# Financial Literacy & 21st Century Skills

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Research paper prepared for the
Task Force on Financial Literacy

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### Disclaimer



For more information on the Task Force on Financial Literacy, visit **www.financialliteracyincanada.com**

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# Financial Literacy & 21st Century Skills

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## Executive Summary

The Partnership for 21st Century Skills, a U.S. organization that supports the integration of essential skills into the education curriculum, suggests that, in addition to core subjects, schools should promote an understanding of several 21st century interdisciplinary themes, including "financial, economic, business and entrepreneurial literacy." This report outlines several approaches to introducing financial literacy into classrooms and discusses the advantages and disadvantages of each.

### Why Teach Financial Literacy?

The need to teach financial literacy has never been more urgent. It is driven by higher unemployment rates, increasing individual responsibility for investment decisions, increasing levels of indebtedness and a longer life expectancy. Consumers are also faced with a wide range of increasingly complex financial instruments.

Canadians are concerned about their economic future and consider financial literacy a critical need. The ultimate goal of financial literacy education is not merely to impart knowledge but also to modify behaviour.

### What Should Be Taught?

The Partnership for 21st Century Skills has created a framework that advocates teaching skills as well as knowledge as part of the education curriculum. It has identified financial literacy as an essential 21st Century interdisciplinary theme that should be taught in schools alongside core subjects. It defines financial literacy as knowing how to make appropriate personal financial choices, understanding the role of the economy in society, and using entrepreneurial skills to enhance workplace productivity and career options.

A financial literacy curriculum in the context of 21st Century Skills should strive for relevance and should include age-appropriate topics. It should be emotionally engaging, address existing misconceptions, use real-life situations, and encourage students to reflect on their own actions and behaviours.

This report examines four examples of international financial literacy curricula: Austria, Australia, Japan and the state of Wisconsin.

- Austria issues a "financial driver's license" called "Fit for Money;" the program mainly covers debt prevention
- Australia's financial literacy curriculum covers the nature and forms of money, how to apply financial knowledge in a range of contexts, the ability to manage risk-taking, and the importance of making responsible financial decisions
- Japan has one of the most comprehensive financial literacy curricula; it integrates financial education with core subjects such as Math from Grade 1 through high school
- Wisconsin's new Personal Financial Literacy Standards is one of the most comprehensive approaches and covers, among other things, money management; credit and debt management; planning, saving and investing; and risk management.

However, even the best curricula fail to emphasize several important aspects of teaching financial literacy such as the need to start at a young age and engage the family; include basic accounting and other business literacy components; cover the concepts of behavioural economics and traditional economics; include a discussion of personal values and ethics; and seek to foster corporate responsibility that encourages healthier financial habits among consumers.

The ultimate goal of a financial literacy program is to affect and modify behaviour. One way to achieve this is through the use of a student financial portfolio, a real-life tool that tracks a student's personal financial situation. It would include academic work, résumés, personal reflections, and the student's savings and assets. Technologies ranging from spreadsheets to simulations should be used where appropriate. However, simple, practical, and tangible approaches such as using real money in a jar shouldn't be neglected, particularly at introductory levels.

It is essential to measure the timing and success of the transition from a non-compulsory financial literacy program focused on knowledge, to a compulsory one focused on skills and real-life outcomes that leads to changed behaviours. Students should be able to understand and explain relevant concepts and apply them to their own real-life situations. The successful completion of the program by a majority of Canadian students in all provinces must also be a benchmark of success.

## How Should It Be Taught?

There are several methods to integrate financial literacy into educational curricula each with its own advantages and disadvantages:

1. Integrate financial literacy into existing subjects such as Math and History;
2. Teach it as a summer camp;
3. Introduce it as an add-on mandatory subject in school.

The third method is the most comprehensive and would have the highest likelihood of affecting behaviours.

The introduction of financial literacy into school curricula raises some challenges such as the lack of teacher preparedness and training. Integration of financial literacy into core subjects will require meaningful teacher professional development, as well as curricular choices.

## Conclusions

The ultimate goal of a successful financial literacy program is behaviour modification. A successful program needs to involve students and parents and focus on real-life situations whenever possible. The focus of a financial literacy program should be on relevance, comprehensiveness and values. Integrating financial literacy into existing school subjects may be effective but teaching it as a stand-alone core subject is preferable and has significantly higher chances of affecting behaviour.

The result would be a sophisticated and educated citizenry capable of making sound decisions at the personal and professional level, benefiting the nation at large.

# 1. Why Teach Financial Literacy?

The Partnership for 21st Century Skills is a U.S. organization that supports the integration of certain essential skills as well as knowledge into the education curriculum. The Partnership recommends that in addition to core subjects, schools should promote an understanding of several 21st Century interdisciplinary themes including financial, economic and entrepreneurial literacy. This report uses as its basis the framework developed by the Partnership for 21st Century Skills to describe and expand on how financial literacy skills should be delivered to students. It outlines several approaches to introducing financial literacy into the classroom and discusses the advantages and disadvantages of each.

