose to buy gifts for children who would otherwise not have them. |

Frayer Model

<table>
<thead>
<tr>
<th>Examples</th>
<th>Definition</th>
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<tbody>
<tr>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-examples</th>
<th>Benefits</th>
</tr>
</thead>
</table>
### Market Day Cost Analysis - AN EXAMPLE (one)

**Company Name:** Our Business  
**Directors:** MT

<table>
<thead>
<tr>
<th>Item needed</th>
<th>Cost per unit</th>
<th>Units needed</th>
<th>Outlay cost</th>
<th>Selling price</th>
<th>Profit margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milkshakes</td>
<td></td>
<td>We think we can sell 100 milkshakes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Milk        | $3 / 3 litres | 7 (we worked out that we would be able to make 15 milkshakes from one 3 litre bottle of milk (each one would use 200ml of milk - and 15 x 200ml = 3000 = 3 litres. We worked it out by making a few milkshakes and measuring how much we would need).

Then we worked out that to make 100 milkshakes we would need 7 bottles in total. If we need 1 bottle for 15 milkshakes, 15+15+15+15+15+15+15 = 105 which gives us enough to have a few leftovers in case we drop any or sell a few more than we anticipate. | 7 x $3 = $21 |               |               |
<p>| Paper cups  | $3 / 25 cups  | 5 (so we have some spare in case we need it. 5x25 = 125 so that should give us enough spare cups) | 5 x $3 = $15 |               |               |
| Straws      | $1 / packet of 100 | 1 (we don't need spare ones - people can drink without a straw if needed) | 1 x $1 = $1 |               |               |
| Flavouring  |               | We worked out that we needed 40ml per serve - that makes 15 serves in each bottle | |               |               |
| • caramel   | $1.75 / 600ml bottle | 3 - 35% people said they like caramel and so 3 bottles means we could make 45 caramel flavoured milkshakes in case people change their minds | $5.25 |               |               |
| • chocolate | $1.75 / 600ml bottle | 6 - 100% said they like chocolate flavour so we think we need 6 bottles which is enough to make 90. We think that is enough as some people will probably choose a different flavour at market day | $10.50 |               |               |
| • strawberry| $1.75 / 600ml bottle | 2 - only 20% of people said they would choose strawberry. 2 bottles means we could make 30 strawberry milkshakes. | $3.50 |               |               |</p>
<table>
<thead>
<tr>
<th>Item</th>
<th>Cost/Package</th>
<th>Quantity</th>
<th>Calculation</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanilla Ice-cream</td>
<td>$4.29 / 4 litres</td>
<td>80 servings per tub (this information was on the label) so we need 2 tubs</td>
<td>2 x $4.29 = $8.58</td>
<td></td>
</tr>
<tr>
<td>Blender</td>
<td>None (borrowing 4 from different people)</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Food gloves</td>
<td>$3.49 / box of 24</td>
<td>1</td>
<td>$3.49</td>
<td></td>
</tr>
<tr>
<td>Napkins</td>
<td>$1 / pack of 25</td>
<td>5 - 25x5 = 125 which means we would have left over napkins in case we need spare ones</td>
<td>5 x $1 = $5</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td>to make 100 milkshakes</td>
<td>$73.32 (which means each one costs us $0.73 to make)</td>
<td>$2.00</td>
</tr>
</tbody>
</table>

How many we need to sell to start making a profit: 37

6T - Fairfield Public School
## KLA: MATHEMATICS

### UNIT TITLE: Year 1 Money Economy (8-10 day)

**SCHOOL NAME:** St. Columban’s P.S.  
**STAGE:** 1  
**CLASS:** 1  
**TERM:** 3  
**YEAR:** 2015  
**TEACHERS:** Steve

### Unit Description:

Students practice a small scale economy using Australian monies. Students will be able to recognize different monetary values and identify the different types. Students practice exchanging money for goods and services to achieve different wants and needs. Students will also investigate the problems and issues that can occur when dealing with money such as identifying the worth of goods and services, distinguishing between wants and needs and operating a fair economy.

### Framework for Engagement with Mathematics:

Throughout this unit, the classroom teacher will ensure that students have engaging mathematical experiences. The unit will be student-centred, providing choices and variety of relevant tasks.

The teacher will:

- Engage students in **substantive conversations** that use the metalanguage of mathematics and in particular, **financial literacy**.
- The students’ **background knowledge** is understood, differentiation will appear within the lessons.
- Constant **interaction** with students will exist to make sure that tasks are completed and that knowledge is gained by students.
- Model **enthusiasm** and **engagement** by involving students in the planning process.
- Through past experiences with students, the teacher is **aware** of the students’ mathematical abilities.
- Teacher will draw on students’ **prior learning** to develop students’ mathematical abilities.
- Teacher will ensure that there is regular and valuable **feedback** to students.
<table>
<thead>
<tr>
<th>NSW Syllabus</th>
<th>National Consumer and Financial Literacy Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong> Working Mathematically</td>
<td><strong>Dimension:</strong> <em>Knowledge and understanding</em></td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>Students can:</td>
</tr>
<tr>
<td>• MA1-1WM Describes mathematical situations and methods using everyday</td>
<td>• Recognise the different Australian Monies</td>
</tr>
<tr>
<td>and some mathematical language, actions, materials, diagrams and symbols</td>
<td>• Recognise that money is limited and comes from different sources</td>
</tr>
<tr>
<td>• MA1-2WM Uses objects, diagrams and technology to explore mathematical</td>
<td>• Money can be saved and spent to achieve different needs and wants</td>
</tr>
<tr>
<td>problems</td>
<td>• Prioritise differences between needs and wants with the implications of monetary values</td>
</tr>
<tr>
<td>• MA1-3WM Supports conclusions by explaining or demonstrating how</td>
<td></td>
</tr>
<tr>
<td>answers were obtained</td>
<td></td>
</tr>
<tr>
<td><strong>Strand:</strong> Numbers and Algebra</td>
<td><strong>Dimension:</strong> <em>Competence</em></td>
</tr>
<tr>
<td><strong>Substrand:</strong> Whole Number</td>
<td>Students can:</td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>• Earn and use money as a form of exchange for goods or services</td>
</tr>
<tr>
<td>• MA1-4NA Applies place value, informally, to count, order, read and</td>
<td>• Recognise differences between different monies</td>
</tr>
<tr>
<td>represent 2 and 3 digit numbers</td>
<td>• Recognise and identify consumer and financial matters are a part of daily life</td>
</tr>
<tr>
<td><strong>Strand:</strong> Numbers and Algebra</td>
<td>• Compare cost and recognize different values of items</td>
</tr>
<tr>
<td><strong>Substrand:</strong> Addition and Subtraction</td>
<td>• Prioritise spending and explain choices</td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td></td>
</tr>
<tr>
<td>• MA1-5NA Uses a range of strategies and informal recording methods for</td>
<td></td>
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<tr>
<td>addition and subtraction involving one- and two-digit numbers</td>
<td></td>
</tr>
<tr>
<td><strong>Strand:</strong> Numbers and Algebra</td>
<td><strong>Dimension:</strong> <em>Responsibility and enterprise</em></td>
</tr>
<tr>
<td><strong>Substrand:</strong> Data</td>
<td>Students can:</td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>• Identify and explain, influenced purchasing (window shopping, peer pressure, promotion, advertising etc)</td>
</tr>
<tr>
<td>• MA1-17SP Gathers and organises data, displays data in lists, tables and</td>
<td></td>
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<tr>
<td>picture graphs, and interprets the results</td>
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</table>

**Links to other Key Learning Areas:**

Religion: Bible stories related to monetary values such as ‘The Widow's Offering’ (Mark 12:41-44), ‘Jesus Cleanses the Temple’ (Matthew 21: 12-17)

Science and Technology: Managing cost of keeping a classroom minibeast

HSIE: Use of volunteers for free, how goods and services were used or done before money was used, Aboriginal ceremonial exchange cycle.

