

UNIVERSITY OF WAIKATO

Hamilton
New Zealand

Personal Financial Literacy Among High School Students in New Zealand, Japan and the United States

Michael P. Cameron
University of Waikato

Richard Calderwood
University of Waikato

Ashleigh Cox
University of Waikato

Steven Lim
University of Waikato

Michio Yamaoka
Waseda University

Department of Economics

Working Paper in Economics 13/04

March 2013

Corresponding Author

Michael P. Cameron
Economics Department
University of Waikato
Private Bag 3105
Hamilton, New Zealand

Email: mcam@waikato.ac.nz
Tel: +64 (0)7 858 5082

Abstract

Personal financial literacy is becoming increasingly important in the modern world, especially for young people. In this paper we compare financial literacy of high school students in Hamilton, New Zealand, with samples from Japan and the United States. We compare not only overall financial literacy, but also literacy across five dimensions (or ‘themes’) of financial literacy, and across three cognitive levels. We find that financial literacy is poor overall in all three countries, but is substantially worse in New Zealand and the United States than in Japan. The performance is similar across themes and cognitive levels for U.S. and New Zealand students, but Japanese students perform better mostly in terms of their greater knowledge of terminology and definitions, rather than better comprehension and ability to apply their knowledge. This suggests that all three countries should work harder to develop the financial literacy of their high school students.

Keywords

financial literacy

New Zealand

Japan

United States

JEL Classification

A21, D14

Acknowledgements

This research was funded by a Waikato Management School internal contestable research grant. We are thankful to John Gibson and Bruce Cortesi for suggestions on research design and to Gemma Piercy and participants at a University of Waikato professional development day for high school economics teachers for comments on an earlier draft of this paper.

1. Introduction

The nature of people's engagement in personal finance has changed considerably in recent years with a broadening range of more complex financial products and services on the market, and greater accessibility to credit and, consequently, debt. With the advent of an ageing population, personal savings have increased in importance, while the negative effects of the Global Financial Crisis have shown that people are exposed to significant volatility from the markets. Furthermore, young people are increasingly involved in their own money management and confronted with opportunities to borrow funds and access credit, putting them at risk of making poor financial decisions that can have lasting, costly effects (Roberts and Jones 2001; Lusardi *et al.* 2010). The need for improvements in young people's financial literacy, 'a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing' (Atkinson and Messy 2012, p.14), is very apparent.

Despite there being no commonly accepted, standard definition of financial literacy (Huston 2010), there is consensus among prior studies that the level of financial literacy amongst teenagers is poor (see Literature Review below), although it should be noted that no prior study has specifically investigated the financial literacy of high school students in New Zealand. Despite the dearth of research in this area, the New Zealand Government is committed to improving financial literacy, as highlighted by the National Strategy for Financial Literacy (New Zealand Network for Financial Literacy, 2010). In this paper, we evaluate the financial literacy of high school students in New Zealand and compare their performance with that of students from Japan and the United States. We find that Japanese students perform somewhat better than those from the United States and New Zealand, whose results were quite similar. Overall though, the results illustrate an inadequacy of average financial literacy levels in all three countries.

2. Literature Review

The subject of financial literacy has recently come to prominence, largely as a result of many compounding changes in the nature of personal finance opportunities and responsibilities. Increasing global competition and market deregulations have allowed for greater private access to financial products (Marcolin and Abraham 2006; Borodich *et al.* 2010) while rapid and continuous technological and marketing developments have led to a myriad of financial products and services becoming available (Marcolin and Abraham 2006; Worthington 2006). Furthermore, as developed economies, including New Zealand, face the fiscal challenge presented by an ageing population, individual financial responsibility has been prioritised and the need to undertake financial planning is increasingly crucial (Marcolin and Abraham 2006). In New Zealand, approximately one third of the funds in the compulsory KiwiSaver scheme – a national initiative to promote individual retirement saving and help relieve the country's persistent current account deficit – are held in the default fund options (Morningstar 2012). This demonstrates that many New Zealanders continue to avoid making

long term decisions about retirement saving, despite the government's intentions. Being financially literate provides the best chance of making effective financial decisions and minimising the likelihood of being misled and facing financial problems (Marcolin and Abraham 2006). Such literacy has been noted as a core consumer skill (Atkinson and Messy 2012) and is particularly important in difficult times, when people are more vulnerable to getting themselves into monetary troubles (Borodich *et al.* 2010). Not only does poor financial literacy impact adversely on personal financial affairs, but it has been cited as one of the aggravating factors associated with the global financial crisis (see, for example, Gerardi *et al.* 2010).

As noted above, financial literacy among the young is increasingly important. Young people especially are exposed to the changes being made in the financial sector as they are increasingly confronted with opportunities for overdrafts and credit, interest free payment options, and student and automobile debt (Lusardi *et al.* 2010). Getting into debt early on can constrain potential wealth accumulation over the lifetime and prove very costly (Lusardi *et al.* 2010). With the increasing uncertainty of how societies will finance ageing populations, young people should start preparing for their futures now (Marcolin and Abraham 2006). These potential problems place high priority on undertaking research to ascertain what young people do and don't know about personal finance, what their attitudes to debt are, and to what extent they are forward thinking when making financial decisions (Lusardi *et al.* 2006). Mandell (2006) cites the senior high school years as critical for the development of financial literacy, being closest to the time when many important financial decisions will need to be made, and where an obvious opportunity to provide students with financial literacy skills and guidance exists.

