

**AAMT Final Report to ASIC on the Draft
Resources Map:
Consumer and Financial Literacy**

February 2011

Contact Officer

Ms Kate Manuel

Project Officer

T: (08) 8363 0288

E: kmanuel@aamt.edu.au

Contents

Background information	3
Consumer and Financial Literacy and the Australian Curriculum: Mathematics version 1 (December 2010)	4
Insights about resources from AAMT surveys.....	6
Primary teachers' feedback on their 'resource needs'	6
Secondary teachers' feedback on their 'resource needs'	8
Some general comments	10
Feedback on usefulness of resources	11
Analysis of resources	15
Identifying useful resources	15
Rating the resources	16
Mapping resources to the Australian Curriculum: Mathematics.....	17
Issues arising from the resource mapping research and analysis	18
Primary Resources.....	18
Mapping to the Financial Literacy Framework	20
Gaps in the provision and availability of resources	22
In the secondary years	22
In the primary years.....	23
C&FL Report Recommendations	25
Professional learning for teachers	23
Teaching and professional resources	26
Appendices	26
Appendix 1 – Survey Questions.....	26
Appendix 2 – Other Survey findings.....	30
Appendix 3 - Reviews of C & FL Resource Types.....	38
Appendix 4 - Annotated Resource Map	42

Background information

The Australian Association of Mathematics Teachers (AAMT) was contracted by the Australian Securities and Investments Commission (ASIC) to undertake a range of work to assist it in effective integration of Consumer and Financial Literacy in the Australian Curriculum: Mathematics.

One element of this work was to undertake a comprehensive review of suitable existing resources, linking mathematics to Consumer and Financial Literacy contexts and to map these resources to the Australian Curriculum: Mathematics. The objectives of this task were to:

- identify the availability and cost of identified teacher resources;
- ascertain the strengths, weaknesses and likely applicability of these identified resources;
- identify gaps in the identified resources; and
- report written findings to ASIC including an annotated map of the resources.

Another aspect of the work saw the AAMT survey members and other teachers. The focus of these surveys – one was directed at primary educators, the other at those working in secondary schools – was to gain insight into respondents' perceived needs and preferences in terms of resources and professional learning to support effective treatment of Consumer and Financial Literacy as the Australian Curriculum: Mathematics is implemented. Some of those findings are relevant to this discussion of resources and are outlined as background to the full discussion of resources and the resources map.

This work was largely undertaken during 2010, the year in which the Australian Curriculum: Mathematics was being written – indeed the first component of this project was to inform ASIC of ways in which the draft document could be improved in terms of its representation of Consumer and Financial Literacy. Hence, for the most part, the point of reference at most stages of the project was the current draft of the curriculum. Version 1 of the Australian Curriculum: Mathematics was published on 9 December 2010. Only now is the representation of Consumer and Financial Literacy in the curriculum made clear – a discussion of this is essential background to the considerations of the resources and resource map.

Consumer and Financial Literacy and the Australian Curriculum: Mathematics version 1 (December 2010)

Due, at least in part to submissions to ACARA from ASIC, and separately by AAMT, about the initial draft of the Australian Curriculum: Mathematics, there is a “Money and Financial Mathematics” thread at each Year level from 1 to 10. The table below contains these Content Descriptions.

Year	Content Description
1	Recognise, describe and order Australian coins according to their value
2	Count and order small collections of Australian coins and notes according to their value
3	Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents.
4	Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies.
5	Create simple financial plans
6	Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies
7	Investigate and calculate 'best buys', with and without digital technologies
8	Solve problems involving profit and loss, with and without digital technologies
9	Solve problems involving simple interest
10	Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies

Table 1 – Content Descriptions for Money and Financial Mathematics in the Australian Curriculum: Mathematics

It is noteworthy that there is only ever one Content Description at each year level in the Money and Financial Mathematics thread– some of the threads have two, three or more descriptions. This singular reference to Money and Financial Mathematics at each year level could lead to a relatively narrow interpretation of the place of Consumer and Financial Literacy in the mathematics curriculum. It is essential for the mathematics curriculum to play a key role in developing the mathematical knowledge and skills that underpin Consumer and Financial Literacy, not just those directly associated with the Content Descriptions in the Money and Financial Mathematics thread. Hence it is extremely important for students to encounter financial contexts in aspects of mathematics other than those particularly identified in the Money and Financial Mathematics thread.

This suggests that there needs to be consideration of two different types of mathematics resources to support the implementation of the Australian Curriculum: Mathematics. The first is to directly support the teaching of the

Content descriptions in Table 1. The second are resources that serve to have students learn other mathematics content, but in contexts that encourage and enable the development of appropriate aspects of Consumer and Financial Literacy.

Some Work Samples are included in version 1 of the Australian Curriculum: Mathematics. At Year 3 the sample shows different ways of making up \$15, thus helping set the standard expected in relation to one aspect of the Money and Financial Mathematics Content Description at Year 3. At Year 8, the Work Sample is about analyzing and choosing telephone plans. This is effectively unrelated to the Money and Financial Mathematics Content Description at Year 8 which is about profit and loss. This Work Sample is an example of important mathematics, tagged in the Linear and non-linear relationships thread, being developed in a financial context. It is clear that the activity involved in this Work Sample can contribute to students' development of Consumer and Financial knowledge, skills and orientations – it is an example of the second kind of resource indicated above. However, because it does not connect to the mathematical content listed in the Money and Financial Maths thread, there is a considerable risk that it will be dismissed by teachers.

Insights about resources from AAMT surveys

In August 2010 two surveys, one for secondary teachers and one for primary teachers, were launched on the AAMT website.¹ The scope was the professional learning and resources needs for teaching Financial Literacy in schools. Questions were formulated by AAMT in the first instance, and then sent out by email to members of the Working Group and to Judy Gordon of ASIC for comment. A number of responses were received, some with suggestions of additional questions and others amending the wording. These responses were incorporated into the final questions that appeared. Teachers were alerted to the surveys through a link in the AAMT home page and through the email list; they were encouraged to participate and to inform other colleagues about this opportunity. The surveys ran for a month; respondents were broadly representative in terms of jurisdiction and location (see Appendix 2). It must be acknowledged that although well supported conclusions could be drawn from the respondents views, the sampling was not random and the replies were from those who belong to a professional mathematics association and felt strongly enough about the issue (either positively or negatively) to take the time to complete the survey.

Teachers were invited to make optional comments at several points throughout the survey. Primary teachers gave general approval of the inclusion of C &FL within the curriculum, although there was some concern about the additional time requirements and whether the mathematical background of teachers would be adequate. Their secondary colleagues expressed a very broad spectrum of views on C &FL, from those with a passionate interest in teaching what was perceived as a practical, relevant and essential aspect of mathematics, to others who thought there was no intrinsic worth in financial literacy and therefore it had no place in the mathematics curriculum. Other responses were less extreme and focused on the empowerment that sound financial literacy could impart to students.²

Primary teachers' feedback on their 'resource needs'

Teachers were asked to indicate which topics, if any, they would require support in order to teach effectively. There were eight key mathematical ideas identified. These were drawn from the Financial Mathematics thread for primary years in the *AC: Mathematics*, in its draft form in August 2010, and supplemented with suggestions from the Working Group.³ The results are shown in Table 2.

¹ Appendix 1 contains the questions for both of the surveys. Other findings from the surveys that are not directly related to considerations of resources, but are interlinked through Professional Learning needs, are included in Appendix 2.

² A full list of comments is available from AAMT.

³At the time the surveys were administered the "Money and Financial maths" thread was not present in the Year 6 level or Year 7 level of the draft Australian Curriculum: Mathematics, therefore the topics of percentage discounts and best buys were not included.

Topic (primary)	No. of responses
Problem solving in financial contexts	75
Computation skills in financial contexts	61
GST	61
Budgeting	48
Credit	48
Money in its various forms	48
Saving	41
Earning and income	41
<i>None of the above</i>	<i>13%</i>

Table 2 – Primary teachers’ perceived needs (topics)

There was one distinct area of high need, problem solving in financial contexts, with 75 responses. In equal second and third positions, with 61 responses, were computation skills in financial contexts and the Goods and Services Tax. The two highest ranked areas of need were the same for metropolitan, regional and rural schools, but money in its various forms (rather than the GST) was in third position for rural schools. There was a substantial drop down to 48 responses for each of the topics of budgeting, credit and money in its various forms, then a smaller drop to 41 responses for saving and earning and income. 13% of the responses indicated that no support would be necessary.⁴

Thus the three highest areas of need identified were:

- problem solving in financial contexts
- computation skills in financial contexts
- Goods and Services Tax

Problem solving and computation skills in financial contexts are not content areas in themselves but more approaches in applying mathematics. Their high rating implies that teachers felt more comfortable with the mathematics required but perceived that embedding the calculations within a suitable context was a critical element of successfully implementing Consumer and Financial Literacy through the Australian Curriculum.

The inclusion of GST as an option was, in the end, something of a ‘red herring’. The August draft included GST calculations in one of the primary Content Descriptions. This was subsequently omitted in the published version. Hence it is likely that many fewer teachers would identify GST calculations as a priority when considering the published version of the Australian Curriculum: Mathematics.

⁴ A percentage rather than a count was calculated; by recording the response “none of the above”, it was assumed that no other topic was selected.

Secondary teachers' feedback on their 'resource needs'

Teachers were asked to indicate which topics, if any, they would require support in order to teach C & FL effectively. There were 17 key mathematical ideas identified. Two were drawn from the Money and Financial Mathematics thread for Years 9 and 10⁵ of the August draft of the K-10 Australian Curriculum: Mathematics. Others were related to the financial topics which appeared in the senior subjects of Essential Mathematics and General Mathematics, in the draft senior years curriculum, as at August 2010. For the senior years, core concepts were selected from each of the financial topics; these core concepts made up the majority of the choices offered. Financial spreadsheets as a key idea was also included to incorporate an aspect of the use of technology, which is emphasised in the draft documents. Results are shown in Table 3.