**Prerequisite skills:**

Knowledge of different monies currently used in the Australian economy

Identify different coin values

Knowledge of numbers up to 3 digits
<table>
<thead>
<tr>
<th>Sequenced teaching and learning activities</th>
<th>Assessment task</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity 1: The world of money</strong>&lt;br&gt;Recall the shopping trip viewed on youtube and what was learnt about how money was used to purchase needs and wants. An example of some kids doing a shopping trip is shown involving a budget and transaction skills.</td>
<td></td>
<td><a href="https://www.youtube.com/watch?v=uWuOBonC1ds">https://www.youtube.com/watch?v=uWuOBonC1ds</a>&lt;br&gt;Smartboard for ideas and things learnt</td>
</tr>
<tr>
<td><strong>Activity 2: The local economy</strong>&lt;br&gt;Explain that money is part of an economy and we can use it for our own purpose (ie Play Money). Cover the idea of expensive versus cheap costs and what is appropriate. List the items that could be purchased as goods or services. Explore possible income streams such as selling or donating. Look at needs versus wants. Discuss with partners or groups. Students create a list of needs and a list of wants.</td>
<td></td>
<td>Play money of all current coin denominations&lt;br&gt;Smartboard for collecting ideas and creating lists of needs and want consisting of a simple divided table&lt;br&gt;<a href="https://www.youtube.com/watch?v=RJJgU">https://www.youtube.com/watch?v=RJJgU</a> AhXxqw&lt;br&gt;Examples of supermarkets sites that can sell different needs and wants such as:&lt;br&gt;www.woolworths.com.au&lt;br&gt;www.aldi.com.au&lt;br&gt;Some sample shopping catalogues as hard copy samples and look at the different things available.</td>
</tr>
<tr>
<td><strong>Activity 3: A Fair Pay</strong>&lt;br&gt;Students are given a wallet with their name on it and rules explained that govern conditions of its use. Students are given some money to start with and are made aware that they will need to pay for things that they need and save for things that they want. A chart for some costings is put up for display.</td>
<td>Students can identify the value of each current Australian coin</td>
<td>Play money of all current coin denominations&lt;br&gt;Sheet of cardboard for creating list of costings that students will need to refer to.&lt;br&gt;Plastic ziplock backs 10cmx5cm (wallets)&lt;br&gt;<a href="https://www.youtube.com/watch?v=lhpRbawq6i0">https://www.youtube.com/watch?v=lhpRbawq6i0</a>&lt;br&gt;Maths grid books for shading over coins</td>
</tr>
</tbody>
</table>
## Developing

### Activity 4: First day on the job!
Go over how people are being paid to start the economy off. Students are paid at the end of the day for all work completed and handed in. Teacher will represent the employer, banks and government for the trial period. Money given for work and learning!!!

Play money of all current coin denominations
Wallets

### Activity 5: My pay slip!
Checklists are created to maintain and monitor paid amounts. Students count the current earnings/savings each day to help keep track. Students could set goals for saving amounts to buy wants and needs for goods or services.

Students are able to count their total value in their wallets.

Play money of all current coin denominations
Wallets
Go maths student Journal page 126-127

### Activity 6: Can I Save?
Students look at the benefits of saving money and the purpose of what they can do with what they save. Briefly look at the banking system and their role in the economy. Making decisions between needs and wants.

Students set a goal to achieve a certain amount saved
Students complete 2 different ways to get same amount

Play money of all current coin denominations
Wallets
Go Maths student Journal page 128

## Culminating

### Activity 7: Using Data
Draw in comparisons to home life. Review the collection of data from the earning throughout the unit noting differences between those that spend more and less through the unit.

### Activity 8: Pocket money
Students can create a pocket money system for real life contexts out of school.

### Activity 9: Reflecting
Students reflect on what they have learnt during the unit and can spend their final amounts calculated in their wallets.

**Differentiation:**
Consideration of class position
<table>
<thead>
<tr>
<th>Grouping of students according to ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit modelling and teaching</td>
</tr>
<tr>
<td>Creation of word bank and samples relating to new vocabulary and definitions for reference</td>
</tr>
<tr>
<td>1:1 classroom assistance</td>
</tr>
<tr>
<td>Repeated instruction and group assistance for students needing reinforcement</td>
</tr>
<tr>
<td>Modified tasks to extend and support for student levels</td>
</tr>
<tr>
<td>Daily use of concrete material including ‘Play Money’</td>
</tr>
<tr>
<td>Extra wallets for assistance with grouping money</td>
</tr>
<tr>
<td>Extra time given for student processing</td>
</tr>
</tbody>
</table>

**Reflections:**

1. What were the highlights, for you as a teacher, while teaching your financial literacy unit?
2. What were the challenges, for you as a teacher, while teaching your financial literacy unit?
3. What were the highlights, for your students, while teaching your financial literacy unit?
4. What were the challenges, for your students, while teaching your financial literacy unit?
5. What changes did you notice with regard to student engagement to maths?
6. How did you respond to students’ needs and interests across the unit?
7. What would you change about this unit, if you were to teach it again?
8. What advice would you give other teachers who are considering teaching this unit?
APPENDIX 6: ST COLUMBAN’S YEAR 3 UNIT OF WORK: *Mayfield Monopoly*

**KLA: MATHEMATICS**

**UNIT TITLE:** Mayfield Monopoly - Year 3 Edition

**SCHOOL NAME:** St. Columban’s P.S.  **STAGE:** 2  **CLASS:** Year 3  **TERM:** Three  **YEAR:**2015  **TEACHERS:** Kerri

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**Unit Description:**
In this unit, students will examine the game of monopoly and establish the existing maths and financial literacy aspects of the current Monopoly Game. They will then design their own monopoly style board game called “Mayfield Monopoly – Year 3 Edition.”

The students will adapt the current game to places and locations where money is used in the Mayfield community. They will consider what will be bought and sold, comparing with what is bought and sold in the local community. The students will write problem solving cards using situations that are of interest to them. These will be used as the Chance cards in the game. The children will be given opportunities to decide about the direction their learning will take. They will decide if they want to design their own monetary system (Columban’s Currency) to use in the game. If so, they will need to consider the values and number of coins and notes. The students will consider the role of the banker in the game and decide whether to incorporate EFTPOS machines in the banker’s role. The students will look at ways of incorporating the use of technology into their board game.

At the end of the unit, the children will play the board game they have created and will invite others to play the game with them.