Teenage financial literacy studies have been almost exclusively undertaken in the United States. Notably, there seem to be no such studies considering either New Zealand, Australian or British performance (Worthington 2006). Of the studies that have been conducted, one result is clear: understanding of personal financial literacy is uniformly poor. For instance, Borodich *et al.* (2010), using the Financial Fitness For Life – High School test, found mean scores of 45.5%, 44.7% and 57.3% for high school attending youth in Belarus, United States and Japan, respectively. On reviewing the need for financial education in the U.S., the Office of Investor Education and Assistance, Securities and Exchange Commission (1999 p.2) declared the country to be facing 'a financial literacy crisis', and was 'alarmed' at how few high school students could pass a basic financial literacy test. This is consistent with the literature on high school students' financial literacy reviewed here (see, for example, Bowen 2002) and there a few signs of any improvement. Mandell (2008a) that financial literacy levels appear to be worsening with time. The results of the initial JumpStart survey of 1997 were considered appalling, returning an average score of 57.3%. However the following four biennial test means were between 50.2% and 52.4% (Mandell 2008a), and by 2008 average score had fallen to 48.3%, meaning the test averages have never made the 60% designated as acceptable (Mandell 2008b).

Bowen (2002) considered 70% to be the minimum correct answer rate for any one question in their research, in order to conclude that teens were ‘knowledgeable’ on the topic. Only two questions – one on net incomes, and the other on endorsing cheques – qualified as such. Generally, it has been found that high school students answer questions on income best (Borodich 2010, Bowen 2002, Mandell 2008b), while answering questions regarding saving least well (Borodich 2010, Mandell 2008b). Our study disaggregates results across five dimensions (or ‘themes’) of financial literacy, and at three cognitive levels, comparing students from New Zealand with students from Japan and the United States.

3. Data and Methods

We surveyed high school students in schools in and around Hamilton, an inland city in the central North Island of New Zealand, in September and October 2012. Eleven high schools were approached, and five agreed to participate in the research project. The schools ranged from decile 4 to decile 10, with an average decile of 7.8, and were geographically dispersed throughout the Hamilton sub-region. The sampling frame comprised students in NCEA Level 1 mathematics classes. Mathematics was selected because NCEA Level 1 mathematics is compulsory for all students.

Almost all students in NCEA Level 1 will be in Year 11, i.e. 15 years old, which matches the ages of the comparator samples from Japan and the United States. Students were given 50 minutes to complete the financial literacy test, a short demographic questionnaire, and a survey instrument designed to measure financial risk tolerance. The combined test and survey instrument was pre-tested for suitability and length among first-year university economics students before data collection began. Student participation in the research was incentivised through a random draw for prizes undertaken after all students had participated. The research was given ethical approval by the Waikato Management School Ethics Committee.

The students’ financial literacy was evaluated using the Financial Fitness for Life – High Schools (FFFL-HS) test (Walstad and Rebeck 2005). The FFFL-HS Test was designed by the National Council on Economic Education (NCEE) to provide an up-to-date assessment tool that ‘measure(s) understanding of personal finance among high school students’, as part of their endeavour to provide the best possible economic and financial education to high school students. The test has been used widely (see for example, Borodich *et al.* (2010), Harter and Harter (2007) or Butt *et al.* (2008)). The test has high content validity, having been based on the major personal finance teaching courses and developed by subject experts (Walstad and Rebeck 2005). It thus represents a test of what high school students ought to know about personal finance. The FFFL-HS test comprises ten multiple choice questions on each of five themes:

- **The Economic Way of Thinking:** Economic reasoning and the way decision making affects incomes and standard of living;
- **Earning Income:** Aspects of finding work and own job creation, and reasons why incomes vary between various jobs;
- **Saving:** Costs and benefits of saving and various aspects of investment;
- **Spending and Using Credit:** The use of credit and the nature of interest payments, and
- **Money Management:** Budgeting, banking and insurance.

The questions in the test are also classified into three cognitive levels: Knowledge, Comprehension, and Application. There are 14 questions pertaining to Knowledge, which emphasise the ability to recognize and recall facts. The 25 Comprehension questions require some understanding of information and the skill of explaining it in various ways. The other 11 questions (Application) involve the use of information in different scenarios. The questions from the U.S. version of the FFFL-HS test were adapted for the New Zealand context by the New Zealand-based authors. This involved minor alterations to individual questions to account for differences in local financial and tax laws. The final version of the New Zealand test is included in the Appendix.