The need to teach financial literacy has never been more urgent. It is driven by:

1. The increasing complexity of individual needs:
    - Unstable work environments and (sometimes chronic) unemployment
    - A devolution of investment responsibilities from organizations to individuals
    - In some cases, increased personal wealth as a result of higher real estate valuations, inheritances, or higher earnings
    - Increased indebtedness
    - A longer life expectancy

2. Growing societal pressure on consumers to spend beyond their means. The growing complexity of financial instruments:
    - New distribution mechanisms for easily available credit
    - Consumer inability to compare offerings
    - Availability of a wider range of financial products, coupled with the frequent introduction of new offerings

3. The new imperative for businesses:
    - A growing requirement for key work-related skills, such as budgeting, pricing, project management, etc.;
    - An increase in the number of personal enterprises necessitating financial literacy.

In addition, a lack of good role models while growing up and social taboos that discourage individuals from talking about money may also adversely affect an individual's knowledge of financial and economic matters.

The popular Canadian TV series[1] "Til debt do us part" provides plenty of anecdotal evidence[2] of the deeply rooted misunderstandings that Canadians have about personal finances, and the role of institutions in perpetuating unhealthy behaviours. Consumers demonstrate an inability to understand financial jargon, think critically about marketing pitches (which may hide the costs of defaults, interest rates, etc) and be ***conscious*** of their own behaviours.

- Industry practices such as making credit too easily available; providing confusing explanatory materials, and using aggressive marketing tactics.

Powerful psychological and cognitive biases may also affect an individual's financial and economic decisions (see Appendix B). For example, the so-called "hyperbolic discounting," effect which is the tendency for people to have a stronger preference for more immediate payoffs rather than later payoffs, may result in consequences that range from not recognizing the cost-cumulative impact of "affordable luxuries" (such as habitual $5 cups of coffee) to taking on unaffordable mortgage and car payments and, worst of all, financing mortgage payments with even more expensive credit-card debt.

1 www.slice.ca/shows/showspage.aspx?title_id=93097

2 Private communication with Ms. Gail Vaz-Oxlade, TV show host of "Til debt do us part", August 13, 2010

Six Canadians in 10 are concerned about their economic future, and a vast majority of adults in Canada and other member countries of the Organisation for Economic Co-operation and Development consider financial literacy a critical need.

The ultimate goal of financial literacy education is to *achieve behavioural modification*, and not merely to impart knowledge. Good habits start young, so it is important to begin teaching financial literacy at a young age, perhaps even at the pre-school level, through to the primary grades and beyond.

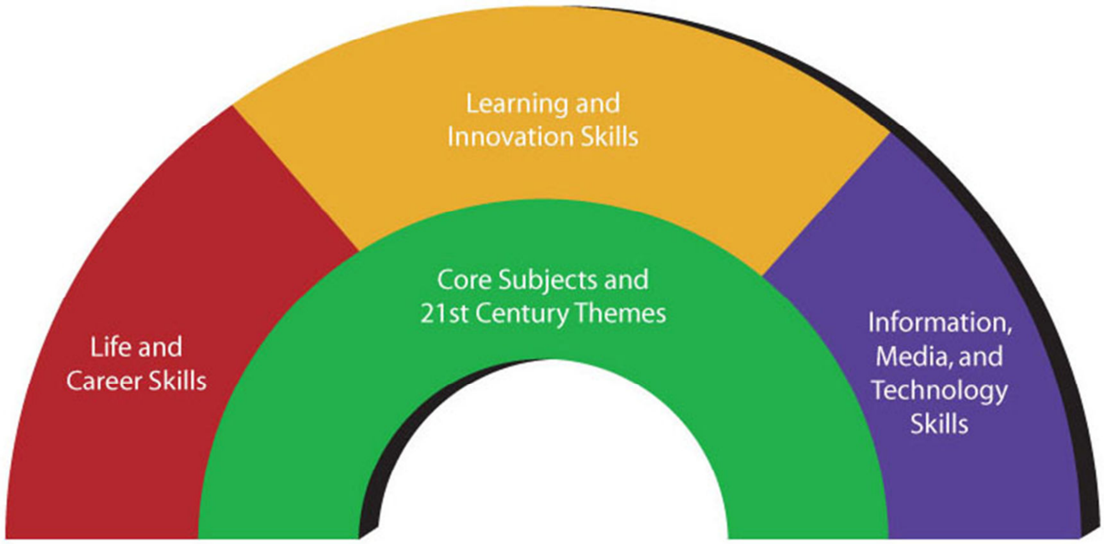
## 2. What Should Be Taught?

The OECD defines financial education as[3]: *"the process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction and/or objective advice, develop the skills, concepts and […] confidence to become aware of (financial) risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being and protection."*

The definition of the Task Force on Financial Literacy is more crisply articulated: *"Financial literacy means having the knowledge, skills and confidence to make responsible financial decisions."*

3 www.oecd.org/dataoecd/8/28/44409678.pdf

The Partnership for 21st Century Skills (P21[4]) has created a framework that advocates teaching skills in addition to knowledge. The framework is graphically represented by the rainbow below:




The complete framework with the list of skills appears in Appendix A.
In its framework, P21 recommends that the 21st Century Theme of "financial, economic, business and entrepreneurial literacy" be taught alongside core subjects in classrooms. It defines the theme as follows:

- *"Knowing how to make appropriate personal economic choices"*
- *"Understanding the role of the economy in society"*
- *"Using entrepreneurial skills to enhance workplace productivity and career options"*

## Review of Leading Curricula

The Task Force on Financial Literacy correctly notes that there is an enormous amount of public- and private-sector information as well as course materials available on financial literacy, some of it of high quality. However, it does not amount to a coherent ensemble of information, with comprehensive, research-tested, formative and summative assessments.