Topic (secondary)	No. of responses
Annuities and perpetuities	105
Investments, including superannuation	90
Income support and benefits	88
Financial spreadsheets	80
Consumer credit: credit and debit cards, personal loans	62
Reducing balance loans	61
Payment plans	53
Effective interest	53
Taxes and deductions	50
Personal income tax	41
Budgets	38
Payslips	37
Depreciation	33
Buying and paying for goods and services	27
Wages and income	24
Compound interest	17
Simple interest	16
<i>None of the above</i>	<i>17%</i>

Table 3 – Secondary teachers' perceived needs (topics)

⁵ At the time the surveys were administered the "Financial maths" thread was not present in the Year 8 level of the draft Australian Curriculum: Mathematics

There was a distinct grouping of four topics with a high support need: annuities and perpetuities with 105 responses, investments including superannuation with 90 responses, income support and benefits with 88 responses and financial spreadsheets with 80 responses. There was then a substantial drop to 62 responses for the topic of consumer credit: credit and debit cards and personal loans, and then a gradual diminution ranging from 61 to 16 for the remaining 12 topics. 17% of the responses indicated that no support would be necessary.⁶

Thus the four highest areas of need identified were:

- annuities and perpetuities
- investments including superannuation
- income support and benefits
- financial spreadsheets

The three most highly ranked topics requiring support come from the senior secondary courses Essential Mathematics and General Mathematics; the fourth is a general topic description to address aspects of the required technology. The lowest ranked topics were simple and compound interest which were from Years 9 and 10.

The high ranking of financial spreadsheets is particularly pertinent, given that the Content Descriptions in the Money and Financial Mathematics thread include “with and without the use of technology” in Years 7 and 8 and “using appropriate digital technologies” in Year 10. It is a strong indication that teachers will be looking for resources that illustrate the use of technology in general, and in particular the use of spreadsheets as a pervasive and extremely effective tool in many financial contexts.

From the rankings, teachers were most comfortable with teaching the Money and Financial Mathematics threads for the junior secondary area, which are based around simple and compound interest.⁷ As the respondents to the secondary survey were likely to have had mathematics training and/or experience in teaching mathematics, the concept and calculation of interest would be a familiar one.

Almost a fifth of secondary teachers recorded “none of the above” as a response, meaning that they felt competent to teach all of the key ideas listed. It may well be that these teachers had experience in teaching financial mathematics, especially in the more senior years. All states and territories offer courses that cater specifically for those students who still have an interest in or need for mathematics in their course of study, without that study being a requirement for further education, and many of those courses have a significant financial element. It is also interesting that the percentage of those confident in their ability to teach financial mathematics without any further support was noticeably higher in the secondary than the primary. This difference could be

⁶ See Appendix 2 for further details

⁷ The topic of profit and loss (which now appears in the Year 8 content) was not in the original draft document and therefore was not included in the list of content.

attributed to different backgrounds, with primary teachers having more general teaching preparation, rather than concentrated on one or two subjects.

Secondary teachers made much comment on the need for resources to be realistic and current for sensible applicability, and relevant for student interest and motivation.

Some general comments

The identification of key ideas needing support does not necessarily mean that suitable resources are lacking. The respondents to the primary survey were drawn from all primary year levels and may not have encountered some topics before, so unfamiliarity with resources could be anticipated. In addition, the topics of problem solving and computation skills in financial contexts are very general descriptions, not associated with particular content areas, and therefore could be viewed as providing potential difficulties.

In relation to the secondary survey, it may be that respondents were not acquainted with particular areas of mathematics associated with the more senior years, and therefore were unaware of the resources that are available. A teacher who works predominantly in the Junior Secondary area, or whose classes were more academically focused, is unlikely to have encountered a number of these ideas, apart from those occurring through life experience. Topics such as personal income tax, budgets, payment plans, playslips and depreciation could be expected to be familiar through having a history of employment, whereas annuities and perpetuities are likely to be outside the field of personal finance.

Feedback on usefulness of resources

Teachers were asked to identify the type of resource that would be most useful in their teaching. There were 10 possible choices. Each type of resource could be allocated a response from “Would not use”, “Unlikely to use”, “Likely to use” or “Would use”. For the purposes of establishing a suitable ranking, the proportions of “Likely to use” and “Would use” were combined. Table 4 lists the responses in order from the most to least appealing to primary and secondary teachers.

Primary	Secondary
Student-centred investigations	Student-centred investigations
Online resources for students	Student worksheets
Games	Online resources for students
DVD/video to engage and instruct	Text book
Whole unit of student work	Background material and information
Background material and information	Games
Expert speaker	Whole unit of student work
Student worksheets	DVD/video to engage and instruct
Business websites	Business websites
Text book	Expert speaker

Table 4 – Ranking of usefulness of types of resources.

The highest ranked resource type for primary schools was student-centred investigations (99%); for secondary schools student-centred investigations and student worksheets ranked equal first with 94%. Although there were considerable differences between the primary and secondary rankings of types of resources, it was significant that student-centred investigations rated so highly in both. Investigative approaches work well for in-depth exploration of ideas and would be particularly suited for Consumer and Financial Literacy as the mathematics is embedded so firmly in the context. They also reflect sound pedagogy as investigations can encourage students to choose areas of individual interest, select different approaches and may also encourage working collaboratively.

Both primary and secondary groups included online resources in the top three, primary with a second ranking (97%) and secondary with a third ranking (92%). Teacher comments suggested the reasons for this preference as ease of access, particularly those in more remote locations, and a perceived positive for engaging student interest.

The rankings of the other types of resources showed significant differences between primary and secondary schools and are probably a reflection of the reality of classroom practice in the different settings. Student worksheets as a resource were ranked equal first by secondary teachers but only eighth (74%) by primary teachers. In a secondary classroom, worksheets may be used for skills practice, homework, revision and extension. They may be less useful in a primary classroom as they tend to be an individual rather than a group activity and typically require developed reading ability in order to follow the

instructions. Differences in methodologies would seem to be the reason behind primary teachers ranking games as third (95%) whereas secondary teachers rated games at sixth (83%). Games demand attributes other than the strictly mathematical (such as cooperation, understanding rules etc) which are very much a “whole child” approach more commonly seen in a primary setting. Secondary teachers ranked text-books in fourth position (88%) while primary teachers rated text-books firmly in the last position with 45%. A text-book is seen as a core resource for secondary teachers; traditionally a textbook is the bedrock in a secondary classroom, with a typical text providing instructional notes, examples, practice exercises with answers, ideas for investigations and often mathematical puzzles as well. Primary teachers clearly had a much less positive impression of this type of resource.

It was interesting to note that both primary and secondary teachers ranked the use of business based websites (such as banks) at ninth. The overall perception appears to be that because these websites are of a commercial nature, the major goal would be one of sales and not education. Also there is the notion that directing students to use a particular website might have connotations of endorsement.

Teachers also liked the idea of engaging an expert speaker but ranked it in the lower half of useful resources. The bottom ranking of this in the secondary responses can be attributed to the “crowded curriculum” - spending a lesson or two listening to a speaker was seen as enriching but not as important as the core work. Others commented that the location of their school made the engagement of a speaker impossible.

There were also some contrasting profiles when considering the locations of the schools. Table 5 contains the relative rankings for Rural, Regional and Metropolitan primary teachers; Table 6 has the rankings for secondary teachers.

Metropolitan	Regional	Rural
Student-Centred investigations	Student-centred investigations	Student-Centred investigations
Online resources for students	Games	Online resources for students
Whole unit of student work	Online resources for students	Games
DVD/video to engage and instruct	DVD/video to engage and instruct	DVD/video to engage and instruct
Games	Background material and information	Background material and information
Background material and information	Whole unit of student work	Whole unit of student work
Student worksheets	Expert speaker	Expert speaker
Expert speaker	Student worksheets	Student worksheets
Business websites	Business websites	Business websites
Text book	Text book	Text book

Table 5 – Rankings of primary teachers in the different locations

Metropolitan	Regional	Rural
Student-centred investigations	Online resources for students	Online resources for students
Student worksheets	Student-centred investigations	Student worksheets
Text book	Student worksheets	Student-centred investigations
Online resources for students	DVD/video to engage and instruct	Whole unit of student work
Background material and information	Text book	Text book
DVD/video to engage and instruct	Games	Games
Whole unit of student work	Background material and information	Background material and information
Games	Whole unit of student work	DVD/video to engage and instruct
Business websites	Business websites	Expert speaker
Expert speaker	Expert speaker	Business websites

Table 6 - Rankings of secondary teachers in the different locations

For both primary and secondary schools the metropolitan responses had a different “flavour” from that of the regional and rural schools, although the differences were more marked in the secondary arena. The importance of internet resources in the secondary responses was noticeably different, driven presumably by the physical location or perhaps the infrastructure. Online resources were ranked number one by regional and rural schools, but fourth by metropolitan schools. Other variations were also apparent. Text books were ranked third for metropolitan but fifth for regional and rural; games were eighth for metropolitan but sixth for regional and rural. It appears that rural and regional schools take a less traditional approach to the resources used for instruction. This may be a factor of the nature of the student cohort or of the personal teacher profile.

There was less variation within primary schools. The most noticeable difference was in games, which were ranked fifth for metropolitan, but second for regional and third for rural.

Rural and regional schools were also very consistent with each other in their responses.⁸ In primary schools 8 of the 10 rankings were exactly the same for regional and rural schools; in secondary schools, there were only two kinds of resources (whole unit of student work and DVD/video) in which the rankings differed by more than one between regional and rural schools.

⁸ Responses from remote schools were not included in the discussion of profiles as the numbers were too small to be significant. Remote schools made up 2 out of 187 secondary schools and 3 out of 110 primary schools.

In summary, four types of resources have been identified which would cover the top three ranked types in both primary and secondary. This would address the majority of identified needs. The resource types are:

- student-centred investigations
- student worksheets
- online resources for students⁹
- games

There are some differences between city and country teachers' rankings of resources, and these may need to be considered when designing responses to teachers resource needs in relation to Consumer and Financial Literacy and the Australian Curriculum: Mathematics.

⁹ Online resources could include interactive elements as well as being a source of downloadable material. The games may also be online and interactive.

Analysis of resources

Identifying useful resources

To enable a good and broad understanding of existing consumer and financial literacy resources suitable for use in mathematics classrooms and the subsequent identification of possible gaps, AAMT employed a tiered process:

- 1) types of resources used by Mathematics teachers was identified. This was based on the understanding that many allied resources would likely follow the same style and therefore could be easily identified (a good example of this would be a text book). The four resource types identified were:
 - a. online games
 - b. online print resources
 - c. online interactive resources
 - d. print resources (primary and secondary)

Although the four resource types listed above do not match exactly to those identified as highest needs in the surveys, they do cover the desired areas. Clearly, games and on-line interactive resources for students appear in both. The category of print resources, whether online or in book form, is very broad. Within this grouping, student-centred investigations and worksheets, which are the other two favoured resource types from the surveys, might be expected to feature.