In all, 352 students participated in the research. We omitted from the analysis 17 students who scored less than 25 percent in the test (we assume these students were answering test questions randomly), or who failed to attempt five or more of the questions. Thus, the analysis in this paper is based on the test results from the remaining 335 students. The results of the financial literacy test were then compared with two other samples: (1) the norming sample of U.S. high school students who had not completed a personal financial literacy course from the FFFL-HS manual (Walstad and Rebeck 2005) and (2) a sample of Japanese high school students (Yamaoka *et al.* 2005). The results of this comparative analysis are presented in the following section. In assessing the adequacy of financial literacy, we use as a benchmark the 60% that is applied in the Jump\$start programme (Mandell 2008b). An analysis of the demographic and other factors associated with personal financial literacy within our New Zealand sample is reported elsewhere (Cameron *et al.* 2013).

4. Results and Discussion

The overall financial literacy test results are summarised in Table 1. New Zealand students' mean score of 45.3% was 0.5 percentage points higher than that of United States students, but 12 percentage points lower than that of Japanese students, who clearly performed better in the test. Notwithstanding the Japanese students' better performance, students in all three countries have poor overall performance, that is, below the 60 percent benchmark.

Table 1: Aggregate Statistics for FFFL-HS Test

	New Zealand	Japan	United States
Number of high schools	5	10	14
Number of students	335	1434	335
Mean score	22.6	28.6	22.4
Mean percentage correct	45.3%	57.3%	44.8%

Table 2 breaks the financial literacy results down by individual question. Japanese students had a higher rate of correct response for most questions, but the size of the difference in correct response rates varied greatly. New Zealand students had the highest correct response rates for eight of the 50 questions, five of which were from the *Economic Way of Thinking* theme. Over these questions, U.S. students' scores were 6.8 percentage points lower than New Zealand students on average, and for Japanese students the discrepancy was almost twice as large. Overall, there was a close correlation between New Zealand and United States students in terms of their question-specific performance (Pearson's correlation coefficient of 0.843). There was a much lower correlation between either of those groups of students and the Japanese students (Pearson's correlation coefficient of 0.523 between Japanese and New Zealand results, and 0.528 between Japanese and U.S. results).

The most severe divergence in correct response rates occurred in Question 33, where 11.6 percent of New Zealand students, 16.0 percent of U.S. students, and 86.9 percent of Japanese students answered correctly. Japanese students also performed more than 40 percentage points better than U.S. and New Zealand students on average in Questions 5, 12, 40, and 43. These significant differences relate most to differences in the questions between Japanese, U.S., and New Zealand versions of the FFFL-HS test. The Japanese version of Question 33 is arguably easier, since the incorrect option D replaces 'income sources' with 'hobby', and makes it much less likely for a student to choose that option. Question 12 is completely different between the Japanese and other versions of the test. The other three questions, though, are similar between the three versions. Thus, the difference in results between the Japanese and New Zealand/U.S. students is unlikely to arise entirely due to differences between the tests.

Table 3 categorises the question-specific results by theme. Japanese students had higher average scores in every theme, and in particular in the *Earning Income* theme. The difference between the three samples was smallest in the *Economic Way of Thinking* theme, which was also the only theme where the average in all three countries was above 50 percent. New Zealand and U.S. students perform similarly in each theme, which is consistent with the high correlation between student performances by question shown in Table 2. Within each theme, the relative ranking of questions was similar for each country. That is, the most difficult questions (in terms of fewer students correctly answering them) were similar across the three countries.

Table 2: Percentage of Correct Responses by Item (%)

Question	NZ	Japan	U.S.	Question	NZ	Japan	U.S.
1	29.9%	23.8%	17.0%	26	33.4%	19.5%	30.0%
2	84.2%	79.5%	88.0%	27	54.0%	63.8%	51.0%
3	21.2%	13.5%	14.0%	28	26.6%	32.0%	20.0%
4	78.2%	85.1%	80.0%	29	31.3%	43.8%	48.0%
5	31.6%	71.6%	31.0%	30	60.9%	67.9%	54.0%
6	85.1%	62.3%	83.0%	31	63.6%	83.9%	61.0%
7	60.3%	81.6%	78.0%	32	47.5%	31.4%	51.0%
8	57.0%	50.1%	56.0%	33	11.6%	86.9%	16.0%
9	57.0%	77.7%	38.0%	34	24.5%	32.7%	27.0%
10	55.2%	31.6%	48.0%	35	55.8%	51.8%	57.0%
11	58.2%	89.5%	68.0%	36	37.6%	49.8%	44.0%
12	44.2%	86.6%	39.0%	37	43.3%	44.4%	36.0%
13	65.7%	70.4%	46.0%	38	32.8%	24.8%	16.0%
14	76.4%	80.9%	76.0%	39	53.1%	84.0%	48.0%
15	45.1%	65.1%	42.0%	40	32.5%	69.2%	24.0%
16	37.9%	59.3%	49.0%	41	36.7%	44.1%	37.0%
17	49.3%	81.3%	57.0%	42	41.2%	66.2%	34.0%
18	36.1%	73.2%	42.0%	43	34.6%	82.1%	44.0%
19	22.1%	48.8%	37.0%	44	29.9%	34.2%	51.0%
20	67.2%	77.5%	66.0%	45	66.9%	70.0%	59.0%
21	27.8%	36.1%	23.0%	46	48.7%	59.2%	57.0%
22	30.1%	45.3%	23.0%	47	40.9%	25.9%	37.0%
23	44.8%	48.2%	32.0%	48	37.3%	34.7%	56.0%
24	25.4%	28.3%	25.0%	49	46.9%	58.3%	25.0%
25	52.8%	78.1%	48.0%	50	33.1%	60.8%	49.0%

