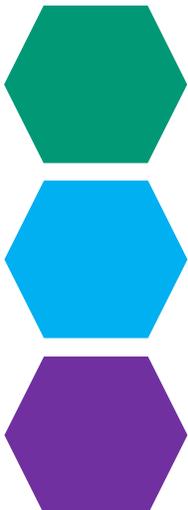


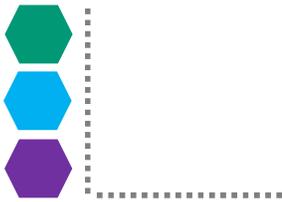


FinStart



Nudged into financial literacy

By Joanna Zapior, CFA



Growing pains

Research into financial literacy education

Teachers did an excellent job teaching. Students did an excellent job learning. Both of these were reflected by excellent financial knowledge test scores. Then students grew up and struggled to apply this knowledge in the real world. Some ended up okay, learning through trial and error, while others failed. How can we equalize the playing field?

We reviewed 82 academic papers, which collectively cover over 300 research studies highlighting successes and failures of financial literacy education ¹.

We identified six success factors of personal finance education, each discussed in its own section of this paper.

We also learnt that financial coaching may be a promising complement to conventional education - this is discussed further on page 8.



The author of this paper is a co-founder of FinStart.

FinStart's goal is to help young adults own and manage their finances.

The purpose of this paper is to share ideas about teaching financial literacy.

Six Success Factors

1. Find Teachable Moments

Research favours continuous financial education with 'just-in-time' delivery of information at times of transition.

2. Target & Engage

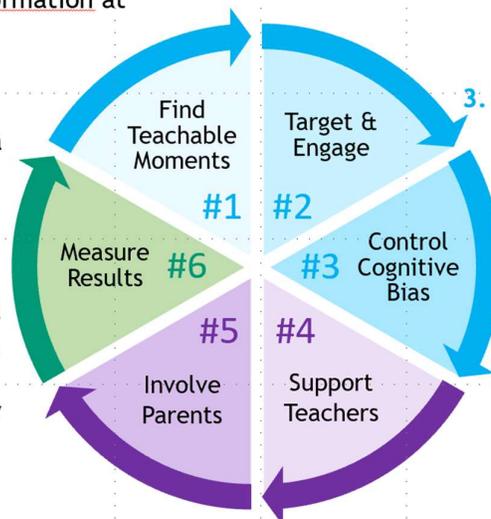
Financial education is only as effective as the student is motivated and engaged.

6. Measure Results

Financial literacy is a combination of knowledge, skill, and confidence, ultimately leading to desirable financial outcomes. Measuring the impact of education on literacy can be difficult.

3. Control Cognitive Bias

Behavioural science suggests that design and presentation of choices, combined with positive reinforcement, can 'nudge' us into responsible financial behaviour.



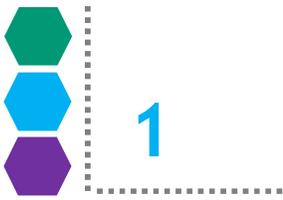
5. Involve Parents

Parents' attitudes predict children's financial behaviours. For example, attitudes to debt are in part a cultural factor, transmitted along family lines. Financial literacy can also trickle-up from children to parents.

4. Support Teachers

Teachers across many disciplines are called upon to teach financial literacy. Many have little formal education in personal finance / relevant pedagogy and often rely on personal experience. They need resources to support them.

¹ See Bibliographical Notes.



Find teachable moments

A time and place for everything

Personal finance education is best delivered, received, and applied just-in-time, at life-milestones.

Researchers increasingly argue in favour of continuous financial education rather than a single course. This is because:

1. Financial needs change with age.
2. Economic conditions and financial products also change over time.

This supports the idea that financial education should be offered:

- In high school and again in college / university.
- In the workplace and across community organizations.
- Broadly online.

With respect to high school, some researchers argue for financial education embedded in curricular and co-curricular activities across multiple disciplines. This is modeled on the way information literacy is already being taught.



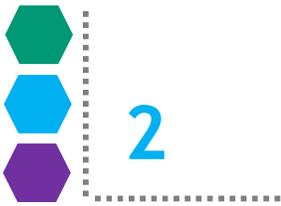
Research provides evidence that just-in-time financial education, and education made available at times of transition, has a more significant impact on financial behaviour than other formats of instruction. This is especially true for those with moderate incomes who may not see clear financial futures for themselves - many young adults fall into this group.

Researchers agree there are two kinds of teachable moments:

1. Expected milestones, for example starting college / university, living on your own, starting your first job, or buying a car / home.
2. Unexpected life events, like losing a job, or having to care for someone who's fallen ill.



« Literacy refers to an achievable plateau once one achieves the necessary skills and knowledge. Fitness implies a lifelong reflexive process.



Target & engage

Active learning - on your terms

Students are most engaged when learning doesn't feel like work.



Maintaining focus on attaining financial milestones and goals isn't the only way to promote engagement.

Scope and delivery format of financial literacy education must be relevant, relatable, and tailored to:

- Gender and age.
- Ethnic / cultural background.
- Socio-economic situation - for example, level of income or indebtedness.
- Different learning styles.

Learning techniques that work

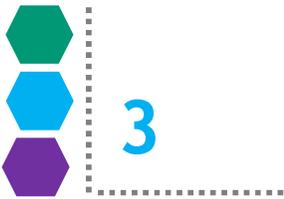
- **Experiential learning.** Learning by doing increases both knowledge and confidence.
- **Interactivity.** Hands on simulations and visual analytic tools streamline decision-making.
- **Real-life problem solving.** Realistic exercises make it easier to relate knowledge to your own finances.
- **Narratives, case studies, and personal stories** help us learn from the mistakes of others.
- **Graphics** help illustrate concepts.
- **Multimedia.** Video supports longer persistence of knowledge than other formats.
- **A balance of qualitative concepts and quantitative exercises** produce bigger impacts.
- **Competitive games** increase engagement.
- **Incentives to act, like prizes / rewards,** spur students to complete tasks.
- **A safe, non-judgmental environment** encourages learning.



Do rules-of-thumb work?

Researchers warn against programs anchored on motivational rhetoric and prescriptive dicta, which may lead to systematic biases.

That being said, empirical evidence suggests that simple rules-of-thumb have a significantly larger impact than traditional instruction, especially for less eager participants.



Control cognitive bias

Harnessing the power of the nudge

Subtle and easy-to-follow suggestions, coupled with positive reinforcement, can influence financial behavior and decision making.

Poor financial practices have been observed even in those who demonstrate having financial knowledge. Behavioural scientists attribute this effect to cognitive bias.



We often refer to cognitive biases by their colloquial names - inertia, lack of self control, and procrastination. These biases are related - we tend to succumb to more than one.



Present bias causes us to underestimate future consequences. For example, some may fund regular expenses with debt and prioritize consumption over saving.

Status quo bias leads us to poor financial product choices, particularly when presented with an overwhelming number of options.

Anchoring makes us overly reliant on pre-existing or anecdotal information - like getting swayed by special promotions and advertising.

Overconfidence leads investors to continue picking stocks despite evidence of underperformance - we tend to believe that our judgement is more accurate than it truly is.

Mental accounting makes us assign different value to money depending on the context. We're more likely to spend lottery winnings or tax refunds than money we had to work for.



Solution: 'choice architecture'

'Choice architecture' describes interventions that address behavioral biases by 'nudging' individuals into responsible financial decisions.

It has been used to design financial products, but has yet to make an impact on educational programs.

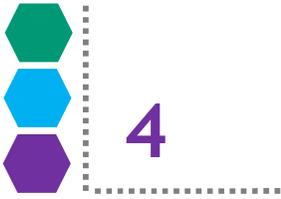


Pension plan example

Defined-contribution pension plans now automate enrollment and offer automatic escalation of contributions to match salary increases. There is empirical evidence that these design innovations have more impact on employee saving behaviour than traditional, knowledge-based, financial literacy education.