Throughout the unit the student will be given opportunities to make choices and to vote on options. They will be given time to reflect on their learning during all phases of the unit.
Framework for Engagement with Mathematics: Throughout this unit the classroom teacher will ensure that they have an engaging mathematics classroom, positive pedagogical relationships by:

- The students’ background knowledge is understood and differentiation will appear within the lessons.
- Constant interaction with children will exist to make sure that tasks are being completed and that knowledge is being gained by students.
- Through being involved in the planning process, the teacher will be enthusiastic and engaged in the teaching of this unit
- Through past experiences with students, the teacher is aware of the students’ mathematical abilities
- Teacher will ensure that there is regular and valuable feedback to the students

<table>
<thead>
<tr>
<th>NSW Syllabus</th>
<th>National Consumer and Financial Literacy Framework</th>
</tr>
</thead>
</table>
| **Strand:** Number and Algebra  
**Substrand:** Whole Number  
**Focus outcome/s**  
- Uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM  
- Selects and uses appropriate mental or written strategies, or technology, to solve problems MA2-2WM  
- Checks the accuracy of a statement and explains the reasoning used MA2-3WM  
- Applies place value to order, read and represent numbers of up to five digits MA2-4NA | **Dimension:** Knowledge and understanding  
Students can:  
- explain how money is exchanged in return for goods and services  
- explain some different forms that money can take  
- recognise that different countries use different currencies. |
| **Strand:** Number and Algebra  
**Substrand:** Addition and Subtraction  
**Focus outcome/s**  
- Uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM  
- Selects and uses appropriate mental or written strategies, or technology, to solve problems MA2-2WM  
- Checks the accuracy of a statement and explains the reasoning used MA2-3WM  
- Uses mental and written strategies for addition and subtraction involving two-, three-, four- and five-digit numbers MA2-5NA | **Dimension:** Competence  
Students can:  
- order and discuss reasons for spending preferences  
- use money to buy basic goods and services in ‘real-life’ contexts  
- classify and compare goods and services |
| **Strand:** Measurement and Geometry  
**Substrand:** Area  
**Focus outcome/s** | **Dimension:** Responsibility and enterprise  
Students can:  
- identify simple ways the consumer decisions of individuals may impact on themselves, their families, the broader community and/or the environment  
- apply consumer and financial knowledge and skills in relevant class and/or school activities such as student investigations, charity fundraising, business ventures and special events |
<table>
<thead>
<tr>
<th>Focus outcome/s</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Uses appropriate terminology to describe, and symbols to represent,</td>
<td></td>
</tr>
<tr>
<td>mathematical ideas MA2-1WM</td>
<td></td>
</tr>
<tr>
<td>• Selects and uses appropriate mental or written strategies, or technology,</td>
<td></td>
</tr>
<tr>
<td>to solve problems MA2-2WM</td>
<td></td>
</tr>
<tr>
<td>• Checks the accuracy of a statement and explains the reasoning used</td>
<td></td>
</tr>
<tr>
<td>MA2-3WM</td>
<td></td>
</tr>
<tr>
<td>• Measures, records, compares and estimates areas using square</td>
<td></td>
</tr>
<tr>
<td>centimetres and square metres MA2-10MG</td>
<td></td>
</tr>
</tbody>
</table>

Strand: Measurement and Geometry
Substrand: Position

<table>
<thead>
<tr>
<th>Focus outcome/s</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Uses appropriate terminology to describe, and symbols to represent,</td>
<td></td>
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<tr>
<td>mathematical ideas MA2-1WM</td>
<td></td>
</tr>
<tr>
<td>• Selects and uses appropriate mental or written strategies, or technology,</td>
<td></td>
</tr>
<tr>
<td>to solve problems MA2-2WM</td>
<td></td>
</tr>
<tr>
<td>• Checks the accuracy of a statement and explains the reasoning used</td>
<td></td>
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<tr>
<td>MA2-3WM</td>
<td></td>
</tr>
<tr>
<td>• Uses simple maps and grids to represent position and follow routes,</td>
<td></td>
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<tr>
<td>including using compass directions MA2-17MG</td>
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</tr>
</tbody>
</table>

Strand: Statistics and Probability
Substrand: Chance

<table>
<thead>
<tr>
<th>Focus outcome/s</th>
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</thead>
<tbody>
<tr>
<td>• Uses appropriate terminology to describe, and symbols to represent,</td>
<td></td>
</tr>
<tr>
<td>mathematical ideas MA2-1WM</td>
<td></td>
</tr>
<tr>
<td>• Selects and uses appropriate mental or written strategies, or technology,</td>
<td></td>
</tr>
<tr>
<td>to solve problems MA2-2WM</td>
<td></td>
</tr>
<tr>
<td>• Checks the accuracy of a statement and explains the reasoning used</td>
<td></td>
</tr>
<tr>
<td>MA2-3WM</td>
<td></td>
</tr>
<tr>
<td>• Describes and compares chance events in social and experimental contexts</td>
<td></td>
</tr>
<tr>
<td>MA2-19SP</td>
<td></td>
</tr>
</tbody>
</table>

Strand: Statistics and Probability
Substrand: Data

<table>
<thead>
<tr>
<th>Focus outcome/s</th>
<th></th>
</tr>
</thead>
</table>
- Uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM
- Selects and uses appropriate mental or written strategies, or technology, to solve problems MA2-2WM
- Checks the accuracy of a statement and explains the reasoning used MA2-3WM
- Selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs MA2-18SP

Links to other Key Learning Areas:
HSIE – Living in Communities; English – Procedural Texts
### Sequenced teaching and learning activities

<table>
<thead>
<tr>
<th>Introducing</th>
<th>Activity 1</th>
<th>Assessment task</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the board games that the children have played.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• What is the aim of the game?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• What are the rules?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• How do you start the game?</td>
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<td></td>
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<tr>
<td>• How do you win/finish the game?</td>
<td></td>
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<td></td>
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<tr>
<td>• What equipment do you need to play the game?</td>
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</tbody>
</table>

### Activity 2

Play a game of Monopoly (Junior Edition). Discuss how the game is played.

- What is the aim of the game?
- What are the rules?
- How do you start the game?
- How do you win/finish the game?
- What equipment do you need to play the game?
- What were the Community Chest and Chance cards about?
- What were the shapes of the counters?
- What was the role of the Banker in the game?

| | | | Board Game – Monopoly (Junior Edition) Different versions of Monopoly |

### Activity 3

Tell the children that we are going to make our own board game called “Mayfield Monopoly Year3 Edition”

- What will be the aim of the game?
- What are the rules?
- How do you start the game?
- How do you win/finish the game?
- What equipment do you need to play the game?

| | | | Board Game – Monopoly (Junior Edition) As an example |
### Activity 4
As a class decide what tasks we would need to do to design our own game. Make a list to refer back to. Add to the list as the children think of other tasks.
- The board layout.
- The names of the properties/utilities that we land on.
- The shape of the counters we will use.
- Write the Community Chest Cards and Chance Cards
- The kind of dice we will use.
- The currency we will use.
- The role of the banker in the game

### Activity 5
Discuss what Mathematical skills we will need to be able to do these tasks. Make a list to refer back to during the unit.