- 2) a “typical” example of the type of a C & FL resource was then analysed in detail with respect to content covered and its relationship to the draft Australian Curriculum: Mathematics, as well as any links to the Financial Literacy Framework. (Appendix 3)
- 3) a map of existing C & FL resources suitable for use in Mathematics classrooms was then developed, mapping against the resource types identified and noting links to the Australian Curriculum: Mathematics and the National C & FL Framework where appropriate. Some qualitative judgements were made on how well the resource addressed the financial literacy context as well as the comprehensiveness of the mathematics, using a rating system.¹⁰ (The annotated map is in Appendix 4)

In the primary section, the map contains the title and type, the topic(s) covered and/or the year level in the Australian Curriculum: Mathematics (whichever is appropriate), and the broad content area. The next two columns contain the ratings for context and mathematics. The final column identifies the links to the Financial Literacy Framework.

The junior secondary and secondary tables follows a similar outline, with title and type, the topic(s) covered and/or the subject in the Australian Curriculum: Mathematics (whichever is appropriate), and the broad content area or unit. The next two columns contain the ratings for context and mathematics. Links to the Financial Literacy Framework are identified for the more junior years.

¹⁰ A detailed description of the rating system is described on p 17

The AAMT drew on a number of information sources to develop the annotated map of resources:

- a summary of popular C & FL websites developed by AAMT members at a workshop held on 27 and 28 April 2010
- a summary of comments from a leaders feedback session as a part of “Leaders and the AC:M : Leading the Implementation of the Australian Curriculum” held on 15 and 16 October 2010.
- focus groups with Mathematics teachers conducted by members of the Financial Literacy Working Group¹¹ at various venues and dates
- AAMT resource catalogues and those of other well-known suppliers of mathematics resources
- the results of a scoping exercise undertaken by the AAMT’s Financial Literacy Working Group on 15 November 2010

This process has provided a sound basis for assessing the relevance and quality of the identified Consumer & Financial Literacy resources and their links to the Australian Curriculum: Mathematics and the MCEECDYA Financial Literacy Framework, as well as the practical implications of classroom applicability.

Rating the resources

For the purpose of the resource mapping exercise, a useful resource was considered to be one that had embedded the mathematics smoothly and sensibly within a Consumer and Financial Literacy context. The balance of these two aspects would not necessarily be equal - indeed it might be desirable for the resource to lean one way or the other. Useful resources may be quite different in terms of this balance, depending on the age of the students, the course being undertaken and the approach adopted by the teacher. Meeting the diverse needs and approaches of teachers requires a range of good quality resources – there is no single resource or set of resources that will ‘do the trick’ for all teachers.

There was a view that secondary resources would very likely tend towards the more mathematical as the teaching of Consumer and Financial Literacy would most probably take place in the mathematics classroom. Primary resources are more likely to have the mathematics nested within a broader context as that is the nature of the primary classroom. Junior secondary could well have both, depending upon the level being studied and the umbrella subject under which it fell. For ease of comparison it was decided that the summary table in Appendix 4 would be best grouped into senior secondary, junior secondary (years 7-10) and primary (years 1 - 6).

Those resources that were considered useful in some way were ranked using a rating system. Resources could be considered to lie on a continuum of intensively mathematically based through to minimal mathematical content, and

¹¹ The Financial Literacy Working Group has members drawn from each of the states and territories, with expertise from Kindergarten through to Year 12 and adult education. Following review of the final draft of the annotated resources map by the AAMT executive and ASIC, the AAMT may commission further work from members of the Working Group, or by contracting particular contributions.

on a continuum of richly context based through to minimal context. An “ideal” resource would have strength in both of these aspects.

To rate the resources a 3 star system was used (with 3 being the highest) and a qualitative judgement was made.

Mathematical Content:

- Three stars (***) indicates a comprehensive outline of the mathematics involved plus a suitable number of questions and activities.
- Two stars (**) indicates either a comprehensive outline of the mathematics involved plus a limited number of questions and/or activities OR a limited outline of the mathematics involved plus a suitable number of questions and/or activities.
- One star (*) indicates minimal reference to mathematics.

Consumer and Financial Literacy Context:

- Three stars (***) indicates a comprehensive outline of the financial literacy elements involved plus a suitable number of ideas for activities.
- Two stars (**) indicates either a comprehensive outline of the financial literacy elements involved plus some indication of, or ideas for, activities OR a limited outline of the financial literacy elements involved plus a suitable number of ideas for activities.
- One star (*) indicates minimal reference to the financial literacy background.

Mapping resources to the Australian Curriculum: Mathematics

When conducting the initial mapping against the Australian Curriculum: Mathematics, AAMT used the ASIC recommendations made in response to the draft Australian Curriculum: Mathematics (i.e. the dedicated thread of financial mathematics sitting within the strand of Number and algebra) on the advice that the recommendations have been taken up by Australian Curriculum, Assessment and Recording Authority. Subsequently, that advice was taken up by ACARA and there were additions so that the thread Money and Financial Maths appeared in all years from 1 - 10. The links to the Draft Senior Years Curriculum are more speculative, given the preliminary nature of the documents at this time.

Issues arising from the resource mapping research and analysis

A number of issues arose as a result of discussions, consultations and research undertaken by the AAMT and its members as part of the resource mapping exercise. These were identified by the Working Group when engaged in face to face meetings, through the written comments and suggestions submitted by teachers as a part of the surveys and as a consequence of the general discussions from various focus groups. The issues are summarized below and have been taken into account in formulating the recommendations.

Primary Resources¹²

The context of most primary classes provides opportunities for cross-curricular learning through learning activities that integrate two or more curriculum areas. Teachers identified two key aspects of resources that were important - the actual mathematical content, and the embedding of that content within the Financial Literacy context. Thus the key need identified by primary teachers is a resource(s) that will provide the link connecting the mathematics back to Consumer and Financial Literacy. Teachers are happy to teach the mathematics but want it readily integrated into the Consumer and Financial Literacy rich context.

In terms of existing resources, those produced by banks were generally considered sound and useful, although there were some concerns about using materials from a clearly commercial source. The Commonwealth Bank in particular was identified as running pertinent and interesting programs; its reach into regional areas was especially valued.

A number of electronic resources did not fare so well in the evaluation. An overall comment was made that although some were useful for skills practice, many were boring. Student engagement is not merely a matter of adding “colour and movement” as can be relatively easily done with electronic materials – teachers value material that is intellectually stimulating. Similarly the consensus was that a number of The Learning Federation resources did not really “hit the mark” although the format was considered an appropriate vehicle for bringing high quality resources to teachers.

Secondary Resources

The common context of secondary schooling makes cross-curricular teaching and learning more problematic¹³. The reality is that teachers of mathematics focus on their students’ development in mathematics. For example, considering consumer affairs material about rights and responsibilities can be a good way of building Consumer and Financial Literacy understandings. This material is not often covered in mathematics classes where teachers’ emphasis is more on the

¹² A summary of comments from primary school leaders in a feedback session from “Leaders and the ACM: Leading the Implementation of the Australian Curriculum” was also used to inform this discussion.

¹³ It may be that where effective ‘middle years’ processes – such as teachers taking the class for several subjects – are being implemented there is greater opportunity to work in more integrated, cross-curricular ways. This was not tested in this project.

“sums”. Broader Consumer and Financial Literacy learning such as those that integrate effective consideration of consumer rights and responsibilities with clear learning within the mathematics curriculum – both within and beyond the development within the Money and Financial Mathematics thread – can and should be important within mathematics. Resources that deal well with the mathematics and develop these broader outcomes are both possible and desirable to develop for teachers’ use. Such resources have the added advantage of authenticity, a feature that has appeal to secondary teachers who are often challenged by engaging their students in their learning. However, there are impediments to the practical implementation of such because of the very nature of school structures and organisation. Thus, cross-curricular resources beyond the primary years will probably need to be approached with clear acknowledgement of the context and its constraints.

There was a view that educationally sound printed resources other than textbooks (which, as discussed, have their own limitations) can be hard to. The internet as a source of resources can have the advantage of being more up to date and more authentic. This may not always be the case, so the task of finding useful and useable resources on the internet can be very time consuming. Teachers reported that it is not possible to devote considerable hours to trawling the internet to find a good site, particularly if there is then the need to construct a worksheet or a set of exercises for students to complete.

Suitable internet resources, when found or developed, would also need to be frequently updated. The changing nature of financial mathematics is a challenge. It is not a static body of knowledge: interest rates fluctuate, personal taxation thresholds alter, superannuation rules are frequently modified.

It is especially important that resources are responsive to the practical needs in the classroom, and have a variety of linked activities such as skills practice (in the form of exercises, worksheets, quizzes etc), investigations and assessments of various kinds. Teachers were particularly adamant that resources be modifiable to suit different teaching and learning styles and contexts.

There is some frustrating uncertainty in terms of consistent availability of commercial websites. Other teachers express concern that using commercial sites could be seen to be promoting a particular organisation and its services. Some of the resources that have been developed in the commercial arena can be questioned in terms of the inferences that students could take from the context of the investigation, game or whatever. For example several seem to carry the implication that money is meant to be spent; do not help students appreciate the difference between wants and needs etc.

It was suggested that an educationally driven set of online resources, calculators in particular, be developed and supported. These could certainly simulate the ‘real thing’, but would have many advantages for teachers of mathematics (and other subjects). It may also be desirable that some demonstrate the mathematics behind the calculator. Such resources could then have curriculum-linked activities driven by the needs of the curriculum and considerations of educational value and quality.

Mapping to the Financial Literacy Framework¹⁴

Where possible the resources considered were mapped to the existing National C & FL Framework. As the Framework currently incorporates descriptors in years 3, 5, 7 and 9 only this was not always achievable. Although the linking of the framework to the resource did not go deeper than the dimension and the level, this was considered a sufficient measure of connectedness.

In terms of relevance of the Financial Literacy Framework for practicing teachers, the following comment was made: “the framework sits out there along with Dog Bite Prevention”¹⁵. This can be interpreted as saying that although laudable, the framework does not feature strongly in classroom practice or planning. This was reinforced by another focus group where only one member of the group had actually looked at the Framework, and many were ignorant of its existence.