The Checklist

Sometimes complexity overwhelms us and we miss the obvious. Sometimes it intimidates us so much we don't try at all. Checklists, like the ones commercial pilots might use, have proven themselves in other fields and may have merit in finance.



Support teachers

Teachers need resources

« Ninety percent of the nearly 800 teachers surveyed believe personal finance should be taught in schools, but only 50 percent of those currently teaching it say they have a good understanding of the subject.

Based on a 2018 survey by The Global Financial Literacy Excellence Center” at the George Washington University

Two issues are of particular interest to teachers:

- In what context will they teach financial literacy?
- How can they become subject-matter experts?

Context

A successful financial education formula integrates:

- A ‘one-shot’ personal finance course to introduce basic principles of managing money.
- Reinforcement of financial concepts across multiple disciplines over time, with a focus on widely taken / required courses, such as Math and English. Projects, papers, activities, and experiential learning exercises support this process.

Subject-matter expertise

Formal education is a predictor of teachers’ own perceived competence to teach any topic, including financial literacy.

Yet, as researchers point out, teachers are acquiring little formal education in personal finance and the methods of teaching it. Many shape their ideas of what personal finance is and should be based on their own experiences.

« Milton Friedman famously suggested that just as pool players need not be experts in physics to play pool well, individuals need not be financial experts if they can learn to behave optimally through trial and error.

Why is math important?

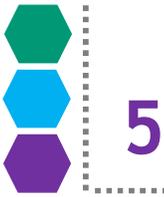
Multiple studies have shown that those who are good at math score better on financial knowledge tests and demonstrate more effective financial decision-making.

Researchers traced a central component of



What’s the solution?

- Educational workshops for teachers. It can be difficult to implement such programs on a large scale while maintaining consistency.
- Alternative approaches that focus more on student financial socialization than teacher expertise. For example, providing access to financial role models.



Involve parents

Transparency and access for everyone

When parents are involved in the financial education of their children, everyone benefits.



Parents are crucial to the financial education of their children.

There is compelling research evidence that saving and debt attitudes are related to cultural factors transmitted along family lines.

When parents / guardians become directly involved, researchers observe two effects:

1. Students are more likely to talk to their parents / guardians about financial and economic decisions. This can help reinforce messages taught in the classroom.
2. Students can also ‘trickle knowledge up’ and act as agents of change in their households to promote responsible financial behaviours, for example, by volunteering to help organize the household budget.

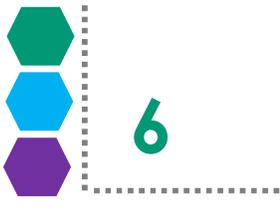
It doesn't take much to see an effect

In one study, parents were invited to just one workshop at the beginning of their child's financial literacy course. They were shown a financial education video for parents to complement the course.

The program led to a greater increase in students':

- Financial knowledge.
- Saving for purchases.
- Likelihood of financial planning.
- Participation in household decision making.





Measure results

No improvement without measurement

When we teach financial literacy, we have to hold ourselves accountable. This means implementing metrics to assess learners’ knowledge, confidence, skill, and long-term financial outcome. Are conventional testing methods up to the task?



Research shows that confidence is a good predictor of short-term outcomes (especially those related to payments, like bank accounts, credit cards, and budgeting).

On its own, confidence does not shield from bad outcomes related to long-term financial goals, like saving and investing.

Testing, one, two, three

Knowledge and confidence are easiest to test objectively and are often used as measures of both financial literacy and effectiveness of financial education. Two kinds of questions are commonly asked:

Performance-based questions

The “Big 3” assess understanding of compound interest, inflation, and risk diversification. The “Big 5” ask two additional questions about interest rates and mortgages. Questions about specific financial instruments, like stocks and bonds, can also be asked.

Self-assessment questions

Questions regarding confidence in our financial capabilities are used to assess the impact of education and knowledge on financial behaviour.

Are tests an accurate metric?

Test results do not consistently reflect financial capability.

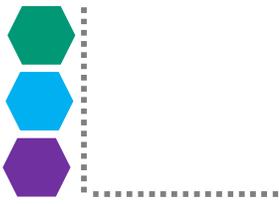
- ▶ Tests don’t have mechanisms to encourage thoughtful answers.
- ▶ When answering self-assessment questions, we’re overly optimistic about how much we actually know.

- We don’t necessarily give true answers about our personal finances; we consider this information private.
- In real life, the internet, family, and friends can compensate for lack of knowledge, as long as we understand both our own and their limitations.

Sample “Big-3” Question
Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? More than \$110, exactly \$110, less than \$110?
Sample Self-assessment Question
Are you comfortable taking on debt in order to a) buy expensive clothes, b) pay for a vacation, c) cover household expenditures, d) buy a car, e) get an education?

Skills

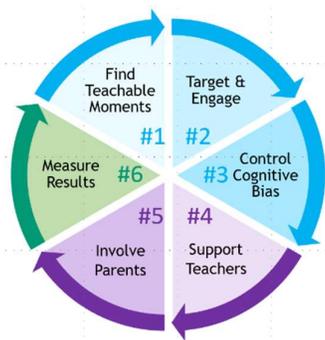
Testing opportunities for financial skills are limited in the context of educational initiatives. In real life, we only complete financial tasks as we need to. By then, skills may have decayed from lack of use. This makes it difficult to attribute concrete financial successes / failures to particular education initiatives.



Beyond teaching literacy

A practitioner's take

Having reviewed the body of research, we concluded that financial literacy education initiatives must adhere to six key success factors. Is that all we need to do?



To make financial literacy education initiatives useful, we need to consider six success factors:

1. Frame personal finance as continuous education, accessible at life-milestones.

2. Deliver it to a target audience in ways that motivate and engage.

3. Mind cognitive bias, both when creating content and while teaching.
4. Ensure teachers have access to relevant resources.
5. Find ways to involve parents.
6. Measure results - for accountability, credibility, and to improve financial education tools / initiatives.

Even under ideal circumstances, financial education is not always effective. Detractors point out that personal finance is a complex professional domain. We don't expect people to be their own doctors or lawyers, so why should we expect them to be their own financial advisors?

Between conventional education and professional advice lies the concept of financial coaching. Instead of

providing advice, coaches guide us as we achieve our goals.

A coach isn't the same as a financial planner or advisor. They lend a knowledgeable helping hand as needed. They may or may not charge fees. The coach may be a person or an online tool. Even teachers, community members, parents, and peers can become effective financial literacy coaches - as long as they have proper resources to support them.

The concept of financial coaching is anchored on social cognitive theory, specifically the idea of self-efficacy:



Self-efficacy (belief in one's own ability to perform successfully in a particular situation) can be improved through mastery experience, which involves the help of a trained professional and / or an online tool that facilitate completion of step-by-step goals, in an environment where the user can engage in the task and meet goals in a short time frame. The tool acts as the "expert," guiding the user through the process.

Bibliographical Notes

The following colour-coding refers to the six core sections of this paper and is provided for the convenience of readers.

#1 Teachable	#2 Engage	#3 Cognitive	#4 Teachers	#5 Parents	#6 Results
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The order in which the bibliographical notes are presented reflects the author’s personal progression through the material. As new research comes to our attention, we’ll add it at the end of the list. We acknowledge that our system of references and notes is non-traditional - we use it as we find that this format can improve readers’ experience.