4 www.p21.org

The available content is typically organized around themes (e.g. "risk"), chronology (e.g. "my first piggybank") and events (e.g. marriage).

In designing a financial literacy curriculum in the context of 21st Century Skills, one needs to be mindful of:

A) Conceptually:

- Striving for *relevance* (meaning *applicability, and significance*), carefully distinguishing between what is core knowledge and what is contextual learning; Curriculum designers need to weigh the necessity of each item (for instance, by distinguishing between one-time financial events and recurring ones, and weighing their relative impact.
- A Relevance + Rigor matrix[5] that also expands the knowledge dimension beyond Bloom's old taxonomy into Creativity[6], but keeping Synthesis as well.
- Keeping topics age-appropriate; weighing the students' real-world experiences and their ability to relate to the topic at hand in each grade.
- Balancing the treatment of topics, rather than promoting ideological dogmatism; for instance exposing the shortcomings of both economic "laisser-faire" as well as "dirigisme."
- Providing spirally iterative content, thereby ensuring retention through intelligent, augmentative repetition.
- Ensuring gender-centricity of the materials, particularly through middle school.
- Providing *emotionally engaging* content to achieve the ultimate goal of behaviour modification.

B) Pedagogically:

- Critically addressing and analyzing existing misconceptions.
- Engaging the learner through the use of personally relevant, real-world situations and involving real-world experts in the classroom.

5 www.leadered.com/rrr.html

6 www.potsdam.edu/offices/ie/assessment/upload/Bloom-s-Revised-Taxonomy-1.pdf

- Lastly, requiring students to reflect on their own actions and behaviours to consolidate their learning.

## Curriculum Best Practices and Gaps

The Task Force on Financial Literacy has identified and reviewed materials from a number of countries. The materials are rather similar and comparable in scope, as curriculum design groups use a similar process of working with industry and surveying their global counterparts to identify best practices.

For this report, four examples stand out: Austria, Australia, Japan, and the State of Wisconsin, USA[7]:

### Austria

Austria's federal state of Vorarlberg issues a "Financial Driver's License[8]" called "Fit for Money" (*"Fits fur Geld"*). The program covers chiefly debt prevention for students of ages 10 to 18:

- Needs and consumption (including relevant topics such as mobiles, cars, etc.)
- Credit and debt
- Risks
- Cash versus credit
- Cost of living

### Australia

Australia's Financial Literacy curriculum, developed from year 3 to year 9, addresses the following[9]:

- The nature and forms of money, how it is used and the consequences of consumer decisions.

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7 Note that JumpStart Coalition also has a comprehensive set of Standards for the US www.jumpstart.org/national-standards.html

8 *Note that the Austrian concept is really interesting, but its spirit of putting the entire burden on the consumer is inappropriate – industry must change some of its practices as well.*

9 www.mceecdya.edu.au/mceecdya/national_financial_literacy_framework_homepage,14429.html

- The application of consumer and financial knowledge and skills in a range of changing contexts.
- The ability to use initiative, build financial capabilities and manage risk-taking when making consumer and financial decisions.
- Appropriate consumer and financial decisions that display care for self, others, the community and the environment.

## Japan

Japan has one the most comprehensive frameworks[10] that integrates financial literacy with core subjects (social studies, home economics, moral education, language, and mathematics) and does so from Grade 1 through to high-school graduation.

## Wisconsin, USA

Wisconsin's new Personal Financial Literacy Standards[11] is one of the most comprehensively detailed programs and covers from Grades 6 to 12:

- Relating income and education
- Money management (including wants versus needs)
- Credit and debt management
- Planning, saving and investing (including taxation)
- Becoming a critical consumer
- Community and financial responsibility
- Risk management (including insurance)

However, even the best and most up-to-date curricula fail to emphasize the importance of several key aspects of financial literacy:

1. Starting young: Good habits get engrained early. However, there seems to be little emphasis on financial literacy being taught as soon as children become conscious of the concept of currency as an exchange mechanism for goods and services. One does

10 www.shiruporuto.jp/e/consumer/index.html; www.mext.go.jp/english/shotou/index.htm and www.fsa.go.jp/en/index.html

11 www.dpi.state.wi.us/standards/pdf/pfl.pdf

not need to wait for middle school to practice thrift, or understand wants versus needs[12], for instance.

2. Including business and entrepreneurial literacy: Understanding basic accounting and financial statements would benefit everyone, and not just those inclined to run or start a business.

3. Behavioural economics: At the personal level, powerful psychological forces are at play (Appendix B) that affect financial and economic decisions and need to be explained (such as loss aversion, sensitivity to advertising, etc.).

4. Traditional economics: most consumers have little or no understanding of concepts such as supply and demand, market forces, compound interest, marketing techniques, competitive pressures, globalization, labor costs, and so on. Yet economics is generally an elective class at the high school level, rarely taught with practicality in mind (relating to the student's world), and rarely draws from the lessons from History (such as inflation: precious metal content of antiquity coins, Spanish conquistadores silver, etc.).

   In addition to a *practical* grounding in traditional economics, students need to gain a deep appreciation for the probability of events and in particular the consequence of such events which is not part of how canonical economics[13] are taught. Gambling is one example of how an understanding of probabilities and knowledge of psychological biases, could help some avoid the slippery slope to financial ruin[14].

