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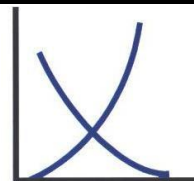


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What Have We Learned About Financial Literacy?

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ABSTRACT

Economic reasoning is an important life skill which provides context and structure for good financial literacy. Learning the mechanics of financial literacy is not enough for retention. Students both learn more and retain the knowledge better when they see the connections to their own lives, are engaged, and participate actively in the learning process.

In writing this paper, I have benefitted from discussions with colleagues at UIC and the comments of participants at the Illinois Economics Association. All remaining errors are, of course, my own.

Introduction

The poor financial literacy of adults and children costs them individually and society as a whole. This can be seen in many contexts. When children, parents, or adults suddenly receive a large sum of money, they often do not have the skills to evaluate what would be the best. For example, lump sums of money are awarded to people harmed in medical malpractice or accident judgments. As a lawyer overseeing large financial awards from court cases put it, “When the students at age 18 come into control of their money, the family has a great party for a year or two and then the student goes on Medicaid for the rest of his life.” The families simply do not understand how to maintain and extend the value of their financial assets. They think that withdrawing \$1,000 today from the award and repaying it 10 years later (a step they may not actually make, anyway) would make the lump sum of money whole. This is not true, because the interest that would have been earned on the \$1,000 plus the interest that interest would have earned has been lost. Beyond that, they do not understand why there is interest at all, nor how their funds, other monies, their jobs and so on fit in the whole economy. A working knowledge of these is important for financial literacy and good citizenship.

This does not mean that school children should learn college-level economics. The Max U apparatus should not be taught in the teen years, let alone ages below that. AP economics, which substitutes for beginning college courses are not for all students. Economic reasoning is part of very useful general life skills. The economics apparatus as described in McCloskey (2003) still fails to draw the passion of high school and college students or enhance their understanding of life. And students forget it as soon as they decently can, sometimes between the midterm and final exams. The economics that illuminates why and how their environment works and how they can effectively operate engages students. Citizens need the economic way

of thinking to function well in a market economy. Waiting until college to teach this economics is tardy. It should be done, but can it be done? While we are not teaching economics or its younger step-child, financial literacy everywhere or consistently, there are indications that it is possible. Though the opportunity cost is high, so are the potential benefits.

Life Skills or Angels on Pins?

Students learn and retain concepts better when the subject is of immediate importance to them. This is one of the refrains in *Overcoming the Saving Slump* (Lusardi, ed. 2009) for financial literacy education as well. Economic reasoning is an important life skill. If we don't teach it before college, we miss a significant portion of the population. Should high school prepare students for college economics courses or for life? The answer to this question shapes optimal high school and college economics instruction. High school is a better place to learn economics life skills. Especially until high school life skills are widely taught, general education college courses such as principles-level economics benefit students by first teaching economics life skills, and secondarily preparing students for the more specialized model making and analysis.

High school is where the population is. Truancy laws keep most children in school until 14 or 15 years of age. This means that between 9th and 10th grade students not planning to finish high school exit education. In Chicago this can be 20-30% of each class. These students are missed by the high-school financial literacy courses, which are mainly taught in junior or senior years. The logic for that timing is that students facing graduation and jobs or college will be learning about their places in the world and how to manage independence just-in-time. Because of the significant group which misses this training when it is scheduled late in the high-school

curriculum, some schools are scheduling it earlier and/or creating a multi-year and multi-pronged approach to teaching financial literacy and economics.

About two-thirds of 2010 U.S. high school graduates enrolled in college. In 2000, about two-fifths of college students took one or more economics courses. If the 2000 patterns still hold, a little over a quarter of the 2010 cohort will study economics in college. High school economics, personal finance or consumer economics courses are likely the only formal economics training most of the population gets. (BLS 2011, Siegfried 2000)

The Voluntary National Content Standards in Economics produce economic literacy, specific content knowledge with benchmarks calculated to communicate why each standard is essential, to foster understanding of the underlying principles, and to develop the economic reasoning behind each standard. These can be taught along with math or geography, or literature or history—the other subject areas gain from the addition. Economics provides real-world applications for math problems. Economics gives the ‘why’ for geography beyond memorizing names. Decisions in fictional stories can be better understood with opportunity costs. Studying the economic forces in history show students what makes events happen, and why at that particular time, far more engaging than memorizing lists of rulers and wars. Understanding science requires data analysis, and high-school science teachers are using economics as an additional venue for the importance of the techniques students learn in science classes. Economics as many people understand the term (consumer and producer decision making, role of government, gains from trade, incentives and economic systems) incorporates life skills needed for effective citizenship. Personal finance or consumer economics, which overlaps in topics but adds decision-making about career, saving, investing, budgeting, insurance, etc. is increasingly seen as important for functioning in modern financial systems. Biannual Survey of States (2009).