1. Yates, D., & Ward, C. (2014). <i>The Integration Of Personal Financial Knowledge Into Multi-Disciplines: The First Step Of Reinforcement</i> . American Journal of Business Education. 2Q2014. Vol 7, no. 2.					
#1 Teachable	#2 Engage		#4 Teachers		
A personal finance course can help each student develop their personalized financial plans. Courses in other disciplines can help reinforce sound financial principles. The authors stress the importance of learner engagement, relevance of material to the learner’s own financial experiences, focus on financial goal attainment, demonstration of how the course adds value to learners’ lives, and the value of learning through case studies (real-life problem solving) and narratives (personal stories).					
2. Fernandes, D., Lunch Jr., J.G., Netemeyer, R.G. (2014). <i>Financial Literacy, Financial Education and Downstream Financial Behaviors</i> . Management Science. August 2014.					
#1 Teachable		#3 Cognitive			#6 Results
Just-in-time financial education, and education delivered at times of transition, has a more significant impact on financial behaviours than other formats of instruction, especially for people with low incomes. This is due to decay of education over time and cognitive behavioural biases. To reach this conclusion, the authors analyzed 201 prior studies and pointed out inconclusive or and sometimes contradictory findings and methodological shortcomings related to what is being measured (financial knowledge vs. financial behaviours) and omitted variables (such as cognitive biases).					
3. Almenberg, J., Lusardi, A., Säve-Söderbergh, J., Vestman, R. (2019) <i>Attitudes Toward Debt and Debt Behavior</i> . NBER Working Paper No. 24935 August 2018, Revised August 2019.					
				#5 Parents	
Debt build-up and consumption behavior are related to attitudes towards debt, as well as education, financial literacy, and attitudes to risk-taking. Debt attitudes are passed down along family lines and have a cultural element.					
4. <i>Best Practices for Financial Literacy and Education at Institutions of Higher Education</i> . (2019). U.S. Financial Literacy and Education Commission (FLEC).					
#1 Teachable	#2 Engage	#3 Cognitive			
Best financial education practice include: • deliver actionable, relevant, timely information • capitalize on motivation & consider incentives to spur completion • focus on skills rather than knowledge of particular financial products • create context that bridges the gap between intentions and actions. Just-in-time financial education offsets an observed decay of financial knowledge (within two years of the lesson). There is a need for behaviourally-based strategies (nudges, choice architecture). The authors recommend one-on-one coaching and peer support.					
5. <i>A review of youth financial education: Effects and Evidence</i> . (2019). Consumer Financial Protection Bureau. April 2019.					
	#2 Engage				#6 Results
Effectiveness of financial education programs varies depending on the population targeted, amount of instruction time, and topics covered. The authors argue the topic requires further study: few studies of financial education are rigorous and examine causality, and until recently few researchers studied youth. Knowledge tests are difficult to design for youth when they are meant to measure skills that will be used well into the future. Success can be defined in terms of knowledge gains, skill gains, changes in attitudes, changes in behavior, and changes in actual financial situation or overall financial well-being.					
6. Batty, M., Collins, J.M., O’Rourke, C., Odders-White, E. (2017). <i>Experiential Financial Literacy: A Field Study of My Classroom Economy</i> . American Economic Association Conference. Preliminary Paper.					
	#2 Engage		#4 Teachers		
The authors support learning by doing versus formal instruction, based on assessing the impact of simulated classroom economy on students’ financial knowledge and self-reported financial behaviors. They remind that many teachers feel unprepared to deliver personal finance instruction; therefore, alternative approaches focus on financial socialization (ideally of young people, before negative habits can take hold) and rely less on dedicated lesson plans or teacher expertise. Financial socialization typically occurs in families, as parents or other influential adults model financial behaviors or discuss family finances. An in-school banking program is a good example of socialization outside the family. Such programs offer children an opportunity to practice managing					

<p>their own bank accounts. They are not widespread as they require partnerships of schools and financial institutions, as well as oversight.</p>		
<p>7. Kasman, M., Heuberger, B., Hammond, R.A. (2018). <i>A Review of Large-scale Youth Financial Literacy Education Policies and Programs</i>. The Brookings Institution. October 2018.</p>		
<p>#2 Engage</p>		
<p>Teenage financial literacy is positively correlated with saving by age 25 and influences key decisions about education. The authors highlight the role for financial institutions: should address access to savings accounts and credit that often falls along socio-economic lines, and product design issues. They also discuss knowledge vs behavior vs behavior, and the role of real-world experience in the feedback loop (experiential learning). Numeracy and self-control are classified as foundational skills.</p>		
<p>8. Avery, M., De Bassa Schresberg, C., Guiso, F. (2016). <i>Understanding What Works: Case Studies in Financial Education</i>. Global Financial Literacy Excellence Center. February 2016.</p>		
<p>#2 Engage</p>		<p>#6 Results</p>
<p>Lessons learnt from a review of case studies of financial education programs: • online delivery is cost-effective and should complement seminar-style instruction • content should be kept simple and comprehensible • feedback is necessary • hands-on simulations and calculating tools proxy real-life experience • online games are attractive.</p>		
<p>9. Lusardi, A., Morrison, N.J. (2019) <i>Financial Literacy Transforms Students’ Lives. Here’s Where to Start</i>. Education Week, Opinion Section. July 25, 2019.</p>		
<p>#4 Teachers</p>		
<p>90 percent of the nearly 800 teachers surveyed believe personal finance should be taught in schools, but only 50 percent of those currently teaching it say they have a good understanding of the subject. Teachers need to build the competence and confidence to teach the subject. Source of quote.</p>		
<p>10. Ambuehl, S., Bernheim, B.D., Lusardi, A. (2017). <i>A Method for Evaluating the Quality of Financial Decision Making with an Application to Financial Education</i>. NBER Working Paper 20618. November 2017.</p>		
<p>#2 Engage</p>		<p>#6 Results</p>
<p>The authors warn against educational programs anchored on motivational rhetoric and simple prescriptive dicta. They recommend practical exercises that illustrate the application of the pertinent principles and that create opportunities for providing participants with practice and feedback. This research focuses on quality of financial decisions as evidence of financial competence.</p>		
<p>11. Paskelian, O., Jones, K., Bell, S., Kao, R. (2018). <i>Financial Literacy and Behavioural Biases among Traditional Age College Students</i>. Accounting and Finance Research, Vol. 8, No. 1. 2019.</p>		
<p>#6 Results</p>		
<p>College students who are judged as financially literate and appear confident in making short-run financial decisions nevertheless do not behave in ways that reflect this level of knowledge. Further, they do not have the knowledge required to make wise retirement planning choice and report a distrust of retirement plans, which may lead to poor decisions.</p>		
<p>12. Lusardi, A., Samek, A.S., Kapteyn, A., Glinert, L., Hung, A., Heinberg, A. (2014). <i>Visual Tools and Narratives: New Ways to Improve Financial Literacy</i>. NBER Working Paper 20229. June 2014.</p>		
<p>#2 Engage</p>		<p>#6 Results</p>
<p>The authors evaluated delivery of educational programs designed to inform about risk diversification in investing via an informational brochure, a visual interactive tool, a written narrative, and a video narrative. All programs increased self-efficacy (confidence) and several improved financial literacy. The video was more effective at improving financial literacy scores than the written narrative. Source of quote in the final section of this paper, <i>Beyond teaching literacy</i>.</p>		
<p>13. Michaud, P-C. (2017). <i>The Value of Financial Literacy and Financial Education for Workers</i>. IZA World of Labour Issue: 400.</p>		
<p>#2 Engage</p>		<p>#3 Cognitive</p>
<p>Costs and benefits of financial literacy vary among different population groups. As a result, universal financial knowledge may not be desirable. Behavioral interventions designed to ‘nudge’ workers into taking certain actions may be better suited to address inaction and other behavioral biases that do not result from low financial literacy.</p>		
<p>14. Gathergood, J., Weber, J. (2014). <i>Self-control, Financial Literacy & the Co-holding Puzzle</i>. Journal of Economic Behaviour & Organization. 107 (2014).</p>		
<p>#3 Cognitive</p>		
<p>The authors ask why otherwise financially literate consumers simultaneously hold high-cost credit card balances alongside balances in low-yield liquid savings accounts. They find that this behaviour is associated with impulsive spending behaviour.</p>		