5. Development of complementary personal values: For example, ethics, which will lead to decision-making that serves society (in personal taxation, in banking employment, and in governmental service) and fortitude to accept and act on personal realities.

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12 Financial Literacy K-12 as part of the Iowa Core Curriculum www.corecurriculum.iowa.gov/Discipline.aspx?C=21st+Century+Skills&D=Financial+Literacy

13 Nassim Nicholas Taleb, "The Black Swan", Random House

14 S. Hankins, M.L. Hoekstra, and P.M. Skiba. papers.ssrn.com/sol3/papers.cfm?abstract_id=1134067

6. Behaviour modification of industry, not just consumers: Institutions the world over are somewhat schizophrenic about consumer behaviour. On one hand, they create sometimes excellent tutorials and set up foundations to educate customers about financial literacy. On the other hand, they foster debt practices that reward indebtedness over thrift, and use psychological techniques that encourage consumption.

   A successful approach in behavioural modification needs not only to improve consumer education, but also to bolster corporate responsibility and ethics that will ultimately foster healthier financial habits among consumers.


### Expected Outcomes

A number of improved, traditional summative, and new formative assessment approaches can be deployed depending on the options presented below in the section "*How should it be taught?*" The assessment strategy needs to reflect:

- Better summative assessments: authentic, problem-based approaches that assess multiple dimensions of the student
- More formative assessments: real-time, across the instructional cycle, performance-based approaches that assess multiple dimensions across all skills

Because behavioural understanding and modification is essential to true success, it is recommended that students be exposed from a young age to identifying and counteracting psychological biases (Appendix B) as they become age-appropriate. The benefit would be two-fold:

- Generally, it would help students heed the Oracle of Delphi's admonition of "Know Thyself," which would have positive consequences that surpass financial literacy skills alone
- Specifically for financial literacy, it would prepare them to handle the complexity of their decision-making with a critical thinking mindset of their own behaviours.

Therefore, one key method of successful behaviour modification using a project-based approach is the development of a student portfolio. The portfolio will serve as a true-life financial portfolio, as well as a pedagogical and working tool, reflecting the student's personal financial situation as it changes throughout the years. It will include academic work, experiential learning, résumés, and personal reflections. It will also include the student's *real-life financial situation* such as savings, assets insurance policies and the like.

## Measuring Progress

From a system perspective, there is a need to measure the timing and success of the transition from a non-compulsory system, focused on knowledge, to a compulsory system, focused on skills and real-life outcomes. Setting up timetables for the transition, and measuring progress against the timetables is essential. The enrolment of and successful completion by the vast majority of students from all provinces must also be a benchmark.

From a student perspective, the goal should be to have the student be able to explain the relevant concepts and convince his or her parents of their applicability; apply them to real-life situations; and do so in a way that passes quality standards as defined by experts and practitioners in the field.

There seems to be no existing, working model of financial literacy curricula that fully embodies these ambitious goals. However, this opens up the possibility of starting from a blank slate, often an advantage.

## Role of Technology

Technology has a leveraging and motivating role to play. Instruments ranging from graphing calculators, to spreadsheets, to web-based simulations are readily available. They range from basic to sophisticate at a level that would have been inconceivable a mere decade ago.

The difficulty lies in choosing the appropriate instruments to use in a coherent curriculum. Some typical examples are:

- Budgeting via spreadsheets
- College debt web-based calculators
- Stock market portfolio via web simulation

As part of a student e-portfolio, the ability to aggregate and retain all this information can be achieved via web sites[15]. This approach can also track a person's progress through his or her entire life, and become a key repository for financial information.

Simulations should be used to a significant extent, as they allow students to "fail safely" through the use of paper money. It will highlight the ratio of reward-to-failure and show that without significant know-how the odds are usually stacked against the student's favour.

Another important possibility using technology is the use of a "family portal," which will have the benefit of allowing parents to check on the progress of their children, and also of subtly influencing the parents' own behaviours so that they reinforce those of their children. It would be a worthy service to the parents to offer them the same capabilities as their children, through online learning coupled with a portal e-portfolio, as it would both improve family finances as well as reinforce the proper messages to the whole family.

15 www.evernote.com

The potential danger of technology is to embrace abstraction so much that non-conceptual students will not learn to relate to the tangible realities of paper money. *For many people, the tangibility of paper money allows for highly effective zero-tech approaches such as the use of envelopes and jars, which can be very helpful in visualizing money and identifying and exposing poor behaviours. It is strongly recommended that such low-tech, yet effective approaches, be deployed in the classroom as well.*