### Developing

#### Activity 6
The students will design the layout for their board game. They will research and list the shops, businesses and utilities that are in their local area using local knowledge, yellow pages, local maps, local directories and apps etc. The students will then decide which places they wish to use on their game board. They will adapt the current game to places and locations where money is used in the Mayfield community. They will consider what will be bought and sold, comparing with what is bought and sold in the local community.

#### Activity 7
Discuss the role of the Community Chest and Chance cards in the game. Consider what we would like to be bought and sold, comparing with what is bought and sold in the local community.
The students work together in pairs/small groups to write a draft of the Community Chest and Chance cards they would like for their game. When their work has been conference and edited, the children will publish their work on computer and made into the cards for the game.

---

Phone books, yellow pages, local maps, local directories and apps

Community Chest and Chance cards (as examples)
Computer program for publishing
**Activity 8**
Discuss with the children the currency that they wish to use in their game. Decide if they want to design Columban’s Currency. If so, they will need to consider the values and number of coins and notes. What would be the best 2 coins /notes to use? Compare Columban’s currency with the Australian currency.

**Activity 9**
Consider the prices that the properties should be sold for. How much should the competitors receive for passing GO?

**Activity 10**
The students will consider the role of the Banker in the game and decide whether to incorporate EFTPOS machines in the banker’s role. They will consider the way that they can incorporate this into the game.

**Activity 11**
Small group work
Children research a particular aspect of the game then report back to the whole class. Narrow down the choices then present to the class.
The class then votes on what they want to use in the game
- Dice
- Counters
- Drawings/graphics
- Tokens for properties bought

**Culminating**

**Activity 12**
The children make the final decisions about the design of the board game. They then build the game.

**Activity 13**
The children play the game in small groups. After playing the game the class discusses any changes that need to be made
### Assessment Rubric

<table>
<thead>
<tr>
<th>Skill</th>
<th>Relevant Content Description(s)</th>
<th>Relevant Activities and Worksheet</th>
<th>Competent</th>
<th>Developing at Level</th>
<th>Needs Further Development</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>calculate equivalent amounts of money using different denominations</td>
<td>MA2-1WM</td>
<td></td>
<td>The student accurately performs the operation without visual support</td>
<td>The student accurately performs the operation using concrete materials or by drawing diagrams</td>
<td>The student requires assistance to correctly perform the operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA2-2WM</td>
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<td></td>
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<tr>
<td></td>
<td>MA2-3WM</td>
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<td></td>
<td>MA2-4NA</td>
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<tr>
<td>perform simple calculations with money, including finding change, and round to the nearest five cents</td>
<td>MA2-1WM</td>
<td></td>
<td>The student accurately performs the operation</td>
<td>The student accurately performs the operation using concrete materials.</td>
<td>The student requires assistance to correctly perform the operation</td>
<td></td>
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<tr>
<td></td>
<td>MA2-2WM</td>
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<tr>
<td></td>
<td>MA2-3WM</td>
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<td></td>
<td>MA2-4NA</td>
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<td></td>
<td>MA2-5NA</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>calculate mentally to give change</td>
<td>MA2-1WM</td>
<td></td>
<td>The student accurately performs the operation mentally</td>
<td>The student accurately performs the operation with some prompting</td>
<td>The student requires assistance to correctly perform the operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA2-2WM</td>
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<tr>
<td></td>
<td>MA2-3WM</td>
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<tr>
<td></td>
<td>MA2-5NA</td>
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</tbody>
</table>
APPENDIX 7: ST COLUMBAN’S YEAR 6 UNIT OF WORK Sizzling Sausages

KLA: MATHEMATICS
UNIT TITLE: Sizzling Sausages
SCHOOL NAME: St. Columban’s P.S.  STAGE: 3  CLASS: Year 6  TERM: 3  YEAR: 2015  TEACHERS: Danielle

Unit Description:
Students will be involved in the planning process of organizing a fundraiser where the school community will be offered a ‘meal deal’. The profit from this event will go towards the class farewell in December. Students will be involved in a variety of problem solving activities to ensure they are getting best value for money as well as making a maximum profit.

Students will need to use their knowledge of financial literacy as well as skills from other strands of the mathematics syllabus to be able to participate in all activities successfully.

Students will be working as a whole class, in pairs and individually throughout the unit and activities will be differentiated to suit the learners need.

Framework for Engagement with Mathematics:
Throughout this unit, the classroom teacher will ensure that students have engaging mathematical experiences. The unit will be student-centered, providing choices and variety of relevant tasks.

The teacher will:
- Engage students in substantive conversations that use the metalanguage of mathematics and in particular, financial literacy.
- The students’ background knowledge is understood, differentiation will appear within the lessons.
- Constant interaction with students will exist to make sure that tasks are completed and that knowledge is gained by students.
- Model enthusiasm and engagement by involving students in the planning process.
- Through past experiences with students, the teacher is aware of the students’ mathematical abilities.
- Teacher will draw on students’ prior learning to develop students’ mathematical abilities.
- Teacher will ensure that there is regular and valuable feedback to students.
<table>
<thead>
<tr>
<th>NSW Syllabus</th>
<th>National Consumer and Financial Literacy Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand: Working Mathematically</strong></td>
<td><strong>Dimension: Knowledge and understanding</strong></td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>- analyse the value of a range of goods and services in relation to an identified need</td>
</tr>
<tr>
<td>• MA3-1WM – Describes and represents mathematical situations in a variety of</td>
<td>- describe how an individual can influence their income</td>
</tr>
<tr>
<td>ways using mathematical terminology and some conventions</td>
<td></td>
</tr>
<tr>
<td>• MA3-2WM Selects and applies appropriate problem-solving strategies,</td>
<td></td>
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<tr>
<td>including the use of digital technologies, in undertaking investigations</td>
<td></td>
</tr>
<tr>
<td>• MA3-3WM Gives a valid reason for supporting one possible solution over</td>
<td></td>
</tr>
<tr>
<td>another</td>
<td></td>
</tr>
<tr>
<td>• MA3-5NA Selects and applies appropriate strategies for addition and</td>
<td></td>
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<tr>
<td>subtraction with counting numbers of any size.</td>
<td></td>
</tr>
<tr>
<td><strong>Strand: Number and Algebra</strong></td>
<td><strong>Dimension: Competence</strong></td>
</tr>
<tr>
<td><strong>Substrand: Multiplication and Division</strong></td>
<td>- evaluate the value of a range of goods and services in a variety of ‘real-life’</td>
</tr>
<tr>
<td>• MA3-6NA Selects and applies appropriate strategies for multiplication and</td>
<td>situations</td>
</tr>
<tr>
<td>division, and applies the order of operations to calculations involving more</td>
<td>- identify key features used in advertising, marketing and social media to</td>
</tr>
<tr>
<td>than one operation.</td>
<td>influence consumer decision-making.</td>
</tr>
<tr>
<td><strong>Strand: Measurement</strong></td>
<td><strong>Dimension: Responsibility and enterprise</strong></td>
</tr>
<tr>
<td><strong>Substrand: Volume and Capacity</strong></td>
<td>- apply consumer and financial knowledge and skills in relevant class and/or school</td>
</tr>
<tr>
<td>• AM3-11MG Selects and uses the appropriate unit to estimate, measure</td>
<td>activities such as student investigations, charity fundraising, product design and</td>
</tr>
<tr>
<td>and calculate volumes and capacities, and converts between units of capacity.</td>
<td>development, business ventures and special events</td>
</tr>
<tr>
<td><strong>Links to other Key Learning Areas:</strong></td>
<td>- exercise a range of enterprising behaviours through participation in relevant class</td>
</tr>
<tr>
<td>English</td>
<td>and/or school activities</td>
</tr>
<tr>
<td>Creative Arts</td>
<td></td>
</tr>
<tr>
<td><strong>Prerequisite skills:</strong> Students have some knowledge of shopping and</td>
<td></td>
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<tr>
<td>determining the cost of items. They can access websites to compare the cost</td>
<td></td>
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<tr>
<td>of different items between sellers. Students are able to estimate and check</td>
<td></td>
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<tr>
<td>their estimations by making calculations involving addition, subtraction,</td>
<td></td>
</tr>
<tr>
<td>multiplication and division with and without the assistance of technology.</td>
<td></td>
</tr>
</tbody>
</table>
### Sequence Table