Teachers do not see the Framework having a significant influence on their teaching. However, having said this, many teachers and their classes do in fact address the four dimensions outlined in the Framework. This may be at varying levels of engagement, and not necessarily in mathematics.

In current practice, the first dimension is the one most easily met at present. Teachers are confident that they are suitably equipped to teach the *Knowledge and Understanding* about the nature and forms of money and how it is used. They also tackle some aspects of the second dimension in *competently* applying financial knowledge and skills in a range of contexts. However, the consumer aspects of these dimensions (the consequences of consumer decisions and consumer knowledge) are less well managed.

The third and fourth dimensions of *Enterprise* and *Responsibility* are also achieved in many primary classrooms, most commonly through subject areas such as Studies of Society or Personal Development. Activities such as a “Mothers’ Day Stall” certainly incorporate *Enterprise* through using initiative, building financial capabilities and managing risk-taking. These types of activities can also highlight *Responsibility*. Many decisions are made and teachers actively promote care for self, others, the community and the environment. But again, the more specific focus of doing these activities within an appropriate consumer and financial background is less well articulated.

Secondary students fare less well, especially in the more academic streams, where financial literacy is seen by some as an unnecessary hindrance to the “real work” of teaching pure mathematics. This is reflected in the resources which often have only a fleeting acquaintance with the Framework. Again, secondary resources do tackle, at least in part, the first and second dimensions. The third, *Enterprise*, occasionally appears, perhaps as the context in which a question is

¹⁴ AAMT notes that ASIC is exploring the option to initiate a re-drafting of the learning descriptors in the current Framework, now that the phase 1 Australian Curriculum documents are published.

¹⁵ Further comments drawn from primary school leaders in a feedback session from “Leaders and the ACM: Leading the Implementation of the Australian Curriculum”.

set, but tends to be an afterthought rather than a driver of the mathematics. Generally, junior secondary students are not exposed to financial mathematics in any coherent or significant way, unless they are placed in a set where this is a focus (usually for students who have struggled with “real” maths).

Where the third (and perhaps fourth) dimensions do appear in secondary schools is in the senior years subjects where there are specifically financial topics. These subjects, and their associated investigations (if chosen), lend themselves well to filling out the more societal aspects of C & FL as exemplified in *Enterprise* and *Responsibility*. Although the framework does not extend to the higher year levels, it can be seen that in fact those seemingly problematic third and fourth dimensions can be addressed with vigour within a mathematics course, given a specifically mathematical topic (e.g. Finance 1) and the opportunity to engage in some significant investigation (which is a separate topic within Essential Mathematics for instance). There is a genuine possibility of thoroughly integrating the dimensions in a relevant, unforced way which would greatly add to the completeness of C & FL for those students.

It was anticipated that the resources considered would map most readily to the dimensions of *Knowledge and Understanding* and *Competence* as these dimensions are more inherently mathematical. Equally it was anticipated that the dimensions of *Enterprise* and *Responsibility*, given their broad societal bases, were more likely to appear in other subject areas such as Studies of Society or Science.

For most of the resources the anticipated result was realized. The *Knowledge and Understanding* dimension appeared most often, frequently allied with the *Competence* dimension. *Enterprise* did appear in a primary investigation (about fund raising using a coin trail) but there was no evidence that *Responsibility* would be addressed in the resources examined. It is clear that the first two dimensions sit comfortably and naturally within the Money and Financial Maths thread.

As discussed, the integration of all four dimensions is possible within a mathematics course but the path needs to be carefully directed. Some year level content within the thread will more obviously lead to this treatment; for others it would be more difficult to add an extra layer. Time limitations are always on teachers’ minds; the integration needs to occur naturally and without crowding the curriculum. It should be seen as adding value to the mathematics, making it more relevant and more interesting.

Gaps in the provision and availability of resources

Resources that support the development of Consumer and Financial Literacy in and through the teaching of mathematics seem to be abundant, but highly variable in terms of educational worth and usability in the mathematics classroom. Helping teachers choose and use resources that enable effective implementation of the Australian Curriculum has been identified as a general issue. MCEECDYA has established the Australian Curriculum Connect project to provide a mechanism for providing teachers with access to good quality, relevant resources. Ensuring teachers have access to good quality, mathematics resources that support the development of Consumer and Financial Literacy through Australian Curriculum Connect would seem to be an important strategy to pursue.

In the secondary years

The senior years subjects of Essential Mathematics and General Mathematics would appear to be well-served with print resources as they largely reflect existing courses in the states and territories. There is a variety of texts that match reasonably well to individual state and territory curricula in terms of the mathematics covered, however there would need to be some reworking to marry happily with the Australian Curriculum: Mathematics. It could quite reasonably be expected that commercial enterprises would (are?) produce senior secondary texts that map directly to the Australian Curriculum: Mathematics.

One of the identified flaws in many of these “traditional” texts is the relative paucity of context. A typical text presents the mathematics within an introductory context, and the problems posed would also sit within a financial context. For example, in a topic such as investments, there might be a brief introduction about the need to have a deposit when buying a house, followed by problems involving saving the deposit, possibly with variations such as interest rate changes, different regular amounts deposited etc. However, it would be unusual in most texts to include discussion and activities on the reason for the deposit, whether it was affordable within a budget or if the institution engaged in ethical investments.

Many financial institutions, other businesses and government agencies provide financial “calculators”. Their uses are as diverse as the calculation of mortgage repayments, growth in investments such as superannuation and term deposits, and personal taxation. These calculators are very useful for tasks such investigations where repetitive calculations are rendered routine so that the student focus is on the interpretation of the results. However, for senior teachers especially, it would be useful to be able to “see” the mathematics behind at least some of these calculators as a reinforcement of the mathematics learned in the classroom. Also it is important to know why a commercial “calculator” may produce an answer different to that produced by a student in the classroom.

One of the key notions of C & FL for teachers, especially in the senior years, is the need for current information, not only that used for mathematical calculations but also government and institutional rules and regulations. For calculations to

sensibly support the literacy element of C & FL, they need to be realistic. It is less useful to calculate and discuss the length of time it might take to save up a house deposit if the interest rate is very different from that currently offered. Texts can quickly become dated, and some sections can become virtually useless. A good example of this is personal taxation rates; the mathematical method is unchanged but the results can be very different! Regular updating would occur most sensibly by electronic means.

In addition to current data, sound historical data is also desirable as a means of students being able to compare and contrast the financial positions and demands of various periods. Investigations of this type enrich the understanding that financial literacy is a dynamic field and an ongoing concern for Australian citizens throughout their lives. Depending on the investigation, students may need to access historical data on interest rates (both for investments and loans), Consumer Price Index numbers, typical superannuation returns, average house prices and personal taxation rates. The data is certainly available but is scattered over many web-sites.

Similarly, the mathematical content in the junior secondary area would be covered in many standard text series. Simple and compound interest would certainly appear in most texts, as would profit and loss, although the latter is possibly more likely to appear as an application of percentages than in a section of its own. Resources tend to be slight on the contexts within which the mathematics should be embedded. This is a significant gap and one which needs to be addressed if the concept of C & FL is to be developed thoroughly.

There are certainly some existing resources in the secondary area that are superior, ConsumerStuff! from the Victorian Department of Consumer Affairs being one. This resource is rich in both context and content, and would be a good springboard for further development. Similarly there are some good secondary texts available that deal with C & FL thoroughly and appropriately.

In the primary years

The very nature of typical primary classrooms means there are many resources required to meet the demands of a delivering a broad curriculum. Classroom materials for the teaching of mathematics are likely to be drawn from a number of sources. Although this implies a richness and variety, it is also a limitation in that it requires teachers to search to find suitable materials that support the teaching of financial literacy.

Of the resources examined, many had excellent contexts but were thin on the mathematics. Ironically, this can have a consequence of divorcing the mathematics from the context, if the calculations are treated separately. This is much the same difficulty with the secondary resources - but in reverse.

Mathematical games are favoured by teachers of primary students for a number of reasons. A game may not only reinforce the mathematics taught in the classroom but will almost always incorporate literacy elements as well as other aspects of the curriculum. A game can also provide opportunities for social development through cooperative play.

Teachers expressed a need for games that were easy to play whilst still providing a mathematical challenge at a number of levels. It was also desirable for the

games to have an element of new learning rather than practice of skills already learned. Online games were seen as attractive for students but missing the cooperative element which adds value to the time invested in learning and playing a game.

C&FL Report Recommendations

The advent of the Australian Curriculum: Mathematics is a watershed event in Australian school education. It creates a raft of opportunities to align what happens in schools with the intentions of the Melbourne Declaration. In the case of promoting attention to, and making real advances in, the field of Consumer and Financial Literacy for our young people these opportunities will be realised through careful strategic action. The following recommendations seek to inform the strategic action taken by ASIC.

Professional learning for teachers

There are several dimensions of professional learning that will be required by teachers and schools. These range from awareness raising around the area of Consumer and Financial Literacy, through to building capacity with specific content and teaching strategies. It is important to note that to deliver effective Professional Learning in this area, there needs to be a broader approach than individual learning; the focus should be at a school and system level. In building its plans for professional learning, ASIC should:

Develop generic programs that alert and inform schools about the importance of Consumer and Financial Literacy in the curriculum, and their roles as teachers in promoting the development of Consumer and Financial Literacy of their students. These programs should draw on examples of effective practice, and involve peer to peer delivery. (Recommendation 1)

Develop specific professional learning programs for primary schools that tap into and extend the capacity for holistic cross-curricular learning with significant Consumer and Financial Literacy outcomes. Working with and through principals and their organisations will be critical to the success of these programs. The benefits for schools would include working towards coherent progression across the school through collaborative development and programs. Teachers would build their skills and knowledge about how to take a 'simple' starting point and turn it into a powerful extended learning activity that enables deep student learning across a range of curriculum areas, and within Consumer and Financial Literacy. (Recommendation 2)

Develop specific professional learning programs for mathematics faculties in secondary schools that help teachers build their capacity to use contexts for learning mathematics that are rich in opportunities to draw out and focus on Consumer and Financial Literacy development. Access to quality resources will be a feature of these programs as a means to both excite and inform teachers, and to help stimulate and support changed emphases in the classroom. Given the pivotal role that mathematics plays in the development of students' Consumer and Financial Literacy, these programs should also assist mathematics leaders and teachers to lead whole of school attention to Consumer and Financial Literacy. (Recommendation 3)

Teaching and professional resources

The teaching resources used in the classroom essentially drive the students' learning. In the context of the Australian Curriculum: Mathematics, the resources need to do the "heavy lifting" in terms of development of cross-curricular capacities, including Consumer and Financial Literacy. The field is currently populated by a wide range of resources of extremely variable quality and applicability for teaching the Australian Curriculum: Mathematics. Finding a pathway through these and selecting those that suit them and their students is a daunting prospect for most teachers, and one they most often avoid.