15. <i>Progress Report: Canada’s National Research Plan on Financial Literacy 2016-2018</i> . (2018). Financial Consumer Agency of Canada. April 2018.		
#2 Engage		
<ul style="list-style-type: none"> Financial knowledge is important but on its own not enough to lead to financially desirable behaviours Financial confidence is a better predictor of outcomes associated with day-to-day money and debt management. For longer-term planning and saving behaviours, more positive outcomes are found for individuals with high levels of both financial knowledge and financial confidence Experiential learning is critical to increase financial confidence and knowledge (learning-by-doing). 		
16. Skagerlund, K., Lind, T., Stromback, C., Tinghog, G., Vastfjall, D. (2018). <i>Financial Literacy and the Role of Numeracy - How Individuals’ Attitude and Affinity with Numbers Influence Financial Literacy</i> . <i>Journal of Behaviour and Experimental Economics</i> 74, 2018.		
#4 Teachers		
A central component of financial literacy can be traced to understand numbers) and a positive emotional attitude towards numbers (i.e. absence of mathematics anxiety).		
17. Lusardi, A. (2019). <i>Financial Literacy and the Need for Financial Education: Evidence and Implications</i> . <i>Swiss Journal of Economics and Statistics</i> . 2019 155:1.		
#1 Teachable		
The authors argue for financial education both in high school and college / university, as well as the workplace.		
18. Cole, S., Paulson, A., Kartini Shastri, G. (2014). <i>High School Curriculum and Financial Outcomes: The Impact of Mandated Personal Finance and Mathematics Courses</i> . Harvard Business School Working Paper 13-064. April 2014.		
#4 Teachers		
Good financial behavior can be taught at school, but not via traditional personal finance courses (which the authors find have no effect on financial outcomes). Instead, additional mathematics training was found to lead to greater financial market participation, investment income, and better credit management, including fewer foreclosures.		
19. Heinberg, A., Hung, A., Kapteyn, A., Lusardi, A., Samek, A.S., Yoong, J. (2014). <i>Five Steps to Planning Success: Experimental Evidence from US Households</i> . <i>Oxford Review of Economic Policy</i> , Vol, 30, 2014.		
#2 Engage		
The authors advise against ‘generic’ financial education and find that pedagogy and delivery matter significantly. Short videos and narratives have more impact on improving financial planning knowledge related to retirement. Further, effects on self-efficacy are significantly higher when videos are used. Moreover, both knowledge and self-efficacy persist better 8 months later with video / narrative delivery.		
20. Drexler, A., Fischer, G., Schoar, A. (2016). <i>Keeping It Simple: Financial Literacy and Rules of Thumb</i> . <i>American Economic Journal: Applied Economics</i> . 6(2).		
#2 Engage		
This study compares two programs delivering accounting training to micro-entrepreneurs: standard program versus a simplified, rule-of-thumb training that taught basic financial heuristics. The rule-of-thumb training significantly improved firms’ financial practices, objective reporting quality, and revenues. For less sophisticated micro-entrepreneurs, the impact of the rule-of-thumb training was significantly larger than that of the standard accounting training.		
21. Palameta, B., Nguyen, C., Hui, T.S., Gyarmati, D. (2016). <i>The Link Between Financial Confidence and Financial Outcomes Among Working-aged Canadians</i> . Financial Consumer Agency of Canada. May 2016.		
#3 Cognitive		#6 Results
The authors discuss knowledge vs skills vs confidence, in the context of ‘financial well-being’ - a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life. Confidence is a better predictor than financial knowledge of outcomes associated with day-to-day money and debt management. Confidence may be an indicator of good day-to-day financial practices requiring simple self-control-based ‘rules of thumb’. But those with high confidence and low knowledge tend to have poor planning and saving outcomes. Low confidence may be linked to susceptibility to cognitive bias. The study draws similar conclusions for insurance as for investment products: confident individuals tend to choose more diversified insurance providers only if their confidence is coupled with a high level of knowledge. The authors discuss prevalence of product features designed to exploit cognitive biases, and the role of learning by doing in building confidence.		
22. Jagman, H., Lewis, K., Nunn, B., Walter, S. (2014). <i>Financial Literacy Across the Curriculum (and Beyond): Opportunities for Academic Libraries</i> . <i>College & Research Libraries News</i> . Vol 75, No 5.		
#1 Teachable		#4 Teachers
What appears to be successful is not only the one-shot program ideas, but financial education embedded in the curricular and cocurricular activities, in much the same way we attempt to teach information literacy.		

23. Hastings, J.S., Madrian, B., Skimmyhorn, W.L. (2013). <i>Financial Literacy, Financial Education and Economic Outcomes</i> . Annual Review of Economics, Vol. 5.	#6 Results
Financial literacy is framed in the context of consumer financial decision making. The authors review definitions and measurement of financial literacy, examine links between financial literacy and economic outcomes (such as wealth accumulation, savings decision, investment choices, and credit outcomes), and assess the impact of financial education on financial literacy and economic outcomes.	
24. Hadar, L., Sood, S., Fox, C.R. (2013). <i>Subjective Knowledge in Consumer Financial Decisions</i> . Journal of Marketing Research. Vol L, June 2013.	#6 Results
Effective financial education must focus not only on imparting relevant information and enhancing objective knowledge but also on promoting higher levels of subjective knowledge (how knowledgeable you feel). In some circumstances, providing relevant but complex information may enhance objective knowledge but paradoxically diminish feeling knowledgeable - and reduce the person's interest in, for example, investing.	
25. Haiven, M.(2017). <i>The Uses of Financial Literacy</i> . Cultural Politics, Vol. 13, Issue 3.	#1 Teachable
Source of quote.	
26. Mandell, L., Schmid Klein, L. (2007). <i>Motivation and Financial Literacy</i> . Financial Services Review 16, 2007.	#1 Teachable
In a survey of high school seniors, the authors use financial literacy scores and find that, after controlling for socioeconomic, demographic and aspirational characteristics, motivation to be financially literate significantly helped explain differences in financial literacy scores.	
27. Stolper, O.A., Walter, A. (2017). <i>Financial Literacy, Financial Advice, and Financial Behavior</i> . Journal of Business Economics. Springerlink.com	#6 Results
The authors evaluate the impact of financial education on literacy and behaviour - and find it disappointing. They consider expert intervention (professional financial advice) as a substitute to financial literacy, and suggest that economically vulnerable groups are placed at a particular disadvantage by their lack of financial knowledge.	
28. Eades, M. K., Fox, J., Keown, A., & Staten, M. E. (2013). <i>The Role of Professors in Improving Financial Literacy Roundtable Session Highlights from the 2012 FMA Annual Meeting</i> . Journal of Applied Finance,138-144.	#2 Engage #4 Teachers
Universities / colleges, through business finance programs, can provide volunteer income tax assistance, credit, investment management and general financial counselling, on a peer-to-peer basis. A pan-campus program can be a cost-effective way to fund staff positions necessary to deliver it. Collaboration-based community outreach financial education programs for young adults both in high school and college / university can bring together teachers, financial education leaders and researchers. Introduce case method into financial education - students immerse themselves in actual problems, collaborate to synthesize information from various sources and use it to solve real-life problems. Case method has been proven to improve retention because of its interactive, iterative and dynamic format.	
29. Tisdell, E.J., Taylor, E.W., Sprow Forte, K. (2013). <i>Community-based Financial Literacy Education in a Cultural Context: A Study of Teacher Beliefs and Pedagogical Practice</i> . Adult Education Quarterly XX(X).	#2 Engage #4 Teachers
Educators' teaching beliefs (about cultural context, emotions, and money) interact with their pedagogical approaches to financial literacy. Pedagogy needs to highlight everyday financial realities of learners' lives in a cultural context. Survey findings indicate that, in community-based settings, financial educators believe their role is to provide expert information to help learners make informed financial choices, and often adapt published materials to reflect the life circumstances of learners.	
30. Thaler, R.H., Sunstein, C., Balz, J. (2008). <i>Choice Architecture</i> . Available on SSRN. Draws heavily on Thaler and Sunstein's 2008 book, <i>Nudge</i> .	#3 Cognitive
The authors advocate 'nudging' people to change their behaviour through the design of how choices are presented to them, for example, by limiting the number of options or offering an opt-out rather than opt-in.	
31. Way, W. L., Holden, K. C. (2009). <i>Teachers' Background and Capacity to Teach Personal Finance: Results of a National Study</i> . Journal of Financial Counseling and Planning 20 (2).	#4 Teachers
Single accepted certification to teach financial education does not exist. Teachers from diverse backgrounds are being tapped to teach financial education topics that they may know little about (or where their knowledge comes from personal experiences). Education faculty may need to be made more aware of the importance of integrating this subject matter into the teacher education curriculum, assuming they themselves are competent to teach specific financial concepts. The paper suggests teachers would benefit from learning about the developmental nature of financial reasoning.	