Table 3: Distribution of Percentage of Correct Responses by Theme

Theme		Range of Percent Correct										Mean		
		0-9%	10-19%	20-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%	NZ	Japan	U.S.
The Economic Way of Thinking	NZ			1, 3	5		8, 9, 10	7	4	2, 6		56.0%		
	Japan		3	1	10		8	6	2, 5, 9	4, 7			57.7%	
	U.S.		1, 3		5, 9	10	8		7	2, 4, 6				53.3%
Earning Income	NZ			19	16, 18	12, 15, 17	11	13, 20	14			50.2%		
	Japan					19	16	15	13, 18, 20,	11, 12, 14,			73.3%	
	U.S.				12, 19	13, 15, 16,	17	11, 20	14					52.2%
Saving	NZ			21, 24, 28	22, 26, 29	23	25, 27	30				38.7%		
	Japan		26	24	21, 28	22, 23, 29		27, 30	25				46.3%	
	U.S.			21, 22, 24	23, 26	25, 29	27, 30							35.4%
Spending and Using Credit	NZ		33	34	36, 38, 40	32, 37	35, 39	31				40.2%		
	Japan			38	32, 34	36, 37	35	40		31, 33, 39			55.9%	
	U.S.		33, 38	34, 40	37	36, 39	32, 35	31						38.0%
Money Management	NZ			44	41, 43, 48,	42, 46, 47,		45				41.6%		
	Japan			47	44, 48	41	46, 49	42, 50	45	43			53.5%	
	U.S.			49	41, 42, 47	43, 50	44, 45, 46,							44.9%

Table 4 summarises the question-specific results by theme and cognitive level. Japanese students obtained the highest scores at all three cognitive levels. The difference between Japanese and New Zealand and U.S. students was greatest in the Knowledge questions, demonstrating that Japanese students have a better ability to recognise and deal with jargon and personal finance terminology. This was also the cognitive level where Japanese students performed best of the three, in contrast to New Zealand and U.S. students, who both performed worst in Knowledge and best in Comprehension (though the difference between Comprehension and Application scores was very small and not significant). This suggests that New Zealand and U.S. students are better at interpreting financial information. However, their Comprehension and Application scores were still both lower than those of Japanese students.

While it is difficult to draw strong conclusions at each cognitive level within individual themes due to the small number of questions, Japanese students' advantage in Knowledge over New Zealand and U.S. students appears to mainly arise due to Japanese students' greater knowledge in the *Earning Income*, *Spending and Using Credit*, and *Money Management* themes. In particular, New Zealand and U.S. students did extremely poorly in the Knowledge questions in the *Spending and Using Credit* theme, which relate to creditworthiness and the role of credit reporting agencies. This highlights an overall lack of understanding of how credit works among young people in New Zealand and the United States.

Differences between Japanese and other students were less substantial in other cognitive level-theme combinations. The only areas where New Zealand or U.S. students outperformed Japanese students were Knowledge questions in the *Economic Way of Thinking* theme (both New Zealand and U.S. students), and Application questions in the *Money Management* theme (U.S. students). However, those differences are based on only one and two questions respectively.

Table 4: FFFL-HS results by Cognitive Level

Themes and Items	Cognitive Level								
	Knowledge			Comprehension			Application		
	N.Z.	Japan	U.S.	N.Z.	Japan	U.S.	N.Z.	Japan	U.S.
The Economic Way of Thinking									
1 Becoming a Millionaire				29.9	23.8	17.0			
2 Financial Success				84.2	79.5	88.0			
3 Opportunity Cost							21.2	13.5	14.0
4 Cost and Benefit							78.2	85.1	80.0
5 A Free Lunch				31.6	71.6	31.0			
6 Choice				85.1	62.3	83.0			
7 Opportunity Cost							60.3	81.6	78.0
8 Scarcity				57.0	50.1	56.0			
9 Human Resource				57.0	77.7	38.0			
10 Decision-making Process	55.2	31.6	48.0						
Mean Percent Correct	55.2	31.6	48.0	57.5	60.8	52.2	53.2	60.1	57.3
Earning Income									
11 Getting a Job				58.2	89.5	68.0			
12 Looking for a Job	44.2	86.6	39.0						
13 Job Interview				65.7	70.4	46.0			
14 Entrepreneur				76.4	80.9	76.0			
15 Human Capital	45.1	65.1	42.0						
16 Competitive Job Market							37.9	59.3	49.0
17 Lifetime Income	49.3	81.3	57.0						
18 Net Pay	36.1	73.2	42.0						
19 Social Security Contributions	22.1	48.8	37.0						
20 Deductions and Net Pay							67.2	77.5	66.0
Mean Percent Correct	39.3	71.0	43.4	66.8	80.3	63.3	52.5	68.4	57.5