Resources must be well publicised to and readily accessed by, teachers and schools, so that the take-up of their use and therefore the development of students' capacities in Consumer and Financial Literacy is maximised.

Rarely will a resource perfectly match all requirements for individual classes and so it is important that resources can be adapted and modified to suit the circumstances of different school settings and student cohorts. As well as tailoring a resource to fit more closely with needs, teachers like to "own" a resource by putting their individual stamp upon it.

Provide access to a small number of targetted and proven quality resources that are delivered electronically. This will be of most benefit to teachers and schools. This may require development of some particular resources, one set of which should be a collection of 'calculators' with associated learning materials that include regularly updated data to keep the materials current, along with authoritative historical data. The provision of classroom ready student materials (such as worksheets, assessment items, rich tasks and/or investigations) should be a priority.¹⁶ Consideration should also be given to sourcing suitable games. At least some of the resources should be able to be modified by the users. (Recommendation 4)

Quality resources that support the development of Consumer and Financial Literacy in and through the teaching of mathematics should be **discoverable through Australian Curriculum Connect** and well promoted. (Recommendation 5)

¹⁶ A "rich" task is one where the problem posed provides different levels of challenge and where there are a variety of possible methods of solution or investigation.

Appendices

Appendix 1 – Survey Questions

Appendix 2 – Other Survey findings

Appendix 3 - Reviews of C & FL Resource Types

Appendix 4 - Annotated Resource Map

Appendix 1a – Survey Questions: Primary

- 1.* How likely would you be to take part in Professional Learning activities based around the *mathematics* of Financial Literacy as described in the Australian Curriculum: Mathematics?
- 2.* How likely would you be to take part in Professional Learning activities based around the *overall concept* of Financial Literacy?
- 3.* Which of the following types of Professional Learning activities is most useful for you? (select as many as apply)
 1. Online course
 2. Series of workshops
 3. Whole day conference
 4. Study group
 5. Mentor
4. Elaborate on your response to question 3 if you wish.
- 5.* Professional Learning can be undertaken individually or in groups. Which of the following would best support your Professional Learning in Financial Literacy? (select as many as apply)
 1. Individual
 2. Year level
 3. Whole school
 4. Cluster of schools
- 6.* In what environment do you think that Professional Learning in Financial Literacy might work best for you?
 1. Wholly external
 2. Mostly external
 3. Mostly in-school
 4. Wholly in-school
- 7.* How likely would you be to use the following teaching resources for Financial Literacy, assuming that there is a direct link to the Australian Curriculum: Mathematics?
 1. Background material and information
 2. DVD/Video to engage and instruct students
 3. Business-based web sites
 4. Online resources for students
 5. Student-centred investigations
 6. Text book
 7. Games
 8. Student worksheets
 9. Whole unit of student work
 10. Expert speaker

8. Please describe any other resources that you would like to have and why.
9. * The Australian Curriculum: Mathematics is not finalised but currently has links to the following Financial Literacy elements. In which topics would you need support in order to teach effectively? (select as many as apply)
1. Money in its various forms
 2. Computation skills in financial contexts
 3. Budgeting
 4. Saving
 5. Earning and income
 6. GST
 7. Credit
 8. Problem solving in financial contexts
 9. None of the above
10. * What year level(s) do you teach?
- K 1 2 3 4 5 6 7
11. * Where is your school?
- ACT NSW NT QLD SA TAS VIC WA
12. * What is your school's location?
1. Remote
 2. Rural
 3. Regional
 4. Metropolitan
13. Is there anything distinctive about your teaching context?
14. Do you have any other comments?
15. If you would be willing to provide more detailed feedback at a later date, please include your email address.

Appendix 1b – Survey Questions: Secondary

1.* How likely would you be to take part in Professional Learning activities based around the *mathematics* of Financial Literacy as described in the Australian Curriculum: Mathematics?

2.* How likely would you be to take part in Professional Learning activities based around the *overall concept* of Financial Literacy?

3.* Which of the following types of Professional Learning activities is most useful for you? (select as many as apply)

1. Online course
2. Series of workshops
3. Whole day conference
4. Study group
5. Mentor

4. Elaborate on your response to question 3 if you wish.

5.* Professional Learning can be undertaken individually or in groups. Which of the following would best support your Professional Learning in Financial Literacy? (select as many as apply)

1. Individual
2. Cross faculty
3. Mathematics faculty
4. Year level
5. Whole school
6. Cluster of schools

6.* In what environment do you think that Professional Learning in Financial Literacy might work best for you?

1. Wholly external
2. Mostly external
3. Mostly in-school
4. Wholly in-school

7.* How likely would you be to use the following teaching resources for Financial Literacy, assuming that there is a direct link to the Australian Curriculum: Mathematics?

1. Background material and information
2. DVD/Video to engage and instruct students
3. Business-based web sites
4. Online resources for students
5. Student-centred investigations
6. Text book
7. Games
8. Student worksheets
9. Whole unit of student work
10. Expert speaker

8. Please describe any other resources that you would like to have and why.
9. * The Australian Curriculum: Mathematics is not finalised but currently has links to the following Financial Literacy elements. In which topics would you need support in order to teach effectively? (select as many as apply)
1. Payslips
 2. Personal income tax
 3. Simple interest
 4. Compound interest
 5. Effective interest
 6. Budgets
 7. Financial spreadsheets
 8. Depreciation
 9. Wages and income
 10. Income support and benefits
 11. Taxes and deductions
 12. Buying and paying for goods and services
 13. Consumer credit: credit and debit cards, personal loans
 14. Payment plans
 15. Investments, including superannuation
 16. Reducing balance loans
 17. Annuities and perpetuities
 18. None of the above
10. * What year level(s) do you teach?
- 7 8 9 10 11 12
11. * Where is your school?
- ACT NSW NT QLD SA TAS VIC WA
12. * What is your school's location?
1. Remote
 2. Rural
 3. Regional
 4. Metropolitan
13. Is there anything distinctive about your teaching context?
14. Do you have any other comments?
15. If you would be willing to provide more detailed feedback at a later date, please include your email address.

Appendix 2 – Other Survey findings

This appendix outlines the participation in the AAMT surveys. For completeness, there is a report of the findings about professional learning needs, with comments on the implications of some of these for resource provision.

Participation – primary teachers

There were 110 participants in the on-line survey. As the data show, the respondents are reasonably representative of primary teachers in this country.

Each of the states was represented but there were no responses from either of the territories (Figure 1). Half of the responses were from teachers in metropolitan schools, a third from regional schools with respondents from rural and remote areas as well (Figure 2). Year levels from K (Kindergarten was the term used in the first draft) to 7 were represented (Figure 3).