There is some evidence that more economics and personal finance are being taught pre-college than in the past. In 2009, 21 states required students to take an economics course for high school graduation, up from 17 in 2007. (The 21 states are Alabama, Arizona, Arkansas, California, Florida, Georgia, Idaho, Indiana, Louisiana, Michigan, Mississippi, New Hampshire, New Jersey, New Mexico, New York, North Carolina, South Carolina, South Dakota, Tennessee, Texas, and Virginia.) Sadly, most economics courses are taught in the last two years of high school and the largest number of dropouts is the second year of high school (above truancy age limits), so the percentage of students taking even high school economics courses in the population is lower still. Personal finance, often mandated separately from economics, is also increasing both in standards (28 states now have personal finance standards) and in required courses to meet those standards (13 states). (2009 Biannual Survey of States) Retention continues to be an issue. See Gill and Gratton-Lavioe (2011) for a recent measure of the effects of a mandated high school economics course. Their estimate of ‘moderate’ effects (at most 8.96 percentage points or 3.6 questions on the 40-question test) would not bring the average percent college students answered correctly above the widely-used 70% minimum passing score, since the sample means were about 58% for the college students.

Progress in Economic Literacy

The VNCS are a road map, and research results, also including the 2006 National Assessment of Educational Progress (NAEP), tell us we have a long road ahead, but there are some encouraging signs. The 2006 NAEP high school tests included economics and consumer economics questions. Many of the questions were designed to assess competency of the VNCS. From this test, 42% of students were assessed as proficient: “demonstrate solid academic

performance by showing competency, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter” and 79% of students were assessed at or above the basic level, defined as “partial mastery of the prerequisite knowledge and skills necessary for proficiency” (Walstad and Buckles 2008).

Basic proficiency is not enough for citizens expected to manage their retirement portfolios, likely a larger sum of money over a longer period of time with poorly-understood risks. Moreover, portfolio skills are important for members of the population far removed from high-net-worth individuals. Collins, Morduch, Rutherford and Ruthven find that even in the world’s population of people living on less than \$2 per day, families operate quite sophisticated financial portfolios through family networks and neighbors, managing and diversifying their risks with informal networks for insurance and small savings or loans. I have seen families operating with similar strategies in the neighborhoods of Chicago.

Teaching Economics Before College

Research in the last two decades demonstrates over and over that students well below college age can understand basic economic concepts. Watts (2005) Why aren’t students learning more economics K-12, even though the economics state goals and learning standards in many states, including Illinois, address many of the VNCS?

In Illinois, one reason lack of teacher knowledge. Elementary school teacher preparation programs do not require even one economics course, and most teachers elect to take none. High school social studies teachers are supposed to be able to teach a beginning high school economics course, and 20% of the questions on the certification exam relate to economics.

However, the passing grade bar is low enough that teachers with little or no economics knowledge can be certified in social studies. So one trouble is that K-12 teachers are not prepared to teach economics.

It is not that teachers cannot learn economics. Pre- and post-tests of teachers after courses at UIC's Center for Econ Ed show initial scores well below random guessing for some teachers, which suggests that misconceptions about economics play a role. Gains of 18 percentage points are the average pre- versus post- test results using the nationally-normed tests of the VNCS such as the Test of Economic Literacy.

Teachers recognize they have holes in their understanding. In a recent survey of area teachers, asking them which of the items they are supposed to teach, the 10% of the long list that they felt least ready to teach were some of the most important for financial literacy and good citizenship. They were: financial institutions, investing for goals, what makes a good borrower, how risk affects the need for, benefits of, and cost to get insurance, the costs and benefits of local, state, and national programs and policies, entrepreneurship (and a majority of students surveyed plan to be at least part-time entrepreneurs), the difference between company shares of stock and corporate or government bonds, and what consumer protection laws exist and how they work. We are working to improve teachers' knowledge and readiness to teach in these areas through professional development workshops on campus at UIC and at schools, by organizing systems of teacher leaders to mentor newer teachers in these areas, and by offering graduate programs and courses at the university.