Table 4 continued: FFFL-HS Results by Cognitive Level

Themes and Items	Cognitive Level								
	Knowledge			Comprehension			Application		
	N.Z.	Japan	U.S.	N.Z.	Japan	U.S.	N.Z.	Japan	U.S.
Saving									
21 Opportunity Cost of Compound Interest				27.8	36.1	23.0			
22 The Power of Compound Interest							30.1	45.3	23.0
23 The Power of Compound Interest				44.8	48.2	32.0			
24 The Rule of 72							25.4	28.3	25.0
25 Market Price Risk				52.8	78.1	48.0			
26 Liquidity Risk				33.4	19.5	30.0			
27 Risk and Reward				54.0	63.8	51.0			
28 The Real and Nominal Rate of Return	26.6	32.0	20.0						
29 Common Stock				31.3	43.8	48.0			
30 Criteria of Investment	60.9	67.9	54.0						
Mean Percent Correct	43.7	50.0	37.0	40.7	48.3	38.7	27.8	36.8	24.0
Spending and Using Credit									
31 The Advantage of Using Credit				63.6	83.9	61.0			
32 Loan Transaction				47.5	31.4	51.0			
33 Judging a Creditworthiness	11.6	86.9	16.0						
34 A Credit Bureau	24.5	32.7	27.0						
35 Paying Back a Loan				55.8	51.8	57.0			
36 Risk of Loan Default				37.6	49.8	44.0			
37 The Cost of a Loan				43.3	44.4	36.0			
38 Unauthorized Use of a Credit Card							32.8	24.8	16.0
39 A Pyramid Scheme							53.1	84.0	48.0
40 A Payday Loan Company				32.5	69.2	24.0			
Mean Percent Correct	18.1	59.8	21.5	46.7	55.1	45.5	43.0	54.4	32.0

Table 4 continued: FFFL-HS Results by Cognitive Level

Themes and Items	Cognitive Level								
	Knowledge			Comprehension			Application		
	N.Z.	Japan	U.S.	N.Z.	Japan	U.S.	N.Z.	Japan	U.S.
Money Management									
41 Disposable Income	36.7	44.1	37.0						
42 Net Worth	41.2	66.2	34.0						
43 Pay Yourself First	34.6	82.1	44.0						
44 A Debit Card				29.9	34.2	51.0			
45 Balance at a Bank							66.9	70.0	59.0
46 A Type of Insurance	48.7	59.2	57.0						
47 A Type of Insurance for Autos				40.9	25.9	37.0			
48 A Deductible							37.3	34.7	56.0
49 Another Type of Insurance for Autos				46.9	58.3	25.0			
50 Life Insurance				33.1	60.8	49.0			
Mean Percent Correct	40.3	62.9	43.0	37.7	44.8	40.5	52.1	52.4	57.5
Total Mean Percent Correct	38.3	61.3	39.6	48.8	56.2	46.8	46.4	54.9	46.7

5. Conclusions

Financial literacy of high school students in New Zealand is similar to that in the United States, but much lower than that in Japan. However, students in all three countries performed poorly in the financial literacy test, both overall and in each of the five themes investigated. This low overall level of financial literacy among young people should be of concern, particularly given the profound impact financial literacy has on individuals' ability to manage their money and maintain financial wellbeing.

Japanese students' advantage in terms of higher economic literacy largely arises because of their greater knowledge of the terminology and definitions used in personal finance, and much less from better comprehension or greater ability to apply their personal finance knowledge. While it isn't clear to what extent financial literacy is obtained through formal schooling already, the governments and education providers in New Zealand and the United States could potentially learn much from Japan, in terms of how young people engage with personal financial terms, and how they interpret their meaning. However, in order to meet the benchmark standard, all three countries should work harder on developing appropriate curriculum to support young people's personal financial literacy, particularly in the areas of comprehension and application.

References

- Atkinson, A. and Messy, F. (2012). Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study, *OECD Working Papers on Finance, Insurance and Private Pensions No. 15*. Paris: OECD Publishing.
- Borodich, S., Deplazes, S., Kardash, N., and Kovzik, A. (2010). Comparative analysis of the levels of financial literacy among students in the U.S., Belarus, and Japan. *Journal of Economics and Economic Education Research* 11(3), 71-86.
- Bowen, C.F. (2002). Financial knowledge of teens and their parents. *Financial counseling and planning* 13(2), 93-102.
- Butt, N.M., Haessler, S.J., and Schug, M.C. (2008). An incentives-based approach to implementing Financial Fitness for Life in the Milwaukee public schools. *Journal of Private Enterprise* 24(1), 165-173.
- Cameron, M.P., Calderwood, R., Cox, A., Lim, S., and Yamaoka, M. (2013). Factors associated with financial literacy among high school students, *Department of Economics Working Paper 13/05*. Hamilton, New Zealand: Department of Economics, University of Waikato.
- Harter, C.L., and Harter, J.F. (2007). *Assessing the effectiveness of financial fitness for life in eastern Kentucky*. Paper presented at the 2007 Annual Meeting of the American Economic Association, Baltimore, Md., 7-11 November.
- Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs* 44(2), 296-316.