## 3. How Should It Be Taught?

### Deployment Options

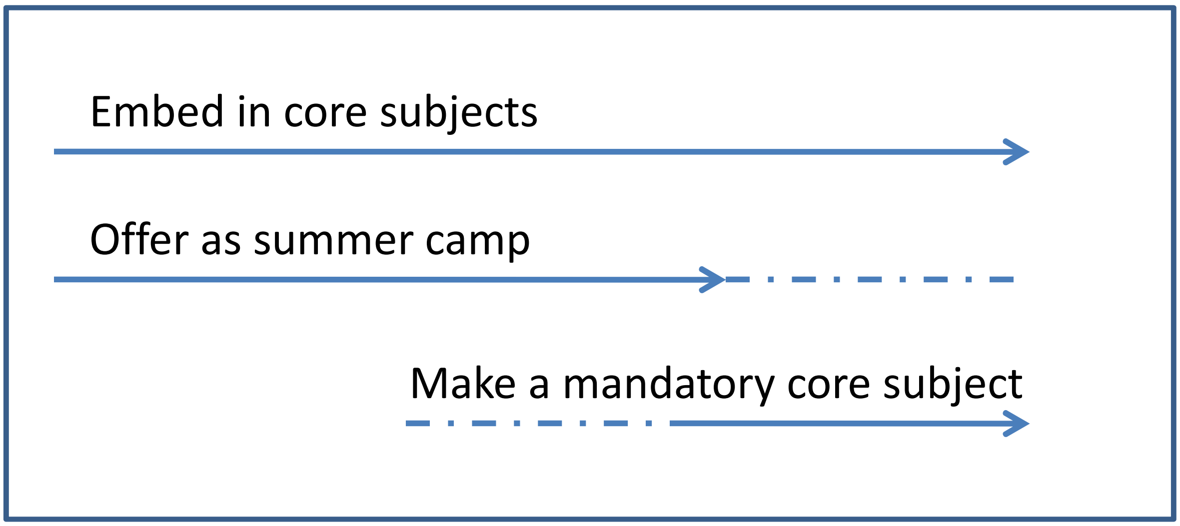
There are several ways to teach financial literacy in a school environment, each with its advantages and disadvantages. Below, we explore the three most common options:

| Approach | Advantages | Disadvantages | Comments |
|---|---|---|---|
| **Embedded in traditional subjects (Math[16], History, etc) – see Appendix C for cross-walk examples with P21 Skills** | • Least disruptive to existing curricula<br>• Ease of traditional, summative assessments | • May crowd out other topics in each discipline, which may create resistance. Often gets ignored due to other subject requirements<br>• Hard for the student to make the connection<br>• Difficult to thread coherently from subject to subject<br>• Requires significant professional development for teachers | System-centric not student-centric |
| **As a "summer camp"** | • Focused and self-contained<br>• Can be made entertaining and fun<br>• Can be started very quickly | • No efficacy if not mandatory<br>• May backfire as yet more (summer) time required by the student<br>• As complete as allowed by its limited duration<br>• Limited follow-up and insertion in everyday life, for behavioural modification | Best interim option, least disruptive to the system and the student |

16 mathandecon.councilforeconed.org/index.php

| Approach | Advantages | Disadvantages | Comments |
|---|---|---|---|
| **As an add-on mandatory subject in middle and high school** | Most in-depth and comprehensive approach | Forces hard curricular choices about what not to cover in other subjects, given the total curricular requirements | Best long-term option |

A hybrid model of the above three could be used to transition towards system change, over one to four years.




An additional very simple option could be to make available in the classrooms consumer finance shows through public television networks such as TVO, ACCESS Television, Knowledge Network and Canal Savoir. The advantages of doing so would be:

- Providing emotionally gripping stories to which all socio-economic levels could relate
- The ability to start immediately and not require complex and lengthy curricular decisions
- Require minimal school investments
- Possible involvement of parents, for their own education as well

A second step might be to create and offer a financial literacy curriculum online developed according to the guidelines described herein. Materials from the "summer camp" would also find themselves offered for 24x7x365 availability.

Canada might also wish to deploy a series of local projects culminating in a national project challenge. This would also serve to highlight the importance of this topic by attracting media exposure.

Parental involvement should be viewed as an intrinsic part of the process. This can be achieved by making reference to real-life needs and using portfolios as previously described. Inducement programs to encourage saving, rewarded by matching grants and small prizes could be another option.

### Teacher Development

Financial literacy raises challenges due to lack of teacher preparedness. The option of integrating financial literacy into core subjects will require specific, targeted, and meaningful professional development.

One strategy could be to combine direct online student learning with teacher guided projects. The sequence might be: online interactive simulated problem → short videos explaining core concepts from simulation → local real-world group learning project challenge → provincial, national, and perhaps international competition on a globally-common challenge.