<table>
<thead>
<tr>
<th>Sequenced teaching and learning activities</th>
<th>Assessment task</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introducing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Activity 1: Clever Shopping</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students participate in discussion about powerpoint presentation “Clever Shopping”.</td>
<td></td>
<td>Clever Shopping – From <a href="http://www.moneysmart.gov.au">www.moneysmart.gov.au</a></td>
</tr>
<tr>
<td><strong>Activity 2: How Does the Maths Work?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students participate in discussion/activity “Clever Shopping – How Does the Maths Work?”</td>
<td></td>
<td>Clever Shopping – how does the maths work when shopping? From <a href="http://www.moneysmart.gov.au">www.moneysmart.gov.au</a></td>
</tr>
<tr>
<td>Differentiation – demonstrate to students an alternative method for calculating price units and allow them to choose which method they will use.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Activity 3: Consolidation of Skills</strong></td>
<td>Formative Work samples Observations</td>
<td><a href="https://www.consumer.vic.gov.au/.../teacher.../a-resource-for-teaching-an">https://www.consumer.vic.gov.au/.../teacher.../a-resource-for-teaching-an</a>... Pages 32 – 34 Activity B3</td>
</tr>
<tr>
<td>Students participate in further activities to strengthen their ability to calculate price per unit of grocery items.</td>
<td></td>
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<tr>
<td><strong>Developing</strong></td>
<td></td>
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</tr>
<tr>
<td>In pairs, students investigate the cost of making a sausage sandwich, or offering a ‘meal deal’ with a juice box.</td>
<td></td>
<td>Links to supermarket websites on Gate 21 class page</td>
</tr>
<tr>
<td><strong>Activity 5: Making a Profit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a class, decide on the selling cost of each sandwich. What markup will we put on the product? How much money will that total for us if each child in the school (160) purchases a sandwich? Could we offer 2 meal deals, one with a large sausage sandwich, and one with a small sandwich?</td>
<td></td>
<td>Smartboard Calculators</td>
</tr>
<tr>
<td><strong>Activity 6: Timetabling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decide on a date for the activity and check with principal for availability of school barbeque equipment and for timetable clashes.</td>
<td></td>
<td>School calendars</td>
</tr>
<tr>
<td>Decide on a return date for orders and select a shopping date so that students can purchase items.</td>
<td></td>
<td>Smartboard Photocopier</td>
</tr>
<tr>
<td>As a class, jointly construct a note home to parents offering the meal deal.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Distribute.

**Activity 7: Advertising**
Students make posters advertising the meal deal. These are placed around the school and reduced versions in the school newsletter.

| Art Paper |
| Textas/pencils/oil pastels |

### Culminating

**Activity 8: Shopping**
Students attend local shopping centre to shop for items for the bbq meal deal. The money for shopping must come from school funds, so receipts must be kept in order to reimburse the school office after the event.

| Money for purchases |

**Activity 9: Let’s Cook**
Students prepare and distribute the meal deal.

| Sausage sandwich resources (purchased) |
| Barbeque and cooking equipment |
| Protective clothing |

**Activity 10: What did we Make?**
Students count their money and subtract outlay to determine profit made on the day. Did the profit meet expectations?

| assessment using reflection sheet and calculations of profit made |
| Calculators |
| Worksheet |

**Activity 11: Spending our Profit**
Students decide how to use the profit they have made for their Year 6 farewell. Alternatives are:

- Determine how much profit was made per head and subtract this from the cost of the Year 6 farewell ticket for each child.
- Use the profit to purchase decorations for the hall
- Use the profit to purchase a celebratory cake/s for the farewell
- Use the profit for a celebratory item e.g. photobooth to use at the farewell.

Students determine and investigate the cost of the items they will purchase for the farewell.

If possible, students purchase the item/s.

| Smartboard |
| Computers |

### Differentiation:
Students were placed in mixed ability groups for team activities to encourage peer tutoring.
Some students were given calculators to assist with addition and subtraction activities involving more than one step.
Reflections:
1. What were the highlights, for you as a teacher, while teaching your financial literacy unit?
2. What were the challenges, for you as a teacher, while teaching your financial literacy unit?
3. What were the highlights, for your students, while teaching your financial literacy unit?
4. What were the challenges, for your students, while teaching your financial literacy unit?
5. What changes did you notice with regard to student engagement to maths?
6. How did you respond to students’ needs and interests across the unit?
7. What would you change about this unit, if you were to teach it again?
8. What advice would you give other teachers who are considering teaching this unit?

Assessment Rubric

<table>
<thead>
<tr>
<th>Skill</th>
<th>Integrated Content Description(s)</th>
<th>Relevant Activities and Worksheet</th>
<th>Competent</th>
<th>Developing at Level</th>
<th>Needs Further Development</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine which grocery item is the most economical purchase</td>
<td>VA3-1WM MA3-2WM MA3-3WM AM3-11MG</td>
<td></td>
<td>Student can compare costs of the same item when units of measurement are different</td>
<td>Student can determine the cost of a single item from a group of items</td>
<td>Student requires assistance to divide the cost of groups of items</td>
<td></td>
</tr>
<tr>
<td>Determine a profit margin and associated markup of product</td>
<td>MA3-5NA MA3-6NA</td>
<td></td>
<td>Student can justify and calculate their choice of profit margin</td>
<td>Student has unrealistic expectations of/or does not apply knowledge of profit margin</td>
<td>Student requires assistance to calculate profit margin</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 8: ST MICHAEL’S YEAR 1 UNIT OF WORK Learning through Fundraising

KLA: MATHEMATICS
UNIT TITLE: Learning through Fundraising

SCHOOL NAME: St Michael’s Deniliquin  STAGE: 1  CLASS: 1K  TERM: 4  YEAR: 2015  TEACHERS: Sally

Unit Description:
Money transactions utilizing Stage 1 Whole Number outcomes to facilitate preparation for and implementation of stalls for the school’s Mission Day fundraiser. The unit involves supermarket research online, as well as an actual supermarket visit.