- Gerardi, K.S., Goette, L.F., and Meier, S. (2010). Financial literacy and subprime mortgage delinquency: Evidence from a survey matched to administrative data. *Federal Reserve Bank of Atlanta Working Paper No. 2010-10*. Atlanta: Federal Reserve Bank of Atlanta.
- Lusardi, A., Mitchell, O.S., and Curto, V. (2010). Financial literacy among the young. *Journal of Consumer Affairs* 44(2) 358-380.
- Mandell, L. (2006). Financial Literacy: If It's So Important, Why Isn't It Improving? *Networks Financial Institute Policy Brief 2006-PB-08*. Terre Haute, IN: Networks Financial Institute, Indiana State University.
- Mandell, L. (2008a). Financial literacy of high school students. In J.J. Xiao (Ed.) *Handbook of Consumer Finance Research*, pp. 163-183. New York: Springer.
- Mandell, L. (2008b). *The financial literacy of young American adults: Results of the 2008 National Jump\$tart Coalition survey of high school seniors and college students*. Washington, D.C.: The Jump\$tart Coalition for Personal Financial Literacy.
- Marcolin, S., and Abraham, A. (2006). Financial literacy research: Current literature and future opportunities. In P. Basu, G. O'Neill and A. Travaglione (Eds.), *Proceedings of the 3rd International Conference on Contemporary Business*, Leura NSW, 21-22 September 2006. Bathurst: Faculty of Commerce, Charles Sturt University.
- Morningstar. (2012). *KiwiSaver Performance Survey – March Quarter 2012*. Retrieved 20 June 2012 from http://www.morningstar.co.nz/s/documents/kiwisaver_survey1203.pdf
- New Zealand Network for Financial Literacy. (2010). *National Strategy for Financial Literacy*. Retrieved 13 June 2012 from http://www.financialliteracy.org.nz/webfm_send/376
- Office of Investor Education and Assistance, Securities and Exchange Commission. (1999). *The facts on saving and investment: Excerpts from recent polls and studies highlighting the need for financial education*. Washington, D.C. : U.S. Securities and Exchange Commission.
- Roberts, J.A., and Jones, E. (2001). Money attitudes, credit card use, and compulsive buying among American college students. *Journal of Consumer Affairs* 35(2), 213-240.
- Stangl, J. and Matthews, C. (2012). *How young New Zealanders learn about personal finance: A longitudinal study*. Palmerston North: Financial Education and Research Centre, Massey University.
- Walstad, W.B. and Rebeck, K. (2005). *Financial fitness for life – High school test examiner's manual*. New York: National Council on Economic Education.
- Worthington, A. C. (2006). Predicting financial literacy in Australia. *Financial Services Review* 15(1), 59-79.
- Yamaoka, M., Asano, T., Abe, S., and Inose, T. (2005). *FFFL-HS Test Results in Japan*. Paper presented at the National Council on Economic Education Annual Conference. San Antonio, Tx., 5-8 October.

Appendix

FFFL-HS Theme Tests

2012 New Zealand Version

Adapted from the U.S. version by M.P. Cameron, S. Lim and R. Calderwood

Theme 1

1. Which is true about most millionaires?
 - a. They inherit most of their wealth.
 - b. They work more than 40 hours a week.**
 - c. They work in glamorous jobs like sports or entertainment.
 - d. They avoid investing in the stock market due to its riskiness.

2. Which strategy is most likely to improve most people's financial situation over a lifetime?
 - a. Using credit to spend more than a person earns.
 - b. Making financial decisions quickly based on intuition.
 - c. Saving early in life when a person begins earning an income.**
 - d. Gaining work experience early instead of continuing in school.

3. Jarred values three goods in this order : (1) an MP3 player; (2) a computer game; and (3) a sweatshirt. Each item costs \$60. Jarred bought the MP3 player, which he wanted the most. His opportunity cost is the:
 - a. sweatshirt.
 - b. MP3 player.
 - c. computer game.**
 - d. sweatshirt and the computer game.

4. If Jessica chooses to buy more motor vehicle insurance this year than she bought last year, then Jessica has probably decided that:
 - a. the benefits of more motor vehicle insurance are greater than the costs.**
 - b. more motor vehicle insurance will reduce her risk of an accident.
 - c. this added insurance will help her savings grow faster.
 - d. she will drive more safely in the future.

5. The expression 'there is no such thing as a free lunch' means:
 - a. free lunches are a scam but cannot be avoided.
 - b. scarce resources are rare and therefore expensive.
 - c. individuals, but not society, suffer from a lack of resources.
 - d. resources used for one purpose could have been used for another purpose.**

6. Which of the following is typically true?
 - a. Correct choices have no costs.
 - b. People do not respond to incentives.
 - c. Voluntary trade between a willing buyer and a seller must cause winners and losers.
 - d. People's choices have consequences for the future.**

7. Some people choose to stop attending high school before completing NCEA Level 3. What is the cost to the individual of dropping out of high school?
 - a. The lower income earned in the job market.**
 - b. The lower interest rates one is charged for credit.
 - c. The higher taxes one pays for leaving school early.
 - d. The cost to the government of the Youth Guarantee scheme for that individual.