## Conclusion

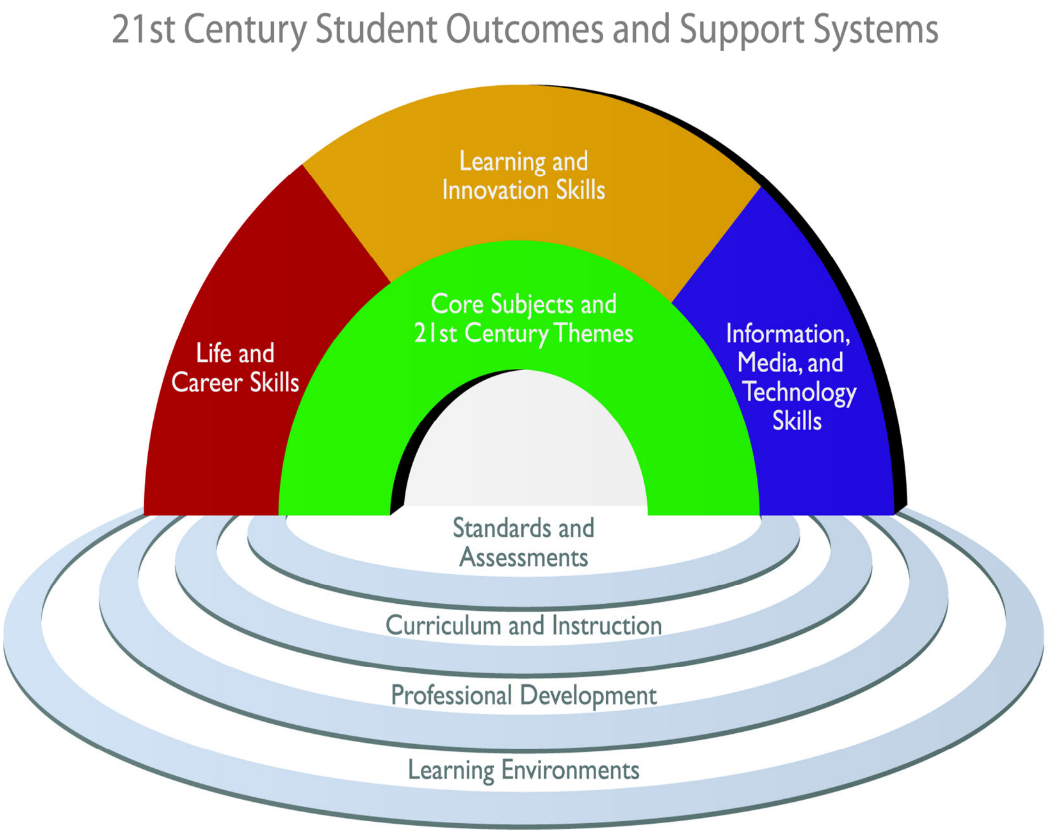
Behaviour modification is the key to a successful financial literacy initiative, and should be pursued as the ultimate goal. It needs to involve students and their parents and make reference to real-life situations whenever possible. It needs to develop all three facets of human success: knowledge, skills, and values. Only then will the full value of a financial literacy education be truly realized.

The ultimate goal of a successful financial literacy program is behaviour modification. A successful program needs to involve students and parents and focus on real-life situations whenever possible. The focus of a financial literacy program should be on relevance, comprehensiveness and values. Integrating financial literacy into existing school subjects may be effective but teaching it as a stand-alone core subject is preferable and has significantly higher chances of affecting behaviour.

The benefits for Canada will be far-reaching and fitting for its expanded global role and growth in the 21$^{st}$ century:

- In the short-term, it would have public relations and agenda-setting benefits of leading globally in financial literacy and 21$^{st}$ Century Skills.
- In the medium-term, it would lead to the further development of Canada's financial industry thanks to a reservoir of talent, coupled with a reputation for ethical expertise.
- In the long-term, it would foster a sophisticated, educated population capable of making sound decisions at the personal, professional, and national levels, benefiting the country's growth and economic diversification.

# Appendix A: 21st Century Skills Framework




## 21st Century Skills[17]

**Learning and innovation skills**
· Critical thinking and problem solving
· Communication and collaboration
· Creativity and innovation

**Digital literacy skills**
· Information literacy
· Media literacy
· ICT literacy (Information & Communication Technologies)

**Career and life skills**
· Flexibility and adaptability
· Initiative and self-direction
· Social and cross-cultural skills
· Productivity and accountability
· Leadership and responsibility

17 Charles Fadel and Bernie Trilling, *21st Century Skills - Learning for Life in Our Times*, (CA: John Wiley & Sons, Inc, 2009), p. 178. www.21stcenturyskillsbook.com and Partnership for 21st Century Skills: www.p21.org

| Core Subjects | 21st Century Themes |
| --- | --- |
| • Native Language<br>• World Languages (including English)<br>• Mathematics<br>• Science<br>• Arts<br>• Geography<br>• History<br>• Economics<br>• Government and Civics | • Global Awareness<br>• Financial, economic, business and entrepreneurial literacy<br>• Civic literacy<br>• Health literacy<br>• Environmental literacy |

# Appendix B: Psychological Biases

Psychological biases fall into broad categories such as:

- Time-inconsistency
- Reference-dependence
- Social preferences
- Overconfidence
- Over-optimism
- Non-standard probabilistic thinking
- Limited attention
- Emotions and affect

Below is a partial list[18] of cognitive biases that affect financial and economic decisions, illustrated by finance-related examples:

- Anchoring effect – the tendency to rely too heavily, or "anchor," on a past reference or on one trait or piece of information when making decisions (also called "insufficient adjustment"); this is used, for example, in pricing negotiations, when the first price "anchors" the conversation.
- Authority bias – the tendency to value an ambiguous stimulus (e.g. a stock recommendation) according to the opinion of someone who is seen as an authority on the topic.
- Availability heuristic – estimating what is more likely by what is more available in memory, which is biased toward vivid, unusual, or emotionally charged examples; for instance, major money losses linger on due to the emotionality they trigger.
- Bandwagon effect – the tendency to do (or believe) things because many other people do (or believe) the same; a hallmark of herd behaviour in financial circles.
- Base rate fallacy – the tendency to ignore available statistical data in favour of particulars.