<p>32. Benartzi, S., Thaler, R.H. (2007). <i>Heuristics and Biases in Retirement Savings Behaviour</i>. Journal of Economic Perspectives, Vol. 21, Number 3, Summer 2007.</p>
<p style="text-align: center;">#2 Engage #3 Cognitive</p>
<p>Simple heuristics (rules of thumb) are often useful and accurate in making retirement saving decisions, but psychology teaches that they lead to systematic biases. There is empirical evidence that education provided by employers about pension plan choices does not have desired impacts on financial literacy or on the employee follow-through. Alternative to education is a change to pension plan design that will promote better savings behaviours, such as automatic enrollment and automatic escalation of contributions, and sensible default portfolio options.</p>
<p>33. Hilgert, M.A., Hogarth, J.M., Beverly, S.G. (2003). <i>Household Financial Management: The Connection Between Knowledge and Behavior</i>. Federal Reserve Bulletin 2003: 89(7)</p>
<p style="text-align: right;">#5 Parents</p>
<p>Increases in both knowledge and experience can lead to improvements in financial practices (related to cash-flow management, credit management, saving, and investment), although the causality could flow in the other direction—or even both ways. One way to increase knowledge is to gain experience. And one way to gain additional education is to learn from the experiences of others -in classes and seminars and through conversations with family and friends. There is a difference between providing information and providing education. Education may require a combination of information, skill-building, and audience-targeted motivation to make the desired changes in behavior.</p>
<p>34. Lusardi A, Mitchell OS. <i>Financial Literacy and Planning: Implications for Retirement Well-being</i>. Pension Research Council; 2006. Working Paper.</p>
<p style="text-align: right;">#6 Results</p>
<p>The Big 5 financial literacy questions: i) Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than \$110, exactly \$110, less than \$110? ii) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account? iii) Do you think that the following statement is true or false? “Buying a single company stock usually provides a safer return than a stock mutual fund, iv) Have you ever tried to figure out how much your household would need to save for retirement? Did you develop a plan for retirement saving? How often were you able to stick to this plan: Would you say always, mostly, rarely, or never? v) Tell me about the ways you tried to figure out how much your household would need. Did you talk to family and relatives? Did you talk to co-workers or friends? Did you talk to co-workers or friends? Did you use calculators or worksheets that are computer or Internet-based? Did you consult a financial planner or advisor or an accountant? How often do you keep track of your actual spending: would you say always, mostly, rarely, or never? How often do you set budget targets for your spending: would you say always, mostly, rarely, or never?</p>
<p>35. Friedman M. (1953). <i>Essays in Positive Economics</i>. University of Chicago Press; Chicago: 1953.</p>
<p style="text-align: center;">#4 Teachers</p>
<p>Source of the quote (paraphrased). Friedman actually said, “Consider the problem of predicting the shots made by an expert billiard player. It seems not at all unreasonable that excellent predictions would be yielded by the hypothesis that the billiard player made his shots as if he knew the complicated mathematical formulas that would give the optimum directions of travel, could estimate accurately by eye the angles, etc., describing the location of the balls, could make lightning calculations from the formulas, and could then make the balls travel in the direction indicated by the formulas. Our confidence in this hypothesis is not based on the belief that billiard players, even expert ones, can or do go through the process described; it derives rather from the belief that, unless in some way or other they were capable of reaching essentially the same result, they would not in fact be expert billiard players”.</p>
<p>36. Carpena F, Cole S, Shapiro J, Zia B. (2011). <i>Unpacking the Casual Chain of Cinancial Literacy</i>. World Bank; 2011. Working Paper 5798.</p>
<p style="text-align: center;">#2 Engage</p>
<p>Financial education does not improve the ability to discern costs and rewards where high numeracy skills are required. But it does improve financial product awareness and individuals’ attitudes towards making financial decisions. Monetary incentives do not induce better performance, suggesting cognitive constraints rather than lack of attention are a key barrier to improving financial knowledge.</p>
<p>37. Collins, M., Baker, C., Gorey, R. (2017). <i>Financial Coaching: A New Approach for Asset Building?</i> Policy Lab Consulting report for Annie E. Casey Foundation. November 20, 2017.</p>
<p style="text-align: right;">#6 Results</p>
<p>Financial coaching can help low-income individuals / families build assets (as low income individuals may have heightened anxiety about financial issues). A disadvantage is that it can take more time and resources than traditional financial education and cost more. Group coaching adds a peer-to-peer component - mutual learning and support in attaining goals. Professional planners are highly knowledgeable about personal finance, but not necessarily skilled at coaching or the issues peculiar to low-income clients.</p>