Framework for Engagement with Mathematics:
High level of operative learning experiences will drive cognitive growth and affective learning based on the usefulness of tasks that will give it genuine value. Positive pedagogical relationships will result from the teacher’s enthusiastic modelling. Pedagogy will include task design that is:
• challenging
• differentiated so that all children achieve a level of success.
• relevant to school’s current focus.

<table>
<thead>
<tr>
<th>NSW Syllabus</th>
<th>National Consumer and Financial Literacy Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong> Number and Algebra</td>
<td><strong>Dimension:</strong> Knowledge and Understanding</td>
</tr>
<tr>
<td><strong>Substrand:</strong> Whole Number</td>
<td>Students learn:</td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>• the nature, forms and value of Australian units of money.</td>
</tr>
<tr>
<td>A student:</td>
<td>• the language commonly used in a range of consumer and financial contexts.</td>
</tr>
<tr>
<td>• describes mathematical situations and methods using everyday mathematical language, actions, materials, diagrams and symbols. <strong>MA1-1WM</strong></td>
<td>• options for seeking advice prior and during simple purchasing transactions.</td>
</tr>
<tr>
<td>• uses objects, diagrams and technology to explore mathematical problems. <strong>MA1-2WM</strong></td>
<td><strong>Dimension:</strong> Competence</td>
</tr>
<tr>
<td>• supports conclusions by explaining or demonstrating how answers were</td>
<td>Students learn to:</td>
</tr>
</tbody>
</table>

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Content outcomes

Count collections to 100 by partitioning numbers using place value. ACMNA014
- count and represent large sets of objects by systematically grouping to ten
- use place value to partition two digit numbers. e.g. 32 as 3 tens and 2 units
- state the place value of digits in two digit numbers. e.g. In the number 32, the 3 represents 30 or three tens.

Recognise, describe and order Australian coins and notes according to their value ACMNA017
- identify, sort, order and count money using appropriate language in everyday contexts. e.g. coins, notes, cents and dollars.
- recognise that total amounts can be made using different denominations. 20 cents can be made using a single coin or two 10 cent coins
- recognise the symbol for dollars ($) and cents (c)

Dimension: Responsibility and enterprise

Students will be able to:
- examine and reflect on their own roles as producers and consumers of goods and services and how these roles fit into their daily lives.
- explore the roles that socio-cultural influences and personal values play as they raise money through their own financial learning experiences for others in need.
- develop enterprising behaviour through fundraising and its prior preparation.

Links to other Key Learning Areas: Religion (Mission outcomes): HSIE (Needs and Wants outcomes-a previous unit); English (Speaking and Listening outcomes)

Prerequisite skills:
- count by 2s, 5s and 10s.
- recognise Australian notes and coins
- understand basic partitioning and place value to 3 digits
- recognise the symbol for dollars and cents

Sequenced teaching and learning activities

Introductory: Talk to the children about Mission Day. Remind them of last year’s event and the things they enjoyed the most. Ask them about the reason for all the fundraising. Why do we usually fundraise? What is our intension, being a Catholic school, to those in need?

Activity 1 Reflect on the introduction. View and read the interactive book, “Ava’s Pancakes” from the MoneySmart website. Brainstorm some ideas for our contribution as a class to Mission Day stalls. Remind the children that this unit is to enrich our Maths skills as well as raise money. Encourage measuring tasks as well as the shopkeeping skills being used. Tear the Mintie, stretch the lolly snake and a ball bouncing activity would be perfect.

Assessment task
Write down all the jobs we will have to do before Mission Day.
Practice skip counting by 2s, 5s, and 10s.

Resources
“Ava’s Pancakes’ interactive book
### Activity 2
Research prices of minties in online catalogues. Look at both IGA and Coles. Note package size and how many packets we would need for the day given our school size. (The teacher will need to have a variety of tasks prepared for small group arrangements at the supermarket. Each group will be accompanied by an adult. The tasks will involve pricing items and noting how prices are displayed. Each group will at some point note where the minties and lolly snakes are kept and their price.

| Record minty packet price and size (in gms) | IGA and Coles websites Caritas promotional video |

### Activity 3
Visit to the supermarket to purchase minties and lolly snakes. Each group will have an adult team leader. One group will be involved in getting the lollies. All groups will visit the lolly aisle to see the display and pricing. Each group will move around the supermarket to answer all their allotted questions. The supermarket will be contacted prior to our visit to inform them of our coming.

| Supermarket questionnaire | The IGA supermarket, parent helpers, questionnaires, clipboards and pencils, money. |

### Activity 4 Developing
Practice Mission Day stalls in classroom. Children take turns to be stall holders, length recorders of stretched snake and torn mintie wrappers. All results are recorded for comparison at the end of the time. All results are recorded in cm. Children will use play money in their tills and the use of a “float” will be discussed and amount used recorded for later subtraction.

| Measure items that are to be compared, count out total takings on each stall at the end. Each “turn” can be 20c, paid for with two 10c pieces. So skip counting by 10s is achievable for all. | Tables, metre rulers, lolly snakes, minties, play money, recording paper, bin, tennis balls, masking tape. |

### Activity 5 Culmination
Mission Day
Children are assigned stalls to run
- ball bounce
- longest torn mintie
- longest stretched lolly snake
Each stall will have “float”. The mintie and lolly stall will have paper to record measurements. They will each have a metre marked behind their area for measuring each entry. 
Children are rostered onto one stall only in order to have their own time to go around other classes’ stalls. Each stall will have a pair of children on duty—one to take the money and possibly give change and the other to do the measurement recording.

| Accurate recording of measurements. Accurate handling of money. | Tables, metre rulers, lolly snakes, minties, money, recording paper. bin, tennis balls, masking tape, posters advertising the activities (including pricing and prizes). |

**Differentiation:** Children that struggle with the prerequisites at the beginning will be supported with simplification of tasks as we go along.
APPENDIX 9: ST MICHAEL’S YEAR 3 UNIT OF WORK Making Sense of Building

KLA: MATHEMATICS

UNIT TITLE: Making Cents of Building

SCHOOL NAME: St Michael’s Deniliquin  STAGE: 2  CLASS: 3V  TERM: 4  YEAR: 2015  TEACHER: Lauren

Rationale:
As a result of teaching the MoneySmart units I realised; my students need more purpose and results from learning, and my students need more explicit links between aspects of maths and money. In my own financial literacy unit I will; Provide activities that challenge and allow hands-on learning, explicitly showing the links between money and maths, give purpose and results to their learning, reflect with the children on their growth and understanding on money and maths, and allow discoveries and constructive learning through inquiry tasks.

Unit Description:
Making Cents of Building looks at the cost of creating something out of durable materials. This unit looks at design, costing, sourcing, and comparing to enable children to deepen their understandings of financial literacy, multiplication, measurement, data collection, and time. By the end of the unit students are able to create connections with the processes used for construction in real world scenarios and how financial literacy is required when deciding to construct or build something.