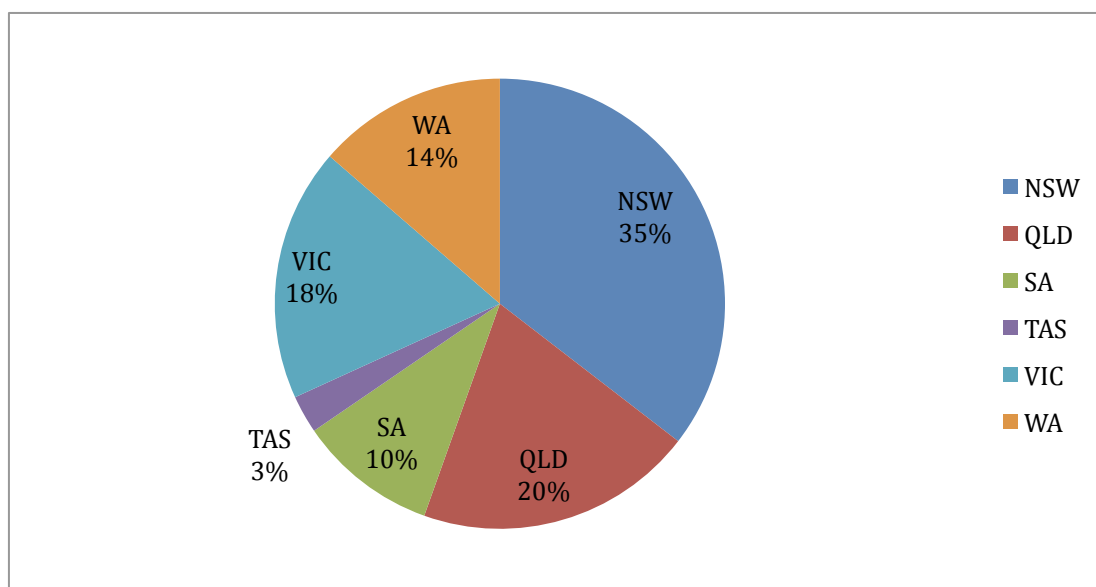


Figure 1 - Participation in survey of primary teachers by state or territory

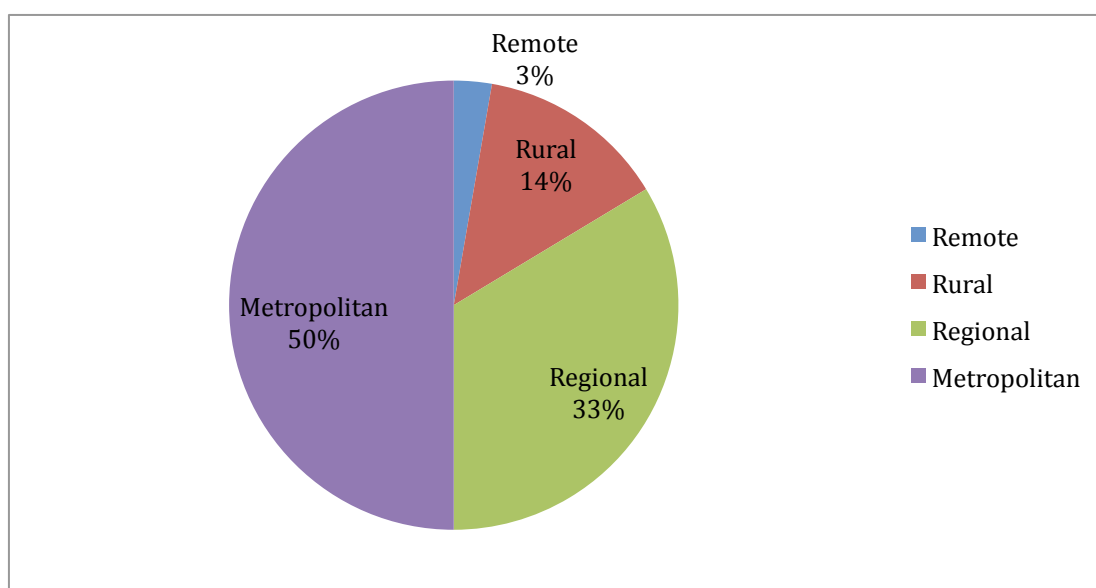


Figure 2 - Participation in survey of primary teachers by location

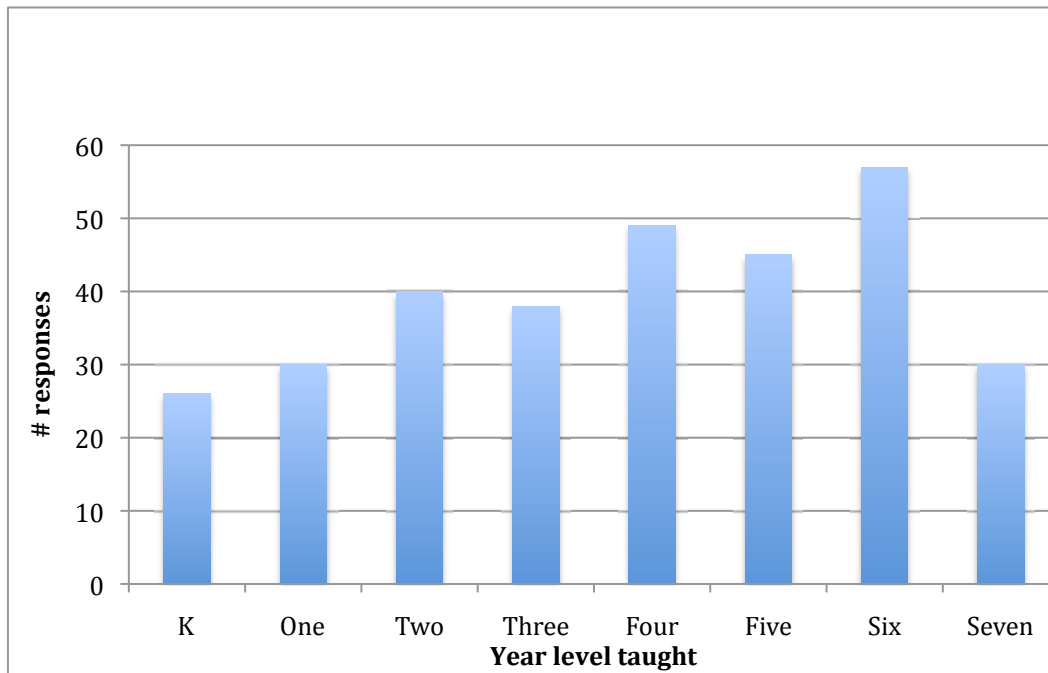


Figure 3 - Participation in survey of primary teachers by year level taught

Participation – secondary teachers

There were 186 participants in the on-line survey. As the data show, the respondents are reasonably representative of secondary teachers in this country.

Each of the states and the Australian Capital Territory were represented but there were no responses from the Northern Territory (Figure 5). Well over half of the responses were from teachers in metropolitan schools, a fifth from regional schools, and a smaller proportion of respondents from rural and remote areas (Figure 6). Year levels from 7 (to accommodate the different secondary school starting ages) to 12 were represented (Figure 7).

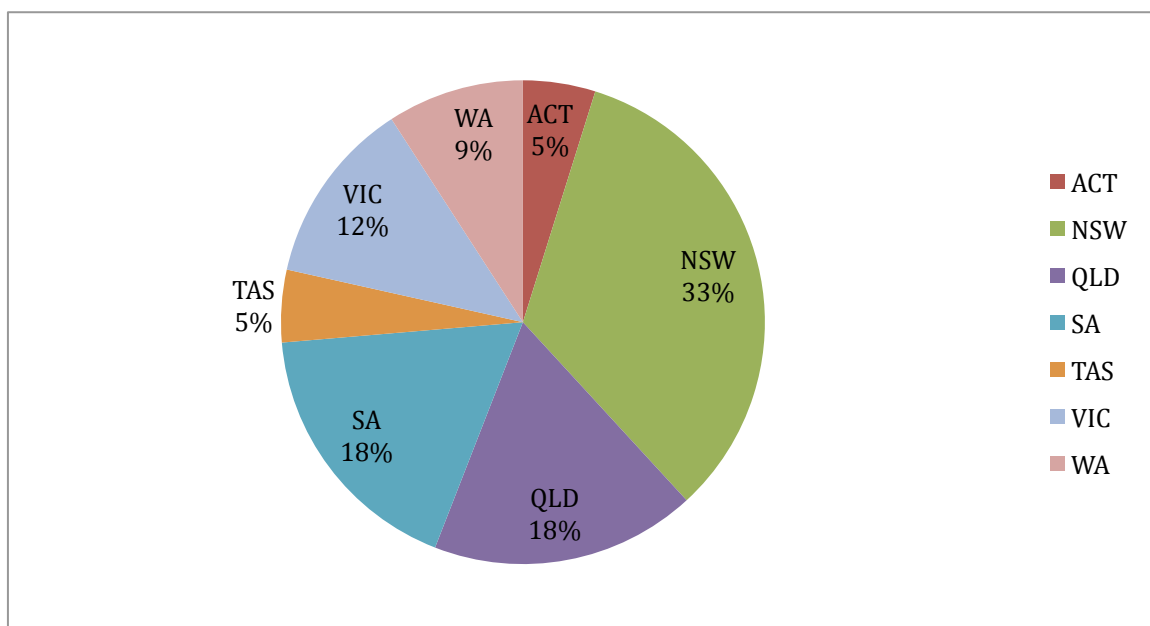


Figure 4 - Participation in survey of secondary teachers by state or territory

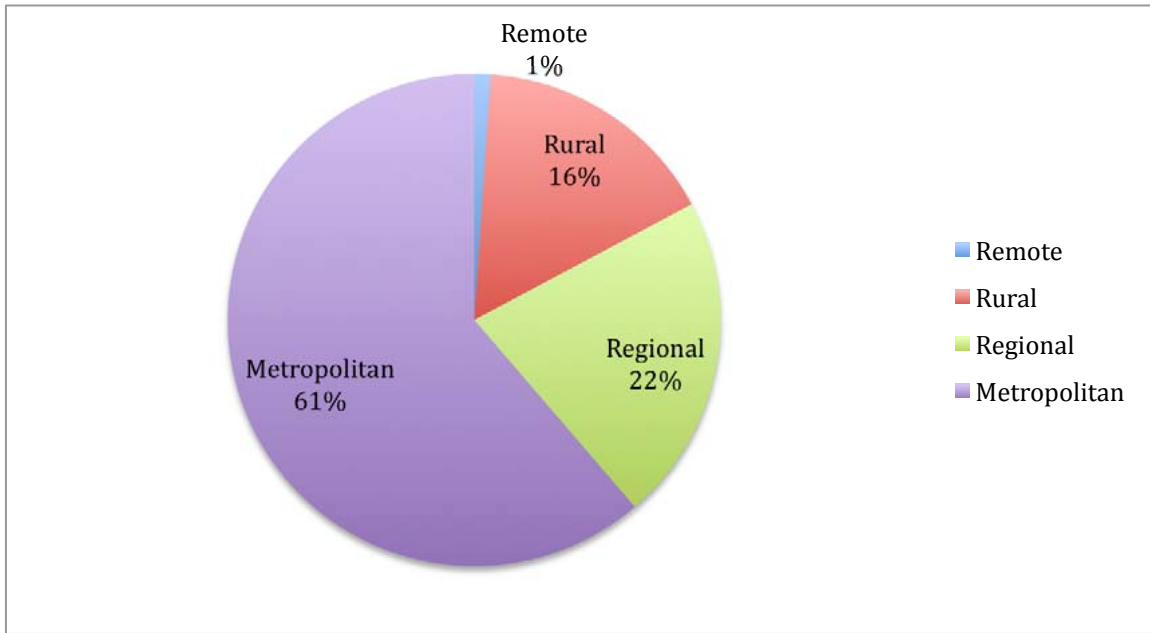


Figure 5 - Participation in survey of secondary teachers by location

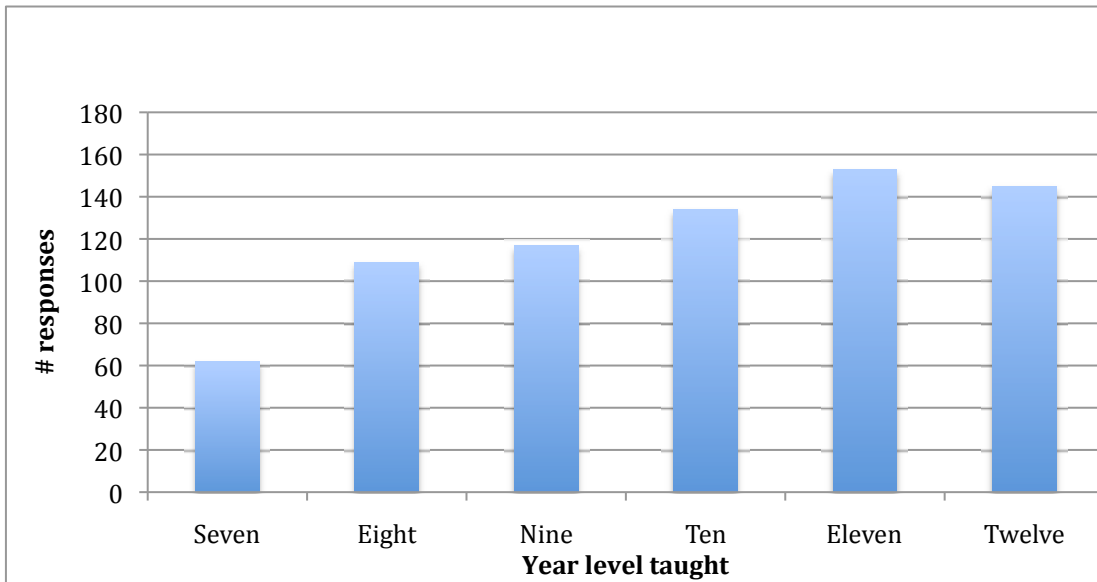


Figure 6- Participation in survey of secondary teachers by year level taught

Findings about resources from the professional learning component of the surveys

As indicated in Appendix 1, the surveys also sought teachers' views in terms of their professional learning needs. These results are reported here, with messages about resource needs summarised.