38. Willis, L. E. (2012). <i>Financial Education: Lessons not Learned and Lessons Learned</i> . Loyola Law School. Legal Studies Paper No. 2013-4.		
	#4 Teachers	#6 Results
<p>Financial programs face insurmountable obstacles and should be replaced with other interventions: math skills development, financial advice, automatic enrolment in savings / debt repayment programs, and financial product design aiming to help overcome cognitive biases. • Financial products change fast and major financial decisions are episodic. The information learnt in high school decays by the time it could be useful. • ‘Frequent education’ is not a remedy because many people don’t want to spend their time and effort on financial instruction - when it’s offered, take-up is low. • Financial knowledge actually required is too advanced for many people - also needed is numeracy, linguistic literacy, and the ability to make predictions about one’s future (income, expenses, health) and likely about future financial market performance. Meanwhile, financial product agreements, such as for credit cards, have readability assessment of grade 15 or higher. • Financial decisions require both substantial reasoning and self-control. Those have a biological component. Genetics appears to influence a number of financial behaviours and those are likely to be difficult to overcome with financial education. • Rules-of-thumb are easy to teach but too simplistic. • Cognitive biases trigger non-rational financial behaviours, at all levels of financial knowledge. • Information and choice overload compound the negative effects of cognitive biases and lead to oversimplified decisions or inaction. • Financial decisions are often high-stakes, causing stress - stress occupies cognitive resources, reducing decision quality. • Giving consumers more information may produce only an illusion of knowledge. • Many financial decisions happen face-to-face with a salesperson, who often has incentives to sell products rather than provider advice. • The financial industry has the means and motivation to run circles around financial educators. Consumers are most open to learning during teachable moments, when they are also under the influence of sellers of products. • A substantial portion of the population simply has unpredictable and insufficient income and assets on which to use any financial literacy knowledge or skills. “With nothing to save or invest, knowing how compound interest works or the difference between a stock and a bond is unhelpful. With an unpredictable income stream, financial planning is largely impossible.” Also referred to in the final section of this paper, <i>Beyond teaching literacy</i>.</p>		
39. Banks, J., O’Dea, C., Oldfield, Z. (2011). <i>Cognitive Function, Numeracy and Retirement Saving Trajectories</i> . NIH Public Access - Author Manuscript.		
	#4 Teachers	
<p>Numeracy is correlated with saving for retirement and wealth accumulation. In the years leading up to retirement those who are more numerate accumulate financial assets at a faster rate than those who are less numerate (controlling for other factors, such as broader cognitive ability and socio-economic situation). It’s much harder to link numeracy to a more broadly-defined financial well-being in retirement (measured, for example by changes in pre- and post-retirement incomes and consumption).</p>		
40. Gerardi, K., Goette, L., Meier, S. (2010). <i>Financial Literacy and Subprime Mortgage Delinquency: Evidence from a Survey Matched to Administrative Data</i> . Federal Reserve Bank of Atlanta Working Paper 2010-10.		
	#4 Teachers	
<p>Numeracy is highly negatively correlated with various measures of mortgage delinquency and default. The study controlled for socio-demographic variables, other aspects of cognitive ability, and characteristics of the mortgage contract.</p>		
41. Smith, J.P., McArdle, J.J., Willis, R.J. (2010). <i>Financial Decision Making and Cognition in a Family Context</i> . RAND Labor and Population Working Paper WR 785. September 2010		
		#6 Results
<p>This study reports on a survey in which each household elects its ‘financial respondent’ - the spouse who is the most knowledgeable about family income and wealth. Families choose the less numerate spouse to respond in less than a fifth of the cases. Those who do have smaller household wealth than when the spouses are equal in numeracy or the financial respondent has a higher numerical score. The authors conclude that numeracy is by far the most predictive of wealth among all cognitive variables.</p>		
42. Kosse, F., & Pfeiffer, F. (2013). <i>Quasi-hyperbolic Time Preferences and Their Intergenerational Transmission</i> . Applied Economics Letters, 20(10), 983-986.		
	#3 Cognitive	#5 Parents
<p>A mother’s patience reflects in her pre-school kid’s behaviours. An experiment described in this article gave mothers a choice between a fixed amount of money available without a delay, or a larger amount available later. The kids’ patience was tested by offering them a trade-off between a smaller-sooner reward and a larger-later reward (gummy bears). The results support a view that present bias can be transferred from parents to children.</p>		
43. Benton, M, Meier, S., & Sprenger, C. (2007). <i>Overborrowing and Undersaving: Lessons and Policy Implications from Research in Behavioral Economics</i> . Federal Reserve Bank of Boston, DP 07-4		
	#3 Cognitive	
<p>People who are susceptible to present bias are more likely to accumulate higher levels of credit card debt and save a lower proportion of their tax refund, even though they do not express a weaker intention to save than those with a lower present bias.</p>		

44. Brown, J. R., & Previtro, A. (2014). <i>Procrastination, Present-Biased Preferences, and Financial Behaviors</i> . 16th Annual Joint Meeting of the Retirement Research Consortium.
#3 Cognitive
There is a direct link between procrastination and retirement planning behavior. Procrastinators (those who wait to the last day of compulsory health care enrolment) are less likely to participate in a voluntary savings plan, and those who do participate, take longer to enroll and contribute smaller amounts. This behavior is best explained by present bias rather than optimal delay or rational inattention.
45. Kuchler, T. (2013). <i>Sticking to Your Plan: Hyperbolic Discounting and Credit Card Debt Paydown</i> . Stanford Institute for Economic Policy Research Discussion Paper No. 12-025. Stanford University.
#3 Cognitive
Short-term impatience (lack of self-control) and the individual's sophistication / naivete (awareness of their own lack of self-control) interact to determine the success / failure of credit card debt repayment. Lack of self-control explains why less sophisticated financial consumers accumulate credit card debt even when they intended to pay it off. Sophisticated consumers are more likely to repay debt if they plan to do so than naïve consumers.
46. Bertaut, C. C., Haliassos, M., & Reiter, M. (2009). <i>Credit Card Debt Puzzles and Debt Revolvers for Self Control</i> . <i>Review of Finance</i> , 13(4), 657-692.
#3 Cognitive
Lack of self-control explains why households maintain high levels of expensive credit card debt even when they have substantial low-interest-earning liquid assets. The authors argue that the way in which credit cards separate the purchase decision from the payment decision facilitates this behaviour.
47. Bertrand, M., & Morse, A. (2011). <i>Information Disclosure, Cognitive Biases, and Payday Borrowing</i> . <i>The Journal of Finance</i> , 66(6), 1865-1893.
#3 Cognitive
Lack of self control explains why people take out expensive payday loans (immediate benefit) even they are aware of the associated costs (delayed and therefore in their mind discounted). Additional, psychology-guided information disclosure induces payday borrowers to lower their use of this expensive form of debt. Particularly helpful is information that allows people to think less narrowly (over time) about the cost of payday borrowing, and information that reinforces the adding-up effect over pay cycles of the dollar fees incurred on a payday loan in comparison to the fees on other financial instruments.
48. Thaler, R. H. (1990). <i>Anomalies: Saving, Fungibility, and Mental Accounts</i> . <i>The Journal of Economic Perspectives</i> , 193-205.
#3 Cognitive
The author discusses mental accounts (subjective labeling of money or placing them in different buckets that are not seen as substitutable, for example different savings / investment accounts) vs a theoretical concept of fungibility of money (an idea that money should have no labels). He analyzes how consumers treat bonus and windfall payments (expected / unexpected). Bonus (irregular but anticipated) is more likely to be saved than the same amount of regular salary. Windfalls are more likely to be spent. Underscore the role of habits, foresight and self-control in financial behaviours. The paper looks at ways people deal with a lack of self-control - take irreversible actions, such as joining a pension plan, or adopt internally enforced rules-of-thumb.
49. DellaVigna, S. & Malmendier, U. (2004). <i>Contract Design and Self-control: Theory and Evidence</i> . <i>The Quarterly Journal of Economics</i> , 119, 353-402.
#3 Cognitive
The authors examine how rational firms respond to consumer biases. They study contract design in the credit card, gambling, health club, life insurance, mail order, mobile phone, and vacation time-sharing industries, and note prevalence of features designed to exploit present bias (back-loaded fees, automatic renewal, cancellation fees).
50. Ashraf, N., Karlan, D. S., & Yin, W. (2006). <i>Household Decision Making and Savings Impacts: Further Evidence from a Commitment Savings Product in the Philippines</i> . Yale University Economic Growth Center Discussion Paper No. 939.
#3 Cognitive
This study shows that financial products with a feature that restricts access to savings until certain threshold amounts or target dates are reached are most likely to be taken up by those who showed larger susceptibility to present bias.
51. Agarwal, S., Driscoll, J. C., Gabaix, X., & Laibson, D. (2009). <i>The Age of Reason: Financial Decisions over the Life-cycle with implications for Regulation</i> . Available at SSRN 973790.
#3 Cognitive
Find that financial mistakes, such as suboptimal use of credit card balance transfer offers (reluctance to switch credit cards when a more cost-efficient one is offered - status quo bias), misestimation of the value of one's house, and excess interest rate and fee payments, are made more often by young adults (as well as older adults) than middle-age people. Discuss a host of tools that can reduce such mistakes: disclosure, nudges, financial driving licenses, advanced directives, fiduciaries, asset safe harbors, and ex-post and ex-ante regulatory oversight.