Framework for Engagement with Mathematics:
• Interaction amongst students and between teacher and students is continuous through discussion and questioning techniques, particularly throughout the procedures of the building and design process.
• The teacher models enthusiasm and an enjoyment of mathematics and has a strong pedagogical content knowledge particularly showing enthusiasm in the creation of the item and how this can demonstrate a positive message for the school.
• The teacher is aware of each student’s mathematical abilities and learning needs and styles and caters to these needs through supporting learning and catering to different learning styles to ensure engagement.
• Feedback to students is constructive, purposeful and timely through verbal and written feedback, as well as peer feedback through presentations and discussions on designs, graphs, and budgets.
• There is a substantial conversation about mathematical concepts and their application to life which is achieved through the links to building and designing within a real world context. The smaller scale design is then discussed and compared to building something larger like a house or skyscraper.
• Students are provided an element of choice through the student led unit with opportunities for surveying, discussing and designing all aspects within reason.
• Technology is embedded and used to enhance mathematical understanding through a student-centred approach to learning through the use of Google Apps for budgeting and researching elements of the unit.
• The relevance of the mathematics curriculum is explicitly linked to students’ lives outside the classroom and empowers students with the capacity to transform
and reform their lives which is evident in the links between building things within the community. It also shows them the impact they can have in the school community by creating a buddy bench to help the children who need a friend.

<table>
<thead>
<tr>
<th>NSW Syllabus</th>
<th>National Consumer and Financial Literacy Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Working mathematically</strong></td>
<td><strong>Dimension: Knowledge and understanding</strong></td>
</tr>
<tr>
<td>• MA2-1WM - Uses appropriate terminology to describe, and symbols to</td>
<td>• Explain some different forms that money can take.</td>
</tr>
<tr>
<td>represent, mathematical ideas.</td>
<td>• Explain the role of work in society and distinguish between paid and unpaid work.</td>
</tr>
<tr>
<td>• MA2-2WM - Selects and uses appropriate mental or written strategies,</td>
<td>• Explain why similar goods and services may vary in price.</td>
</tr>
<tr>
<td>or technology, to solve problems.</td>
<td>• Identify, explain and prioritise different needs and wants.</td>
</tr>
<tr>
<td>• MA2-3WM - Checks the accuracy of a statement and explains the</td>
<td><strong>Dimension: Competence</strong></td>
</tr>
<tr>
<td>reasoning used.</td>
<td>• Use money to buy basic goods and services in ‘real-life’ contexts.</td>
</tr>
<tr>
<td><strong>Fluency</strong></td>
<td>• Create simple budgets for specific purpose.</td>
</tr>
<tr>
<td><strong>Understanding</strong></td>
<td>• Accurately complete simple financial forms, including for online transactions.</td>
</tr>
<tr>
<td><strong>Strand: Number and algebra</strong></td>
<td>• Classify and compare goods and services.</td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>• Order and discuss reasons for spending preferences.</td>
</tr>
<tr>
<td>• MA2-4NA - Applies place value to order, read and represent numbers of</td>
<td>• Discuss some options for purchasing goods and services such as cash, debit card, credit card and direct debit.</td>
</tr>
<tr>
<td>up to 5 digits.</td>
<td>• Explain why similar goods and services may vary in price.</td>
</tr>
<tr>
<td>• MA2-5NA - Uses mental and written strategies for addition and</td>
<td><strong>Dimension: Responsibility and enterprise</strong></td>
</tr>
<tr>
<td>subtraction involving two-, three-, four-, and five- digit numbers.</td>
<td>• Identify and describe the impact that the consumer and financial decisions of individuals may have on</td>
</tr>
<tr>
<td>• MA2-6NA - Uses mental and informal written strategies for</td>
<td>themselves and their families, the broader community and/or the environment.</td>
</tr>
<tr>
<td>multiplication and division.</td>
<td>• Apply consumer and financial knowledge and skills in relevant class and/or school activities such as student</td>
</tr>
<tr>
<td><strong>Strand: Measurement and geometry</strong></td>
<td>investigations, charity fundraising, business ventures and special events.</td>
</tr>
<tr>
<td><strong>Focus outcome/s</strong></td>
<td>• Exercise a range of enterprising behaviours through participation in relevant class and/or school activities.</td>
</tr>
<tr>
<td>• MA2-9MG - Measures, records, compares and estimates lengths, distances</td>
<td>• Explain the role played by the voluntary sector in the community to help those in financial need.</td>
</tr>
<tr>
<td>and perimeters in metres, centimetres, and millimetres, and measures,</td>
<td></td>
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<tr>
<td>compares and records temperatures.</td>
<td></td>
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<tr>
<td>• MA2-10MG - Measures, records, compares and estimates areas using</td>
<td></td>
</tr>
<tr>
<td>square centimetres and square metres.</td>
<td></td>
</tr>
<tr>
<td>• MA2-13MG - Reads and records time in one-minute intervals and</td>
<td></td>
</tr>
<tr>
<td>converts between hours, minutes and seconds.</td>
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</tr>
<tr>
<td>• MA2-14MG - Makes, compares, sketches and names three-dimensional</td>
<td></td>
</tr>
<tr>
<td>objects, including prisms, pyramids, cylinders, cones and spheres,</td>
<td></td>
</tr>
<tr>
<td>and describes their features.</td>
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</tr>
</tbody>
</table>
### Focus Group Summaries

**MA2-15MG** - Manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals, and describes their features.

**Strand:** Chance and Data

**Focus outcome/s**
- **MA2-18SP** - Selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs.

### Links to other Key Learning Areas:

**Science**
- **ST2-4WS** - Investigates their questions and predictions by analysing collected data, suggesting explanations for their findings, and communicating and reflecting on the process undertaken.
- **ST2-5WT** - Applies a design process and uses a range of tools, equipment, materials and techniques to produce solutions that address specific design criteria.
- **ST2-14BE** - Describes how people interact within built environments and the factors considered in their design and construction.

**English**
- **EN2-1A** - Communicates in a range of informal and formal contexts by adopting a range of roles in group, classroom, school and community contexts.
- **EN2-2A** - Plans, composes and reviews a range of texts that are more demanding in terms of topic, audience and language.
- **EN2-7B** - Identifies and uses language forms and features in their own writing appropriate to a range of purposes, audiences and contexts.

**HSIE**
- **HT2-2** Describes and explains how significant individuals, groups and events contributed to changes in the local community over time.