8. One consequence of scarcity is that:
 - a. there is full employment of resources.
 - b. the production of goods and services is constant.
 - c. people have to make choices among alternatives.**
 - d. products which are plentiful have relatively high prices.
9. Which would be considered a human resource?
 - a. Office building
 - b. Factory worker**
 - c. Phone book
 - d. Electricity
10. The first three steps of economic decision-making are to:
 - a. draw a conclusion, construct a model, and make a generalisation.
 - b. identify assumptions, make a policy, evaluate the policy.
 - c. gather facts, form a theory, and conduct a simulation.
 - d. define the problem, list alternatives, and state goals.**

Theme 2

11. Which is most likely to improve a person's chances of getting a job?
 - a. Supplying a neat and accurate application.**
 - b. Preparing a resume (CV) only if an employer requests one.
 - c. Avoiding classified job advertisements in newspapers.
 - d. Dressing for an interview in a manner that is provocative.
12. An approach to finding out about job opportunities that consists of contact with friends and family members who might be able to connect you to a potential employer is called:
 - a. logrolling.
 - b. recruiting.
 - c. connecting.
 - d. networking.**
13. Which question are employers allowed to ask job applicants during a job interview?
 - a. Are you married?
 - b. Do you attend a place of worship?
 - c. What do you feel are your weaknesses as they pertain to this job?**
 - d. What is your date of birth/age?
14. A typical characteristic of entrepreneurs is that they:
 - a. like to work part-time.
 - b. are willing to take risks.**
 - c. would rather save than invest.
 - d. enjoy working under supervision.
15. Human capital consists of:
 - a. stocks and bonds.
 - b. knowledge and skills.**
 - c. plant and equipment.
 - d. savings and investments.

16. Which will result from an increase in the demand for software programmers?
 - a. A decrease in the price of software.
 - b. A decrease in the supply of software.
 - c. An increase in the wage of software programmers.**
 - d. An increase in unemployed software programmers.

17. *Statistics New Zealand* statistics reveal that the fastest growing jobs over the last ten years are among workers with which level of education?
 - a. A completed tertiary qualification.**
 - b. High school qualifications only.
 - c. No qualifications at all.
 - d. Work experience in a related occupation.

18. What is the difference between gross and net pay?
 - a. Net pay is gross pay minus savings.
 - b. Gross pay is net pay minus savings.
 - c. Gross pay is net pay minus deductions.
 - d. Net pay is gross pay minus deductions.**

19. Emily works full-time at a computer company. Who pays the ACC levies on Emily's wages?
 - a. Emily only.
 - b. Her employer only.
 - c. Emily and her employer.**
 - d. The government.

20. An employee works for 40 hours per week at \$20 per hour. The deductions per week are \$50 in income taxes, \$20 in student loan repayments, and \$30 in Kiwisaver contributions. What is the net pay for the week?
 - a. \$700**
 - b. \$730
 - c. \$750
 - d. \$800

Theme 3

21. What is the opportunity cost of letting your interest compound in your savings account instead of withdrawing the interest as it is earned?
 - a. Lower taxes in the current year.
 - b. Increased risk of losing savings.
 - c. Less money for current purchases.**
 - d. More interest on the savings account.

22. Charlie opens a savings account and deposits \$500. If the savings account has a fixed annual interest rate of 5 percent, and he makes no additional deposits or withdrawals, what amount will Charlie have in his savings account at the end of two years?
 - a. Exactly \$505.
 - b. Exactly \$550.
 - c. Less than \$550.
 - d. More than \$550.**

23. Beginning to save while you are young is recommended by financial experts because it:
 - a. is easier to save when you first begin earning income.
 - b. is hard to save later in life when you have more income to spend.
 - c. allows you to lock in higher interest rates when you buy on credit.
 - d. lets compound interest work in your favor by earning interest on interest.**

24. About how many years would it take for \$1000 to become \$2000 if \$1000 is deposited in a savings account with an interest rate of 7.2 percent?
- 7.2
 - 10.0**
 - 14.4
 - 20.0
25. When making an investment, 'market price risk' refers to which possibility?
- The difficulty of converting one's investment into cash.
 - The value of the investment could decrease over time.**
 - The inability to get any money back from the investment.
 - The interest earned might be greater than the rate of inflation.
26. Liquidity risk is highest for which type of investment?
- Real estate.**
 - Mutual fund.
 - Savings account.
 - Individual stocks.
27. What is the general relationship between risk and reward?
- The higher the risk, the lower the potential reward.
 - The higher the risk, the higher the potential reward.**
 - The amount of risk does not influence potential reward.
 - There is a relationship, but it is uncertain.
28. How do you calculate the real rate of return on an investment?
- Subtract the rate of inflation from the nominal rate of return.**
 - Subtract the nominal rate of return from the rate of inflation.
 - Subtract the nominal rate of return from the annual rate of return.
 - Subtract the annual rate of return from the nominal rate of return.
29. Common stock provides the shareholder with:
- ownership in a company.**
 - a set interest rate per year.
 - guaranteed annual dividends.
 - insured protection on investment.
30. What are the three most important criteria to consider when investing?
- Size, insurance, taxes.
 - Leverage, margins, credit.
 - Risk, rate of return, liquidity.**
 - Collateral, access to accounts, dividends.