52. Campbell, J. Y., & Cocco, J. F. (2015). <i>A Model of Mortgage Default</i> . The Journal of Finance.
#3 Cognitive
This is a study of mortgage default decisions regarding whether to refinance the loan, prepay it, or exercise an option to default, depending on several conditions. The analysis of when borrowers default is quite interesting, but more relevant to our review is an implication that refinancing inertia, or failure to take advantage of mortgage interest rate changes in a timely manner (refinance at a lower rate), can be explained by status quo bias.
53. Madrian, B. C., & Shea, D. F. (2001). <i>The Power of Suggestion: Inertia in 401 (k) Participation and Savings Behavior</i> . The Quarterly Journal of Economics. Vol. CXVI, Issue 4, November 2001.
#3 Cognitive
Retirement plan participants hired under automatic enrollment are more likely to retain both the default contribution rate and fund allocation than those hired before automatic enrollment. This ‘default’ behavior appears to result from participant inertia (status quo bias) and from employee perceptions of the default as investment advice.
54. Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2007). <i>The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States</i> . Draft paper, ultimately published in 2009 in Social Security Policy in a Changing Environment. University of Chicago Press.
#3 Cognitive
Opt-out as a default option for enrollment in a retirement savings plan results in a dramatic increase in the numbers of enrolling employees, compared to opt-in as a default option. Similarly, employees tend to anchor their contribution rate level and asset allocation on the default alternatives offered. The authors note the same effect when employees change jobs and roll over savings balances to a new employer plan vs. taking a cash distribution and presumably consuming it (this is a US study), and with respect to choosing retirement options (a more secure annuity vs a lump sum). Possible explanation of this behaviour: (1) procrastination generated by the complexity of the decision-making, (2) procrastination generated by present-biased preferences, and (3) a perception of the default option as an endorsement. The authors caution that there may not be an optimal default option for savings that suits all individuals and all employers - some default options results in unintended negative consequences.
55. Iyengar, S. S., Jiang, W., & Huberman, G. (2003). <i>How Much Choice is Too Much? Contributions to 401(k) Retirement Plans</i> . Pensions Research Council Working Paper, PRC WP 2003-10.
#3 Cognitive
When employers offer multiple retirement savings funds, employee participation rates are lower than when fewer options are offered.
56. Bertrand, M., Karlin, D., Mullainathan, S., Shafir, E., & Zinman, J. (2005). <i>What's Psychology Worth? A Field Experiment in the Consumer Credit Market</i> . National Bureau of Economic Research (No. w11892).
#3 Cognitive
The framing of any initiative, program, or product can be just as important as the actual terms of the offer. The authors observe that decisions are often reached by focusing on various “small” irrelevant features of the context that seem unlikely to affect the costs or benefits associated with a choice, and demonstrate how a financial firm can exploit consumers’ psychological biases and increase demand for a loan product without lowering prices.
57. Willis, L. E. (2009). <i>Evidence and Ideology in Assessing the Effectiveness of Financial Literacy Education</i> . San Diego Law Review, 46, 415.
#6 Results
Limitations of existing research on financial education include: • data-reliability issues related to self-reports of knowledge, behavior, current financial condition and past education • unrepresentative samples • barriers to better data collection methods, such as adults don’t want to be tested, tracking financial behavior is difficult, and measuring results through credit reports is problematic due to inaccuracies, incomplete data and privacy issues • several research design issues, notably lack of control groups and self-selection of participants • lack of precision and accuracy in measurement of exposure to financial education • concerns about validity of measures of financial knowledge and confidence • concerns about accuracy of measures of financial behavior • incompleteness of measures of the financial literacy education model • low statistical significance • misinterpretation of results as supportive of financial literacy education - possibly due to ideological beliefs of researchers.
58. Haigh, M. S., & List, J. A. (2005). <i>Do Professional Traders Exhibit Myopic Loss Aversion? An Experimental Analysis</i> . The Journal of Finance, 60(1), 523-534.
#3 Cognitive
Even professional traders tend to invest higher amounts when the volatility that can occur in any given round of trading is made less salient by pooling and presenting profit and loss information from several rounds in aggregate – in other words, when information is framed to minimize the chance of activating myopic loss aversion.

59. van der Heijden, E., Klein, T. J., Müller, W., & Potters, J. (2012). <i>Framing Effects and Impatience: Evidence from a Large Scale Experiment</i> . <i>Journal of Economic Behavior & Organization</i> , 84, 701-711.
#3 Cognitive
When people make investment decisions, those with a greater susceptibility to present bias are also affected by myopic loss aversion bias. In one experiment, the decision was presented in a way that elicits myopic aversion (feedback in every round of investing). The second experiment was framed to mitigate the loss aversion bias - feedback was less frequent and cumulative. Those less affected by present bias invested similar amounts in both experiments. Those affected by present bias invested more when feedback was less frequent. Both situations had the same average return.
60. Steel, P. (2007). <i>The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure</i> . <i>Psychological Bulletin</i> , 133, 65-94.
#3 Cognitive
Procrastination is associated with decreased well-being, poorer mental health, lower performance, and financial difficulties. It is linked with high impulsiveness (present bias), lack of self-control, as well as low self-efficacy. The author reviews theoretical and clinical understanding of procrastination discussed in prior research.
61. Rozentel, A., & Carlbring, P. (2014). <i>Understanding and Treating Procrastination: A Review of a Common Self-Regulatory Failure</i> . <i>Psychology</i> , 5(13), 1488.
#2 Engage #3 Cognitive
The authors discuss a number of remedies for procrastination: efficacy performance spirals (downward or upward spirals caused by the efforts invested in an activity and the results stemming from that activity), automaticity, stimulus control, stimulus cues, time management, performance accomplishment, goal-setting, implementation intentions, fusing (combining the commitment being postponed with an activity that is experienced as more rewarding), and learned industriousness (using continuous reinforcers when working on tasks and assignments instead of rewarding only the outcome).
62. Hopfensitz, A., & Wranik, T. (2008). <i>Psychological and Environmental Determinants of Myopic Loss Aversion</i> .
#3 Cognitive
Myopic loss aversion is not generally observed. It is particularly likely when we have negative investing experience (losses) initially, and when our self-efficacy (defined as confidence in decision-making abilities, high optimism, and low anxiety) concerning the investment situation is low.
63. Han, J. (2014). <i>Why Medicare Part D Beneficiaries Do not Switch Plans: Testing a Model of Part D Plan Information Processing</i> . PhD (Doctor of Philosophy) thesis, University of Iowa.
#3 Cognitive
People with low self-efficacy are less likely to seek information and make an informed choice regarding health insurance plan switching, and are instead more likely to be influenced by inertia and simply stick with their default plan. Decision whether or not to receive help in understanding plan information may play a larger role in deciding whether to act or not on the knowledge thus acquired, and switch plans.
64. Fellner, G., Güth, W. and Maciejovsky, B. (2001) <i>Illusion of Expertise in Portfolio Decisions: An Experimental Approach</i> . CESifo Working Paper No. 621, December 2001
#3 Cognitive
Investors with high levels of self-perceived financial ability (overconfidence bias) but low levels of objective knowledge are less likely to rely on information from other sources (self-serving bias) and therefore more likely to suffer poor returns, often due to under-diversification.
65. Guiso, L. & Jappelli, T. (2006). <i>Information Acquisition and Portfolio Performance</i> . CSEF Working Paper no. 212.
#3 Cognitive
Contrary to expectation, the more investment information investors have, the worse is the risk-adjusted returns their portfolios (using a measure of return divided by risk). This effect is stronger for men than women, as well as for overconfident investors (those who claim they know stocks well). Having investment information is also associated with more frequent trading, less delegation of portfolio decisions, and less diversified portfolios.
66. Kramer, M. M. (2012). <i>Financial Literacy, Overconfidence, and Financial Advice Seeking</i> . SSRN working paper 2081795.
#3 Cognitive
The author examines whether financial literacy and overconfidence relate to financial advice seeking and finds that confidence in one's own literacy is negatively associated with asking for help, while actual expertise does not relate to advice-seeking. The paper confirms that overconfidence only matters for male subjects. More overconfident investors rate their investment skills, knowledge and information as higher compared to a financial advisor; while they perceive investing on their own as less risky with more control.