18 en.wikipedia.org/wiki/List_of_cognitive_biases

- Bias blind spot – the tendency to see oneself as less biased than other people (particularly when choosing investments).
- Clustering illusion – the tendency to see patterns where actually none exist (again, when choosing investments).
- Denomination effect – the tendency to spend more money when it is denominated in small amounts (e.g. coins) rather than large amounts (e.g. bills).
- Disposition effect – the tendency to sell assets that have increased in value but hold assets that have decreased in value.
- Endowment effect – the tendency to demand much more to give up an object than one would be willing to pay to acquire it (very visible in real estate).
- Extraordinarity bias – the tendency to value an object more than others in the same category as a result of an extraordinariness of that object that does not, in itself, change the value (again, common in real estate transactions).
- Gambler's fallacy – the tendency to think that future probabilities are altered by past events, when in reality they are unchanged; for example: "The market has declined three times in a row; it should go up now."
- Hindsight bias – sometimes called the "I-knew-it-all-along" effect; the tendency to see past events as being predictable of the future (particularly past bubble-burst).
- Hyperbolic discounting – the tendency for people to have a stronger preference for more immediate payoffs relative to later payoffs, and where the tendency increases the closer to the present both payoffs are; this profoundly affects the ability to save for the long-term.
- Irrational escalation – the phenomenon whereby people justify increased investment in a decision based on the cumulative prior investment, despite new evidence suggesting that the decision was probably wrong.
- Loss aversion – the difficulty of giving up an object is greater than the difficulty associated with acquiring it; frequently stands in the way of cutting stock losses, for example.

- Mere exposure effect – the tendency to express undue liking for things merely because of familiarity with them (often seen in stock pickings).
- Money illusion – the tendency to concentrate on the nominal or face value of money rather than its value in terms of purchasing power.
- Neglect of probability – the tendency to completely disregard probability when making a decision under uncertainty (e.g. reckless gambling).
- Post-purchase rationalization – the tendency to persuade oneself through rational argument that a purchase was a good value (e.g. car purchases).
- Pseudo-certainty effect – the tendency to make risk-averse choices if the expected outcome is positive, but to make risk-seeking choices to avoid negative outcomes – for instance in portfolio rebalancing.
- Positive outcome bias – the tendency to overestimate the probability of good things happening (and for that matter, to a favourite stock).
- Primacy effect – the tendency to weigh initial events more than subsequent events (an early positive analysis is not easily replaced by new data to the contrary).
- Disregard of regression toward the mean – the tendency to expect extreme performance to continue (particularly true in mutual fund behaviour).
- Restraint bias – the tendency to overestimate one's ability to show restraint in the face of temptation (gambling is a prime example).
- Survivorship bias – the tendency to concentrate on the people or things that “survived” some process and ignore those that didn't (for instance, arguing that a strategy is effective given the winners, while ignoring the large number of losers).

## Appendix C: 21st Century Skills and Financial Literacy

The following are examples of the intersection between traditional subjects, 21st century skills as defined by P21, and financial literacy components at three grade levels:

| Subject | Skill | 4th Grade | 8th Grade | 12th Grade |
|---|---|---|---|---|
| **Native Language**[19] | **Critical Thinking & Problem Solving** | OUTCOME: Frame, analyze and synthesize information in order to solve problems and answer questions. EXAMPLE: After reviewing profiles at an entrepreneurial microfinancing site such as www.kiva.org, students research the economic and social impact of several proposals. Each student selects one proposal and writes an essay to persuade classmates to choose this proposal. The class creates an appropriate activity to raise the money to support the chosen proposal. | OUTCOME: Make complex choices and decisions. EXAMPLE: Students conduct research to answer the question: How much schooling do you need to get the kind of job you would like to have? After researching salaries, employment outlook, and education/training requirements of a variety of possible careers, students create a chart comparing their top three to five choices and write short personal essays explaining how these choices fit their goals. | |
| **Social Studies**[20] | **Critical Thinking & Problem Solving** | | | OUTCOME: Using sound reasoning and relevant examples, students analyze the historical evolution of a contemporary public policy issue, place it within an historical context, and use a digital publishing tool to report their work. EXAMPLE: In groups, students explore how select societies of the past used their natural resources for fuel (e.g., England's use of its forests at the beginning of the Industrial Revolution) and the economic impact of that use. Students use videoconferencing (e.g., www. skype.com) to collect information from relevant government officials about the use of corn for biofuel instead of |

19 Source: www.p21.org: NCTE English map

20 Source: www.p21.org: NCSS Social Studies map

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| | | | | as food and analyze the environmental and economic implications of this use. Students use district-approved wikis to publish the results of their research. |
| | **Collaboration** | | | OUTCOME: Working in small groups, students will research a current issue and analyze it in terms of historical, political and economic components, various viewpoints, and potential solutions. They will create a digital presentation that clearly describes all sides of the issue.<br>EXAMPLE: Working in small groups, students will survey favourite forms of recreation among local teens and research the local history of recreational youth facilities for teens and the potential sources of political and economic support. The information will be graphed and analyzed, and each group will create a business plan for developing a local recreation centre/club for teens. The survey results and business plan will be presented to a community group or civic association using technology tools. |
| | **Information Literacy** | | OUTCOME: Create and organize original information data sets about key issues in the community, province or nation using a variety of tools.<br>EXAMPLE: Students use digital databases to gather data regarding gas prices, home heating oil prices, wages, etc. in their city over the past 12 months and construct a graph illustrating how these resources have been used. | OUTCOME: Access, reference and present information using multiple sources that offer diverse perspectives about economic issues.<br>EXAMPLE: Students will examine information about federal tax policy from various sources. Focusing on the federal income tax, excise tax, and other forms of federal taxation, students will compare opinions as presented through several information outlets including popular digital and print media, online communities (e.g., |