Participation in Professional Learning

There was a high proportion of both primary (88%) and secondary (81%) teachers who indicated that participation in Professional Learning activities based around the *mathematics* of Financial Literacy was either likely or definite (Table 7).

Category	Primary %	Secondary %
would not take part	1	3
unlikely to take part	10	11
likely to take part	55	54
would take part	33	27
other	2	5

NB: the category "other" includes comments such as "only on new material in the curriculum", "am retiring", "depending on when" etc

Table 7 - Expected participation in Professional Learning activities based around the *mathematics* of Financial Literacy as described in the Australian Curriculum: Mathematics (expressed as a percentage)

The percentages for likely or definite participation in Professional Learning activities based around the *concept* of Financial Literacy were slightly lower (86% for primary and 78% for secondary) but the difference was not significant (Table 8).

Category	Primary %	Secondary %
would not take part	1	5
unlikely to take part	13	13
likely to take part	55	52
would take part	31	26
other	0	4

NB: the category "other" includes comments such as "no time available during the school day", "dependent on time and cost", "just depends what it entails" etc

Table 8 - Expected participation in Professional Learning activities based around the *concept* of Financial Literacy as described in the Australian Curriculum: Mathematics (expressed as a percentage)

It would appear that there is a need for Professional Learning in these areas and teachers are very willing to undertake that learning. In both types of learning, secondary teachers' willingness to be involved was lower than that of primary teachers.

There was a distinct, and perhaps anticipated, pattern for primary responses in expected participation in mathematical Professional Learning when sub-divided into locations (Table 9). The highest expected participation was in the metropolitan areas, followed by regional areas and lastly rural areas, with the difference between the highest and lowest expected participation being a significant 14%. It seems reasonable to attribute these responses to teachers' prior experiences of it being possible and/or practical to attend Professional Learning, with the assumption that most Professional Learning currently offered would be face-to-face. Opportunities for rural and regional teachers to attend Professional Learning activities are usually more restricted.

However, the secondary message was almost the reverse. The highest expected participation was in the regional areas, followed by rural areas and lastly metropolitan areas, with the difference between the highest and lowest expected participation being a significant 16%. This result may have occurred because this question was about the mathematics of Financial Literacy rather than the general concept. Often, secondary schools outside the metropolitan areas are staffed by less experienced as well as "out-of-field" teachers¹⁷, so there is a greater need for mathematical support.

	Metropolitan	Regional	Rural
Primary	92	87	78
Secondary	80	96	89

Table 9 - Likely or definite participation in Professional Learning activities based around the mathematics of Financial Literacy (expressed as a percentage) from different locations

This is supported when looking at the figures for expected participation in Professional Learning based around the concept of Financial Literacy (Table 10). Although the secondary responses do vary from each other, the variations are less extreme and the preferential order is the same, with regional first, rural second and metropolitan third. It may be concluded that the need is greater outside the metropolitan areas. However, the primary responses over the locations are almost identical to each other which seems to counter the argument that location is a factor in participation in Professional Learning.

	Metropolitan	Regional	Rural
Primary	87	86	86
Secondary	76	83	81

Table 10 - Likely or definite participation in Professional Learning activities based around the concept of Financial Literacy (expressed as a percentage) from different locations

Type of Professional Learning

Table 11 lists the responses to the type of Professional Learning which is most useful to primary and secondary teachers, in order from the most to least appealing. Both primary and secondary teachers placed a whole day conference

¹⁷ Metropolitan schools also have the issue of "out-of-field" teachers but it can be a particular problem for smaller and more remote schools.

first. In the secondary responses the online course was clearly second and a series of workshops clearly third. For primary responses, the online course and a series of workshops were close to equal, but clearly in second place.

Primary	Secondary
Day Conference	Day Conference
Series of workshops	Online course
Online course	Series of workshops
Mentor	Study group
Study group	Mentor

Table 11 - Ranking of usefulness of types of Professional Learning (primary and secondary)

When divided into locations, both regional and rural primary teachers ranked a whole day conference first. Teacher comments indicate that it is easier to get replacement teachers for a whole day rather than part of a day, and that travelling long distances for shorter sessions is unpopular. Metropolitan teachers, on the other hand, found a series of workshops attractive, not only for the sound pedagogy but also for the reduced impact on their classes. The appeal of this type of delivery diminished with the distance from an urban location. Rural teachers rated online courses higher than either of the other two locations. There was very little support for study groups or mentors.

Metropolitan	Regional	Rural
Series of workshops	Day Conference	Day Conference
Day Conference	Series of workshops	Online course
Online course	Online course	Series of workshops
Mentor	Mentor	Mentor
Study group	Study group	Study group

Table 12 - Ranking of usefulness of types of Professional Learning sorted into locations (primary)

For secondary teachers, the whole day conference was rated highly with a first preference for both metropolitan and regional areas and second for rural areas. There was a clear (expected?) pattern in the preference for online courses, with rural areas ranking it at number one, regional at number two and metropolitan at number three. Distance and accessibility would seem to be the major factors involved in the perceived appeal of this type of delivery. A series of workshops was ranked lower for secondary metropolitan and regional teachers than primary, but at the same level for rural teachers. Again, there was very little support for study groups or mentors, but the rankings of these were reversed. It may be that primary teachers are more accustomed to working closely with a colleague in a mentoring role.

Metropolitan	Regional	Rural
Day Conference	Day Conference	Online course
Series of workshops	Online course	Day Conference
Online course	Series of workshops	Series of workshops
Study group	Study group	Study group
Mentor	Mentor	Mentor

Table 13 - Ranking of usefulness of types of Professional Learning sorted into locations (secondary)

Preferred learning group

There was general agreement in the primary responses that a whole school approach to Professional Learning was preferred. The next preferred for all but rural locations was learning within a year level.

Total	Metropolitan	Regional	Rural
Whole school	Whole school	Whole school	Whole school
Year level	Year level	Year level	Cluster of schools
Cluster of schools	Cluster of schools	Individual	Individual
Individual	Individual	Cluster of schools	Year level

Table 14 - Preferred Professional Learning group (primary)

Among the secondary teachers, there was agreement over the locations that the preferred Professional Learning group was the Mathematics Faculty (which had double the count of the next highest category), followed by individual pursuit and then learning with a cluster of schools. It was interesting that engaging with other schools was ranked higher than with engaging with other faculties within a single school. This may point to the often quite separate natures of faculties within secondary schools. It was also clear that secondary teachers did not think that a whole school approach to Professional Learning in Consumer & Financial Literacy was workable.

Total	Metropolitan	Regional	Rural
Faculty	Faculty	Faculty	Faculty
Individual	Individual	Individual	Individual
Cluster of schools	Cluster of schools	Cluster of schools	Cluster of schools
Cross faculty	Cross faculty	Cross faculty	Cross faculty
Year level	Year level	Year level	Whole school
Whole school	Whole school	Whole school	Year level

Table 15 - Preferred Professional Learning group (secondary)

The strength of the response to faculty-based Professional Learning for secondary teachers is an important consideration when deciding how best to implement Consumer & Financial Literacy within the curriculum.

Preferred environment

Category	Total %	Metropolitan %	Regional %	Rural %
Wholly external	10	16	3	0
Mostly external	32	31	35	36
Mostly in-school	49	42	57	64
Wholly in-school	9	11	5	7

Table 16 - Preferred environment for Professional Learning (primary)

Category	Total %	Metropolitan %	Regional %	Rural %
Wholly external	13	12	18	10
Mostly external	44	43	48	47
Mostly in-school	37	42	28	30
Wholly in-school	6	3	8	13

Table 17 - Preferred environment for Professional Learning (secondary)

Both primary and secondary teachers wished for a mixed mode of delivery (i.e. some external and some in-school). However, secondary teachers had a preference for mostly external followed by mostly in-school, and primary teachers had a preference for mostly in-school followed by mostly external. This was the same over the locations.

Appendix 3: Reviews of C & FL Resource Types

a) On-line resources: games

<http://www.funbrain.com/cashreg/>

Change Maker

Children choose a playing level from a selection of four where the degree of difficulty is gauged by the amount of money tendered. The amount needed for the purchase is given and then the change has to be worked out by the player. This is done by clicking on the money icons (both notes and coins at the more advanced levels). If the answer is correct, that amount of change goes into the player's piggy bank; if not, that amount of change is removed from the piggy bank. The amount that an incorrect answer is "out" is also displayed. The game score is kept.

This is basically skills practice covering levels 1 to 4 in the draft Australian Curriculum. Children need to be able to recognise (though not necessarily describe or order) coins, count coins and make change to 5 cents. Teachers could encourage students to select multiple representations of money, especially if working with a partner. *Change Maker* would address Knowledge and Understanding and Competence at Year 3. This is not a major resource but could be useful for those students who are motivated by on-line materials, and as additional practice.

b) On-line resources: print

<http://www.consumer.vic.gov.au/CA256EB5000644CE/page/Teacher+resources?OpenDocument&1=970-Teacher+resources~&2=~&3=~>

Available as downloadable PDFs or in print form.

Consumer Stuff for Kids!

Consumer Affairs Victoria developed the *Consumer Stuff for Kids!* teacher resource to support primary school teachers to address the learning standards outlined in the Victorian Essential Learning Standards (VELS) Humanities - Economics Level 4.

There are 8 units which target years 5 and 6, and the appropriate financial literacy dimensions are mapped in each unit.

This is a good general resource for teachers. Each unit gives the learning objectives, lists key terms and includes instructions for lesson preparation (such as photocopying, preparation of cards for games etc). There are detailed teacher notes with answers and information, and lots of activities, from worksheets to games and role-plays.