67. von Gaudecker. (2015). <i>How Does Household Portfolio Diversification Vary with Financial Sophistication and Advice?</i> <i>Journal of Finance</i> , 70(2), 489-507.	#3 Cognitive
Nearly all households that score high on financial literacy OR rely on professionals or private contacts for advice achieve reasonable investment outcomes. Compared to these groups, households with below-median financial literacy that trust their own decision-making capabilities lose an expected 0.5% on average.	
68. Bruhn, M. De Souza Leão, L., Legovini, A., Marchetti, R., Zia, B. (2013). <i>The Impact of High School Financial Education: Evidence from a Large-scale Evaluation in Brazil</i> . The World Bank Policy Research Paper 6723, December 2013.	#5 Parents
The financial education program the authors examined increased student financial knowledge and led to an increase in saving for purchases, better likelihood of financial planning, and greater participation in household financial decisions by students. “Trickle-up” impacts on parents were also significant, with improvements in parent financial knowledge, savings, and spending behavior. Noted unintended consequences of some financial courses for students: higher likelihood to borrow, purchase consumer items, and fall behind on some credit repayments (possibly due to the course’s focus on saving and budgeting).	
69. Brown, S., Taylor, K. (2012). <i>Expectations and the Saving Behaviour of Children: Analysis of the U.S. Panel Study of Income Dynamics</i> . Sheffield Economic Research Paper Series. No. 2012015.	#5 Parents
How much children save is influenced by their expectations, especially expectations regarding future educational attainment and life expectancy.	
70. Arrondel, L. (2009). “My Father was right”. <i>The transmission of Values Between Generations</i> . Paris School of Economics. HALSHS- 00566808	#5 Parents
Parents’ and children’s risk and discounting preferences are significantly positively intergenerationally correlated.	
71. Hastings, J.S., Mitchell, O.S. (2011). <i>How Financial Literacy and Impatience Shape Retirement Wealth and Investment Behaviors</i> . NBER Work. Pap. 16740	#6 Results
Impatience (present bias) is a strong predictor of wealth and investment. Financial literacy is also correlated with wealth though it appears to be a weaker predictor of sensitivity to framing in investment decisions.	
72. Poon, M., Olen, H. (2015). <i>Does Literacy Improve Finance?</i> <i>Public Understanding of Science</i> . Vol. 24(3)	#6 Results
The authors argue against the narrow definition of financial literacy as ‘knowledge of basic financial principles’. They prefer ‘skills that allow people to function effectively in a variety of contexts’ - their definition includes media savviness, confidence, and ability to make choices. They criticize the personal finance industry for providing ‘pulp finance’. They express concern that financial education provided by financial institutions often becomes product advertising in disguise.	
73. Agnew J., Szykman L. (2005). <i>Asset Allocation and Information Overload: The Influence of Information Display, Asset Choice and Investor Experience</i> . <i>Journal of Behavioral Finance</i> . 2005;6(2):57-70.).	#3 Cognitive #6 Results
Those with above-average financial knowledge report significantly less overload when given simpler investment choices (display, number of choices, similarity of choices), while individuals with below-average knowledge find the investment decision overwhelming regardless of how choices are presented. Further, low-knowledge individuals choose the default allocation more often than high-knowledge individuals. The often conservative nature of default investment options may mean that individuals invested in these assets will have inadequate retirement savings.	
74. Hershfield, H., Shu, S., Benartzi, S. (2019). <i>Temporal Reframing and Participation in a Savings Program: A Field Experiment</i> . Working Paper February 2019.	#3 Cognitive
People were four times as likely to start saving when asked if they wanted to save \$5 a day versus those asked to save \$150 a month, even though they are actually equivalent amounts. Three times as many consumers in the highest rather than lowest income bracket participated in the program when it was framed as a \$150 monthly deposit, but this difference in participation was eliminated when deposits were framed as \$5 per day. Framing financial problems in more granular formats can encourage continued behavior through increasing the take-up of a recurring program and can help reduce the gap between low- and high-income groups.	
75. Soman, D., Cheema, A. (2011). <i>Earmarking and Partitioning</i> . <i>Journal of Marketing Research</i> , Vol XLVIII (November 2011).	#3 Cognitive
People save more when earmarked money is partitioned into two accounts than when it is pooled into one account. In addition, the presence of the visual reminder increases the savings rate. The authors suggest that partitioning increases self-control.	

76. Milkman, K.L., Beshars, J. (2009). <i>Mental Accounting and Small Windfalls - Evidence From an Online Grocer</i> . Journal of Economic Behavior & Organizations, 71(2).		
	#3 Cognitive	
People find it easier to let go of small amounts when they're coming out of money that feels like a windfall (they'll spend a \$10 coupon from an online grocery store on items they wouldn't otherwise buy).		
77. Mani, A., Mullainathan, S., Shafir, E., Zhao, J. (2013). <i>Poverty Impedes Cognitive Function</i> . Science. Vol. 341, 30 August 2013.		
	#3 Cognitive	
The stress of poverty makes it harder for people to plan ahead and exert self-control, as it consumes scarce mental resources. Cognitive cost of poverty is roughly equivalent to functioning after pulling an all-nighter.		
78. Meuris, J., Carrie, L. (2017). <i>Price of Financial Precarity: Organizational Costs of Employees' Financial Concerns</i> . Organization Science. October 2017		
	#3 Cognitive	
People who are worried about their financial situation have less cognitive capacity available to them, which subsequently spills over into their work performance.		
79. Kaiser, T, Menkhoff, L. (2017). <i>Does Financial Education Impact financial Literacy and Financial Behavior, and If So, When?</i> Deutsches Institut für Wirtschaftsforschung. Discussion Paper 1652 / 2016.		
	#1 Teachable	#6 Results
Financial education affects both financial knowledge and behaviours, but there is great variation in what works, for whom, and when • Financial education improves financial literacy; improved literacy is positively correlated with financial behaviours • The impact of financial education depends on the target group - low-income individuals benefit less, and so do low- and lower-middle income economies • Borrowing behaviours are more challenging to change than saving behaviours • Programs with greater intensity have a greater effect on outcomes • Mandatory programs and those offered at teachable moments are more likely to affect financial outcomes.		
80. Brown Menard, M. (2017). <i>So Many Courses, So Little Progress: Why Financial Education Doesn't Work - And What Does</i> . Questis research paper.		
	#3 Cognitive	#6 Results
The author analyzed more than 200 studies and found that educational interventions have very little effect on financial behaviours. Interventions that do appear to work consider common cognitive biases, provide accountability, and work collaboratively to engage and encourage intrinsic motivation to change. Personal financial coaching appears to be one of the more effective approaches for influencing behavioural change and promoting positive financial outcomes, especially for those with low to moderate incomes. Also referred to in the final section of this paper, <i>Beyond teaching literacy</i> .		
81. Deming, W., E. (1982). <i>The New Economics for Industry, Government, Education. Third Edition (2018)</i> .		
		#6 Results
Inspiration for the subtitle in this section of the paper. Contrary to common misquoting, Deming actually said, "It is wrong to suppose that if you can't measure it, you can't manage it - a costly myth."		
82. Bandura, A. (1989). <i>Human Agency in Social Cognitive Theory</i> . American Psychologist. September 1989.		
		#6 Results
This paper explores self-efficacy and ways to build it up. Also referred to in the final section of this paper, <i>Beyond teaching literacy</i> .		
83. Gawande, A. (2010). <i>The Checklist Manifesto. How to Get Things Right</i> . New York: Metropolitan Books.		
	#3 Cognitive	
Checklists are written guides that walk us through key steps of any complex procedure. For a long time, they were a forgotten or ignored business tool, perhaps because they seem like a ridiculously simple concept to deal with a complex world. Checklists work because they ensure people apply knowledge and skills consistently well. They are used by pilots, surgeons, and engineers in complex situations, and in the last decade have also been used in finance.		