Teaching College-Level Economics, AP and At Universities

There are hints that an economically literate entering-college population might require changes in college economics courses. Watts (2005) finds that students who have studied economics in high school do know more economics when they enter college. This advantage does not continue through college courses. There is some evidence that students may work not for the highest possible grade, but for a good-enough grade. If their entry knowledge puts them ahead, they spend their time elsewhere. (Allgood 2001, Babcock 2010, Babcock and Marks 2011)

The AP courses in economics prepare students to enter college intermediate economics courses. The college intermediate level is typically where the algebraic and sometimes calculus analyses begin their reign and where the discussion is likely to be abstract. Consider a firm with cost function $C(q)$... Many college students do not easily see how the general forms can translate to their business or lives. Economics courses which build barriers between daily decisions and economic analysis do not help. I have met AP teachers whose students infuse rational decision making into their ways of approaching the world, and these students gain a lifelong tool. Others memorize the graphs and equations and results. For those students, effects are short-term, and some barely exist beyond the AP testing week.

Yet high school and college students keep choosing economics classes. Somehow they believe economics provides necessary life skills- powerful tools for making better decisions and for understanding risks and consequences. They are correct. Knowing more about Marshall's "study of the business of life" can prevent costly mistakes. We do not send new drivers onto the physical highways without at least a glance at the rules of the road. Similarly, the basics of the

economics can be entirely relevant to the young. Why is the school lunchroom dirtier than your home kitchen? Should Derrick Rose mow his own lawn? What is the (opportunity) cost to YOU of not saving your after-school-job salary until retirement? These are questions about which high school students, along with college students, are passionate. And the answers illustrate economics reasoning and concepts: Tragedy of the Commons, Comparative Advantage, Opportunity Cost and Rule of 72, respectively.

VNCS Framework: HOW to Teach Economics and Financial Literacy

Economics categories are appropriate when students are learning to categorize the world in early elementary years: goods and services, production and consumption, and so on. They are trading constantly, and can see that trades can (even should) be win-win. They can consider positives and negatives for group decisions like whether to have hamburgers or hot dogs for the class lunch. In the middle elementary years they are looking behind some of society's veils and into the mechanics. They have figured out the teachers don't live in the schoolroom, even though they never see him out of it. They can role-play how a debit card scanner in a store could ask the bank's computer whether the customer has sufficient funds for the purchase. They can explain why they were willing to make a trade such as lunch desserts. In middle school, as they look outside their communities, they can describe how their lives would be different if there were no trade between people in the United States and people in other countries. And in high school they can take part in trading simulations where they represent people or organizations or countries with specific goods to sell and specific goods they want to buy, and explain how nations pay for imports with their exports.

These could be taught as a list of concepts to memorize and tested as definitions, and they will inspire passion in hardly anyone. Or they can be taught as ways to understand the world the children are struggling to understand, and they will be eagerly grabbed. It is not only the subject, but also the way it is taught. Formal methods will not stick. Just-in-time solutions to the age-appropriate situations provide a foundation to build human capital in economics. In our training workshops for the Stock Market Game, in which student teams invest a virtual \$100,000 in real stocks and the teams with the highest values at the end of the semester win, a stream of new teachers coming for training are those whose only memory of their early teen school years was their experience with this game. They want to bring its benefits to their students. This learning sticks.

Walstad (1994) found knowledge of economics significantly affects public opinion. As he notes, “People will state an opinion about an economic issue despite having little or no knowledge of the subject.” (p.1384) The housing market troubles show that ignorance does not prevent people from making large investments under those conditions either.

The VNCS comprise what a group of esteemed economists agreed are necessary and sufficient for a person to be literate in economics. Each principle articulates an essential concept and what students who understand this should be able to do with that concept, adjusted for appropriate levels of understanding and performance, for grades 4, 8, and 12 (ages 10, 14, and 18). <http://www.councilforeconed.org/ea/standards/standards.pdf>

For example, Content Standard 5: Trade states

“Students will understand that:

Voluntary exchange occurs only when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.

Students will be able to use this content knowledge to:

Negotiate exchanges and identify the gains to themselves and others. Compare the benefits and costs of policies that alter trade barriers between nations, such as tariffs and quotas.”