### Prerequisite skills:
- Add three or more single-digit numbers
- Apply known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers,
- Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents
- Measure, order and compare objects using familiar metric units of length
- Recognise and use formal units to measure and estimate the areas of rectangles
- Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies.
<table>
<thead>
<tr>
<th>Introducing</th>
<th>Assessment task</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity 1 - Brainstorming and surveying (1hr)</strong></td>
<td>Submitted - Children are assessed on their survey results, showing they have generated a survey that will fairly show the choice of students and is then presented in a graph.</td>
<td>Building a throne - <a href="https://www.youtube.com/watch?v=B4OzPt1zaTM">https://www.youtube.com/watch?v=B4OzPt1zaTM</a></td>
</tr>
<tr>
<td>• Watch video (Building a throne on minecraft).</td>
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<tr>
<td>• Discuss the idea of building something for a school.</td>
<td></td>
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</tr>
<tr>
<td>• Brainstorm what the school could use in the form of a mind-map; i.e. a buddy bench, garden beds, cubby house etc.</td>
<td></td>
<td>Rulers</td>
</tr>
<tr>
<td>• Discuss the idea of practicality and budget.</td>
<td></td>
<td>Tape Measures</td>
</tr>
<tr>
<td>○ What would the school like?</td>
<td></td>
<td>Paper/show-me boards</td>
</tr>
<tr>
<td>○ How much do we have to spend?</td>
<td></td>
<td>Grid paper</td>
</tr>
<tr>
<td>○ How much space do we have to build?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What would make other students happy?</td>
<td></td>
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</tr>
<tr>
<td>• Create a list of 3 or 4 things that they would work within the parameters (set by the Principal).</td>
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</tr>
<tr>
<td>• Students create a survey based on these and survey each class in the school (a group per class).</td>
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</tr>
<tr>
<td>• As a whole class collate results and discuss what object was the most wanted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Children then create column graphs based on the results using grid paper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• As a class discuss the results and share the graphs created by the children.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What was the most popular choice?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ How do we know this is the most popular choice?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What was the least popular choice?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ How do we know what the least popular choice was?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What was the difference between the most and least popular choices?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ Why do you think people chose <em>insert choice</em>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What is another way we could present this graph?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Activity 2 - Measuring and designing (1hr)</strong></td>
<td>Submitted - Children are assessed on their scaled drawing, showing an understanding of changing measurements in a comparative way.</td>
<td></td>
</tr>
<tr>
<td>• Discuss the need for tape measures and rulers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What are they used for?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ What is better for measuring longer or shorter distances?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>○ How are these used?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Discuss perimeter and what is it used for when building. Show children the algorithm used for finding the area of objects. They will be estimating and working these out together as a class.</td>
<td></td>
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</tr>
<tr>
<td>• Visit the space provided by the school to build the object. The children are to</td>
<td></td>
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</tr>
</tbody>
</table>
**Focus Group Summaries**

- **Bring paper or show-me boards to write estimations and measurements.**
  - Have children estimate how long and wide the space provided is.
    - While doing this, show students a metre ruler or tape measure (out to a metre) to allow students to gauge an understanding of how long a metre is.
- **As a class measure the length and width, and have children record these.**
  - Was it longer or shorter than you thought?
  - How many metre rulers could fit in the space?
- **Children then work with the teacher to find the area of the space before returning to the classroom.**
- **Discuss how to use grid paper to create a scale drawing.**
  - What does a scaled drawing look like?
  - What is a scale?
- **As a class decide on a common (basic) scale for the class to use for consistency.**
- **Children then use grid paper, rulers and pencils to design what they would like the object to look like. (Assessment)**
- **When children have created this design they are able to colour code and share their designs with others in the class.**
- **As a whole class share designs and discuss the pros and cons of each.**
- **Decide on the most practical and well-liked design using a class vote.**
  - This design will then be enlarged and displayed in the classroom.

<table>
<thead>
<tr>
<th>Developing</th>
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</thead>
<tbody>
<tr>
<td><strong>Activity 3 - Budgeting and value for money (1hr)</strong></td>
</tr>
<tr>
<td>- Recap on the design chosen for the new item.</td>
</tr>
<tr>
<td>- Generate a list of the materials that will be needed to construct the item.</td>
</tr>
<tr>
<td>- Remind the students that they only have a certain amount of money to create this and discuss creating a budget for the class to allocate spending.</td>
</tr>
</tbody>
</table>
  - What does the word budget mean?
  - What words would a budget include? (income and expenses)
  - How could this be laid out?
  - How can we find rough expense costs (online)
| - Children then use Google Sheets or Microsoft Excel to create a basic budget showing the different costs. (Assessment) |
| - During this time the students are able to research prices. |
  - The teacher is able to work with small groups to discuss the concept of value for money and how we can find materials that are durable but not excessive.

---

Submitted - Children will be assessed on their ability to create a budget using Google sheets that shows their expenses and income with excess cost monitored.

Chromebooks/computers
- plastic money
- Local hardware store websites

Rubric

- Children will be assessed on the comparisons they make and present using a google doc.
overly expensive. This relates to research and comparing.

- Students then share their budget planning and as a class, discuss the most cost effective option.
- Print the budget and display it next to the design in the classroom.

Presentation will show their items, the stores, costs and differences in prices. Showing the difference and a rationale of why they chose that object.

**Activity 4 - Cost by metre and subsidies**

- Discuss the budgets created in the previous lessons.
- Discuss the resources used and create a definition of the term “Cost by metre”.
- Brainstorm places and objects where the term “Cost by metre” is used.
- Children then research the prices of different woods at different hardware stores and work in teams to find the cost per metre.
- This is then collated and presented in a graph.
- Children then work this into their budgets.
- Begin to discuss the idea of labour and how builders charge for their services.
- Discuss what the rate would be and how this would affect the budget.
- Allow children to present budgets and discuss what changes they made.

**Culminating**

**Activity 5 - Actual build and creation**

- Children to participate in preparation and building of the structure.
- This includes visiting the local hardware store to collect materials or choose prior to building. Children will also use this time to discuss cost vs quality with a staff member if available.
- Children refer to designs and costing and present this to an adult who will able to assist with the construction.
- Ideally this would be during school hours when the children are able to view this happening, otherwise this is to be documented with photography and discussed.

**Activity 6 - Reflecting on activities**

- Students create a slideshow that shares what they have learnt from the unit and what they understood about constructing a product.
- The following questions can be used as a prompt for students to answer within their slideshow.
  - How was the goal achieved?
  - What maths was used to create this?
○ How did comparing costs and items help in purchasing and building?  
○ What did I learn or get better at, as a result of the project?  
○ What/how can you use your learning in your life?  
○ How can you use this in your future?  
○ How do you think things we buy at the store are prepared?  
○ How do they work out the cost of things at the store?

<table>
<thead>
<tr>
<th>Differentiation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Child A with writing difficulties will be able to work with a recording device or the teacher to scribe their responses and encourage them to verbalise in a logical way.</td>
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<tr>
<td>Child B with hearing difficulties will have written instructions presented and teacher to verify understanding.</td>
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<tr>
<td>Child C who has short attention span and easily distracted will be encouraged to use hands-on objects to aid in understanding mathematical practices and be invited to share their findings with other students to help them focus on the task with dialogue.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Reflections</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Students:</td>
<td></td>
</tr>
<tr>
<td>• See Activity 6 reflection questions.</td>
<td></td>
</tr>
<tr>
<td>Teacher:</td>
<td></td>
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<tr>
<td>• Were the students able to complete the reflection task with a sound understanding?</td>
<td></td>
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<tr>
<td>• Did the children link their mathematical and financial literacy experiences with the real world and how have they applied this?</td>
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<tr>
<td>• Were children able to understand the need for comparing prices and quality and how was this demonstrated?</td>
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<tr>
<td>• How were children able to reflect on their own mathematical understanding?</td>
<td></td>
</tr>
<tr>
<td>• Did the lesson run smoothly and how did this allow good transitioning?</td>
<td></td>
</tr>
</tbody>
</table>