Theme 4

31. One advantage of credit is that it can help people:
- sell assets.
 - immediately increase their net worth.
 - reduce risk when investing in stocks.
 - buy a good or service today and pay for it later.**

32. Who generally benefits from a loan transaction?
- The lender only.
 - The borrower only.
 - Both the borrower and the lender.**
 - Neither the borrower nor the lender.
33. Which three things do creditors consider to be most important when judging a person's creditworthiness to buy a house or car?
- Marital status, gender, location.
 - Character, collateral, capacity.**
 - Length of loan, credibility, commissions.
 - Occupation, connections, income sources.
34. What does a credit reporting agency (such as Veda Advantage in New Zealand) do?
- Extends credit to qualified buyers.
 - Provides advice on how to use credit.
 - Tracks the bill-paying habits of consumers.**
 - Sends warnings to people in credit trouble.
35. If a borrower chooses to pay back a loan over a longer period of time, the monthly payment is:
- lower and the interest paid is higher.**
 - higher and the interest paid is higher.
 - lower and the interest paid is lower.
 - higher and the interest paid is lower.
36. What is the relationship between the interest rate charged to an individual and a person's risk of nonpayment of a loan?
- A relationship exists, but it can be either direct or indirect.
 - The lower the risk of nonpayment, the higher the interest rate.
 - The higher the risk of nonpayment, the higher the interest rate.**
 - No relationship exists between interest rate and risk of nonpayment.
37. The best indicator of the cost of a loan is the:
- amount of down payment.
 - annual percentage interest rate.**
 - number of payments.
 - monthly payment.
38. A thief takes your credit card. You report the card missing as soon as you realise it is missing, but the thief has already run up \$2000 in bills. How much of the \$2000 are you responsible for?
- Your liability is limited to \$50.
 - Your liability depends on whether the unauthorised card user is caught.
 - You are not liable for any of the \$2,000 because you reported the card stolen within a reasonable time.**
 - You are liable for the entire \$2,000 because the card was issued in your name.
39. A company calls you and offers an investment opportunity with very high returns. All you have to do is recruit some of your friends who will also invest and soon your cheques will start rolling in. This is a description of which type of investment fraud?
- Identity theft.
 - A loan scam.
 - A credit repair scam.
 - A pyramid scheme.**

40. Which type of financial institution typically charges the highest interest rates for loans?
- Credit unions.
 - Commercial banks.
 - Foreign-owned banks.
 - Personal finance companies.**

Theme 5

41. Disposable income is the money that is:
- deducted from your paycheck.
 - budgeted for variable expenses.
 - spent or saved after deductions.**
 - saved and invested each month.
42. A positive net worth means that:
- income is less than saving.
 - assets are less than liabilities.
 - income is greater than saving.
 - assets are greater than liabilities.**
43. ‘Pay Yourself First’ means that:
- all bills get paid before any saving.
 - money is set aside for savings before spending.**
 - fixed expenses are paid before flexible expenses.
 - credit cards pay for what you don’t have as income.
44. Using a debit card to purchase a good is most similar to using a:
- loan.
 - cheque.**
 - credit card.
 - money market account.
45. This is Marie’s cheque account register.

Check #	Date	Item Description	Deposit	Withdrawal	Balance
	5/14/03	Beginning Balance			\$500.00
500	5/15/03	Century Auto Parts		\$100.00	
	5/31	Paycheck	\$200.00		
501	6/2/03	Best Clothes			

If Marie writes a check for \$50 at Best Clothes, what is her new balance?

- \$450
 - \$500
 - \$550**
 - \$600
46. Which type of insurance protects a person from loss from lawsuits?
- Liability.**
 - Casualty.
 - Term life.
 - Accident.

47. Which is the best description of third party property damage coverage in a motor vehicle insurance policy?
- It provides income when the policyholder is unable to work after an accident.
 - It covers the cost of damage to a motor vehicle as a result of fire, theft, or storms.
 - It covers only the cost of property damage to others caused by the policyholder.**
 - It provides for the repair and replacement of the policyholder's motor vehicle if it is damaged in an accident.
48. Suzy backs her car into a metal fence, causing \$500 of damage to her car. Suzy has a motor vehicle insurance policy with a \$200 excess. To get her car fixed, how much will her motor vehicle insurance company pay?
- \$0
 - \$200
 - \$300**
 - \$500
49. Which is the best description of comprehensive coverage in a motor vehicle insurance policy?
- It provides income when the policyholder is unable to work after an accident.
 - It covers only the cost of damage to a motor vehicle as a result of fire, theft, or storms.
 - It covers only the cost of property damage to others caused by the policyholder.
 - It covers the cost of damage to a motor vehicle as a result of fire, theft, or storms, and the cost of property damage to others caused by the policyholder.**
50. A whole of life insurance policy offers protection:
- for income when the policyholder is unable to work.
 - during the lifetime of the insured and builds cash value.**
 - for a specified period of time and does not build cash value.
 - that is based on the policyholder following a healthy lifestyle.