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| | | | | district-approved blogs, online interest groups), and community resources, and articulate why some opinions are more compelling or effective than others.<br><br>OUTCOME: Access and use relevant information from the Internet about how Canada and other nations around the world address an economic issue.<br>EXAMPLE: Students will create a spreadsheet and construct a line graph of crude oil prices since the crisis of the early 1970s. They then examine data on selected oil producing and consuming countries from databases and develop possible explanations for the fluctuations in price. |
| | **ICT Literacy** | OUTCOME: Use digital technology and/or networks appropriately to access information.<br>EXAMPLE: Access simulation software to experience running a business (e.g., a lemonade stand). Discuss factors that influence business decisions (e.g., supplies, resources, location, potential customers, price, and capital equipment). | | |
| | **Social & Cross-Cultural Skills** | | | OUTCOME: Students create an economic venture that requires the application of economic principles such as supply and demand.<br>EXAMPLE: Students work together as a class or in groups to execute a simple business task such as selling a certain amount of a popular snack by a certain date. The activity could be structured competitively or in such a way that various groups are attempting to reach group-based specific sales |

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| | | | | goals. Students use a range of sales techniques that incorporate forms of technology such as video and web-based promotion. Students could also create a new product or new packaging for an existing product and make a competitive pitch to fellow students who decide which product or packaging should be awarded with a "venture capital" type of investment. The activity could be incorporated into a co-curricular school-based venture that has access to some start-up funds. |
| | **Productivity & Accountability** | | OUTCOME: Students develop entrepreneurial skills by undertaking a business project.<br>EXAMPLE: JA World Wide (Junior Achievement) provides a semester project for middle school students, in which business leaders from the community teach a weekly class, and each student group in the class develops and markets a product. Students are responsible for setting goals, developing and implementing their plans, monitoring their progress in developing and marketing their product, and modifying as needed. | |
| **Geography[21]** | **Communication** | OUTCOME: Develop and communicate new ideas to others<br>EXAMPLE: Use aerial photos to identify the locations and patterns of economic activities in their community (factories, stores, office buildings, housing developments, malls, highways, hospitals, farms, etc. Students work in groups to create a poster, multimedia | | |

21 Source: www.p21.org: NCGE Geography map

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| | | presentation, or website showing possible locations for economic growth in the future. | | |
| **Science**[22] | **Media Literacy** | OUTCOME: Students can generate guiding questions to help them evaluate media claims based on evidence rather than simply believing the message as presented. EXAMPLE: From a variety of sources, students collect examples of commercially available products claiming to be "green" or "eco-friendly". Students discuss the manufacturer's basis for each claim, and how the meaning of these terms might be different for different groups (e.g., consumers, scientists, medical professionals, environmental regulators); then generate lists of questions that different groups might use to evaluate these claims. | | |
| **Arts**[23] | **ICT Literacy** | | | EXAMPLE: Students use current technologies to produce an advertisement or Web page that demonstrates their understanding of media's ability to influence the viewer's perception of a social issue of their choice, such as environmental awareness, mass transit, or the economy. |
| | **Productivity & Accountability** | | | EXAMPLE: Students, with minimal supervision, prepare and deliver a performance, sharing responsibility for all aspects of a theatrical production: design, casting, production, budgeting, rehearsal scheduling, and reviewing each rehearsal and performance to enable continuous improvement. |

22 Source: www.p21.org: NSTA Science map

23 Source: www.p21.org: NAE Arts map

## Notable Sources

- Australian government's "Understanding Money": www.understandingmoney.gov.au and www.mceecdya.edu.au/mceecdya/national_financial_literacy_framework_homepage,14429.html
- BizWorld Foundation: www.bizworld.org/programs.html
- Council for Economic Education: www.councilforeconed.org and, in particular, Financial Fitness for Life: fffl.councilforeconed.org
- Family Economics and Financial Education center at the University of Arizona: www.fefe.arizona.edu
- Federal Reserve Bank of Dallas: "Building Wealth" www.dallasfed.org/educate/pubs/wealth.cfm
- Financial Consumer Agency of Canada: www.fcac-acfc.gc.ca/eng/default.asp and in particular "The Money Belt" www.themoneybelt.ca/home-accueil-eng.asp
- Junior Achievement: www.ja.org
- JumpStart Coalition's standards: www.jumpstart.org/national-standards.html and clearinghouse: jumpstart.org/jump$tart-clearinghouse.html
- Ms. Gail Vaz-Oxlade, Canadian financial writer and television personality: www.gailvazoxlade.com, New York Financial Literacy Coalition: www.moneypower.org:8080/wise/withframes.jsp
- New Zealand: www.financialliteracy.org.nz
- Organisation for Economic Co-operation and Development's IGFE - International Gateway for Financial Education: www.financial-education.org
- Partnership for 21st Century Skills: www.p21.org
- Singapore: www.moneysense.gov.sg
- UK government's financial literacy resource centre: www.fin-lit-resources.org.uk
- US government's financial clearinghouse site: 205.168.45.52/ (www.mymoney.gov)
- Wisconsin's Model Academic Standards for Personal Financial Literacy**:** www.dpi.state.wi.us/standards/pdf/pfl.pdf