Unit 4, entitled *Money, Money, Money*, could be linked into the Australian Curriculum in Year 5. *Activity 3 - Opportunity Cost or Opportunity Lost?* relates to simple financial plans. This resource would address Knowledge and Understanding and Competence at Year 5.

Activity 1 - Have an Interest in Banking could possibly be used as an introductory activity in Year 9. The concept of interest is covered in a general fashion, but it is a bit young for this level.

Consumer Stuff!

Consumer Affairs Victoria initiated a Consumer Education in Schools program targeting years 9 to 11. There is a mathematics resource book in the *Consumer Stuff!* series.

There are 6 units of work within the resource book. The titles are *Budgeting*, *Buying Things*, *Paying Bills*, *Credit*, *Loans* and *Responsible Gambling*. Each unit has several lessons within it and they are designed to be used over 2 to 4 weeks.

This is a very valuable resource for secondary teachers. Each lesson within the unit has an introduction of key ideas, a series of questions mostly requiring calculations, extension /revision activities and teacher hints. There are answers provided. Most of the calculation questions are closed but there is the opportunity for less directed work in the extension/revision. The content is good, however the “look” of the worksheets is very plain and may not appeal to students.

Some of the lessons would be suitable for levels 9 and 10. *Buying Things* and *Loans* cover simple and compound interest. It may be possible to use the material in the lesson *Shopping Around* (which is a part of *Buying Things*) for level 7 on best buys.

There are many strong links to the draft Australian Curriculum. In Essential Mathematics, under the unit of Finance 1, some of the topic *Buying and Paying for Goods and Services* would be covered. The complete unit of Finance 2 with the topics of *Budgeting*, *Investments*, *Payment Plans* and *Credit* would be supported. *Responsible Gambling* could provide a good context in which to teach the probability section of the Design unit.

In General Mathematics, some of the unit of Rates and Ratios would be covered, and in the unit of Financial Modelling, simple and compound interest.

c) On-line resources: interactive

http://www.curriculumsupport.education.nsw.gov.au/clever_shopping/teachers/index.htm

Clever shopping

This NSW Department of Education online teaching and learning package has been designed to raise awareness of financial issues for Stage 4 students (11 to 13 years of age) through the NSW Mathematics Syllabus areas of number and data. The major thrust is on comparative shopping, including a number of examples of calculations from the very simple through to more complex calculations using fractions. It also illustrates some of the consumer issues facing the community. The package includes a suggested lesson sequence and all materials most teachers would require, including PowerPoint presentations. There are student worksheets (with answers) that can be used on-line or in a traditional manner, and an assessment item with marking guidelines. An on-line

'teach yourself' section is provided to enable students to work at their own pace should the teacher decide to use that approach.

Clever shopping is an attractive, teacher friendly and logically organised resource, which provides a full program including instruction, practice and assessment. Its particular advantage is the "teach yourself" section where students can work at their own pace. Although the process for calculating the best buy is directed towards a price per unit, there is an apt suggestion to look at other methods. This resource links to level 7 in the Australian Curriculum very well. It would cover the dimension of Competence mostly at year 7, but also at year 5.

d) Print Resources: primary

Money Matters: a teachers handbook for developing money concepts

Paul Swan and Linda Marshall (R.I.C. Publications 2009)

This is designed to support teachers to help their students gain a sense about money. It starts with early money concepts such as coin recognition and counting coins, moves onto coin equivalence, shopping and making change, then continues through to financial literacy concepts such as cheques, and bank transactions. It integrates the mathematical ideas associated with money with societal issues. Ideas for activities, scenarios for role-plays, teacher tips, project ideas and games are included, along with black-line masters where appropriate.

The book is highly relevant for primary teachers as it has many useful mathematical activities which link strongly to the Australian Curriculum. It matches closely to levels 1 to 4 although could certainly be used as a stimulus for older children and as a springboard for other teacher developed activities. This resource would cover the dimensions of Knowledge and Understanding, and Competence at year 3.

Maths Investigations: a collection of open-ended tasks

Paul Swan (R.I.C. Publications 2002)

This book is a typical mathematics resource aimed at years 5 - 8. It consists of 38 investigations, two of which relate to the general area of Financial Mathematics. Each investigation gives the background to the task: information (sometimes historical, sometimes mathematical), teacher hints including common pitfalls, and ideas for extension activities. The first is *The Money Trail*, which requires the use of measurement and computation to work out the value of various trails made up of coins. The second is *Coin Capers* which looks at the production of coins and the possible reasons for their sizes, colours and weights.

Both investigations are useful and interesting but as is the case with many of these types of resources, the book would not be purchased solely for the financial literacy elements as there are too few. Also, one of the difficulties of "mixed" resources is the time it might take to search for a targeted activity, especially in a larger library or staff resource collection.

e) Print Resources: secondary

There are many secondary text books produced which cover the financial areas of mathematics in the senior years. Usually these are directly allied to the Year 12 course currently running in the particular state. In South Australia, for

instance, there is a textbook called *Year 12 Mathematical Applications* (Mark Bruce et al, Haese and Harris Publications 2007) which addresses all of the topics included in the curriculum statement for Stage 2 Mathematical Applications. The topic *Investment and Loans* covers simple and compound interest, annuities (investing and borrowing), and applications such as superannuation. It is a “typical” text book - a brief explanation with some context, followed by exemplar problems and solutions, plus calculator steps when appropriate. There are sets of exercises, a few investigation prompts and some spreadsheet activities. Answers are provided, and there is a full solution book available. As is common nowadays there is a CD included which not only has the text but also has some interactive features such a self-tutor, and links to spreadsheets, graphics calculator instructions, computer demonstrations and simulations.

Text books such as these are often the bedrock of many secondary classrooms, particularly for teachers who may be out of field or new to the subject. Their importance and influence should not be under-rated, and so the quality of this type of resource is paramount. Often a weakness is in the relatively shallow context and the routine nature of the questions posed.

In the Finance 2 topic of Essential Mathematics, some of the content of the sub-topics Consumer Credit and Investment are covered. Much of the content in the Financial Modelling topic of General Mathematics is also covered. This particular text could certainly be adapted to parts of Essential Mathematics and General Mathematics but it would be more reasonable to think that a new textbook would be produced to match each particular course quite closely.

Appendix 4: Annotated Resources Map

	Title and type	Topic(s)	Subject in AC:M	Unit	Context	Maths
S	Consumer Stuff! http://www.consumer.vic.gov.au/CA256EB5000644CE/page/Teacher+resources?OpenDocument&1=970-Teacher+resources~&2=~&3=~ Downloadable PDFs	Budgeting, Buying Things, Paying Bills, Credit, Loans	Essential	Finance 1 Goods & services	**	**
		Budgeting, Buying Things, Responsible Gambling		Finance 2 Consumer credit, Budgeting, Payment plans, Investments	**	***
		Buying Things, Loans	General	Probabilities context	**	*
		Buying Things		Rates & Ratios	**	*
		Investment & Loans	Essential	Finance 2 Consumer credit, Investments	*	***
S	Year 12 Mathematical Applications (2nd edition) Mark Bruce et al 2007 Text	Investment & Loans Maths & Small Business	General	Financial Modelling Simple & compound interest computations	*	***

	Title and type	Topic(s)	Subject in AC:M	Unit	Context	Maths
SS	Foundation Mathematics O'Connor & Gatton 2007 Text		Essential	Finance 1 Wages and income, Taxes and deductions, goods and services Finance 2 Consumer credit, Budgeting, Investments	*	*
SS	Access to Pre-vocational Maths 2 S Thomson & I Forster Text		Essential		***	***
SS	Workable Maths for WA (1EMat & 2AMat) S Thomson & I Forster Text		Essential		***	***
SS	Cambridge Maths + Extension 1 Pender et al Text		General	Financial Modelling Annuities	*	***

	Title and type	Topic(s)	Level in AC:M	Content	Context	Maths	Dimension
ss/sr	Safe and Sorry http://www.fido.asic.gov.au/asic/asic.nsf/quiz Game + PDF course outline			Background - insurance	***	*	
ss/sr	Money Starter http://fido.asic.gov.au/asic/asic.nsf/quiz On-line Quiz		Essential General	Superannuation	***	*	
sr	Consumer Stuff! http://www.consumer.vic.gov.au/CA256EB5000644CE/page/Teacher+resources?OpenDocument&1=970-Teacher+resources~&2=~&3=~ Downloadable PDFs	Buying Things, Loans	9 & 10	Simple and Compound Interest	**	***	K & U year 9 (year 7?) C year 9

	Title and type	Topic(s)	Level in AC:M	Content	Context	Maths	Dimension
d	Consumer Stuff for Kids! http://www.consumer.vic.gov.au/CA256EB5000644CE/page/Teacher+resources?OpenDocument&1=970-Teacher+resources~&2=~&3=~ Downloadable PDFs	Money, Money, Money	5	Simple financial plans	***	*	K & U year 5 C year 5
d	Change Maker http://www.funbrain.com/ca/shreg/ Online game		1 to 4	Recognise coins, count coins, multiple representations of money, purchases and change.		**	K & U year 3 C year 3
d	Money Matters Paul Swan & Linda Marshall 2009 Text: worksheets	Entire book	1 to 4 plus	Recognise & describe coins, count coins, multiple representations of money, purchases and change.	***	***	K & U year 3 C year 3
d	Maths Investigations Paul Swan 2002 Text: worksheets	Money Trail, Coin Capers	general "money" link	Money computations	*	*	E year 5

	Title and type	Topic(s)	Level in AC:M	Content	Context	Maths	Dimension
☐	Clever Shoppng http://www.curriculumsupport.education.nsw.gov.au/clever-shopping/teachers/index.htm Online learning/ downloadable PDFs		7	Best buys with and without technology	***	**	C year 5 & 7
☐	Coinland https://coinland.com.au/ Game		1 to 3	Recognise & describe coins, count coins, multiple representations of money	**	*	K & U year 3
☐	MakingCents http://www.financefirst.net.au/ Game + worksheets		5	Simple financial plans	***	*	K & U year 5 C year 5
☐	Money Stuff http://www.moneystuff.net.au Downloadable PDFs		5, 7, 9	Simple financial plans, simple interest, best buys	**	***	K & U year 5, 7, 9 C year 5, 7, 9