Students have more fun and insights stick better if, in learning content, they used their budding knowledge to get a really good deal as Saudi Arabia for their oil, the best price on the food imports, and conducted spirited negotiations for these deals.

Many in the press and the general public would not agree with Content Standard 5 (or with many of the other 19) nor be able to compare effects of government policy alternatives. And some are aware of that. In a 2010 survey of Chicago-area teachers on which economics and financial literacy concepts they were least ready to teach of the then-current list they were supposed to cover, high school teachers indicated they were least knowledgeable of and least ready to teach the costs and benefits of public policies. (Roberts, Sorgman, and Parkison 2011)

The tests based on the Voluntary National Content Standards (VNCS) are a measure of competency in economics. An AP grade of 3 or above, a common threshold for college credit, is not a measure of an advanced level of economic literacy. The purposes are different. VNCS are the competencies an economically literate citizen should have to make good financial and political decisions. AP teaches knowledge of the economic paradigm and its models. High

school students (and college students for that matter) need to learn the VNCS. Good AP teachers teach both.

1. VNCS and AP

VNCS are not the focus of AP economics courses. AP students mostly have not had a regular high school economics course. One of the advantages for high schools of the AP econ courses compared with other AP courses is that there is no assumed previous coursework in economics, compared with science courses where a basic understanding is built gradually in the lower grades. That is also true for the traditional college principles of microeconomics and principles of macroeconomics courses. These courses, also, are not good preparation for the practical economics skills. Salemi (2005) suggests some concepts to drop from the usual principles courses to increase practical learning based on the VNCS. Drop: cost curves, multipliers, Nash equilibrium, for example.

AP economics aims to be equivalent to college introductory-level course, but in practice is more encyclopedic than principles of economics at some colleges. Our department views the course as an introduction to the power of economic reasoning, not an exhaustive overview. This may be why AP students actually scored higher than college students when the two groups were compared by Melican, Debebe and Morgan (1997).

One concern has been whether the AP economics tests are comparable to college course tests. I've graded both tests, and we were part of the norming population for the Test of Understanding of College Economics (TUCE). There is a large area of overlap in the performance of high school students and college principles of economics students. This is not

surprising—college principles of economics students are often only a year older than the AP students.

Economics K-12: Where and when?

One course is rarely enough to develop lasting proficiency or to change someone's life. For that reason, infusion of economics concepts at earlier grades is essential. Scarcity and trading are natural concepts along with sharing in early elementary. Middle school math standards mesh nicely with personal finance budgeting and inflation calculations. Algebra and supply/demand equations can partner well. The gains to math classes from practical applications are shown in the study of the Stock Market Game, an online simulation where students invest pretend \$100,000 portfolios in real stocks online. Middle school and high school students who played the Stock Market Game scored higher on the NAEP mathematics tests. (Learning Points Associates 2010).

Infusing economics into language arts, mathematics, and science instruction provides these subjects with applications that students know are important for their lives. As they calculate their portfolios' gains and losses they do not feel like they are drilling math concepts, but the practice pays. At the awards ceremonies for top-scoring teams in the Stock Market Game, parents often ask me a version of 'Who are you and what have you done to my child?' because their son or daughter is reading the news media for world and business news, not sports or cartoons. They are becoming financially literate and the momentum builds on itself.

Financial Literacy, Where and When?

One lesson is not enough to become an expert, either in reading or in financial matters. So we are working on starting young and building slowly. We have learned that students learn better with relevant lessons using active learning. The important skills must be practiced to be really internalized and useful throughout life. The semester-long course for teens (appendix) demonstrates these principles, and we are working on guidelines for children starting before they learn to read and continuing through college.

Conclusion

Financial literacy is a set of important life skills and economics is the glue that holds them together. Elementary school students need to start learning these concepts and skills, reinforcing them through high school. Students can learn college-level economics such as AP economics in high school. Just because they can, does not mean they should. It also does not mean that AP economics should be eliminated. Students take AP courses in high school as low-cost substitutes for college courses, since the marginal additional fee is usually the test registration cost, well below the tuition for even a community college course. Or to obtain more rigor in a subject than in traditional high school courses. Or to study a subject not otherwise available. And more. We should teach high school students the VNCS in economics for a better-educated polity. The AP course in economics should be an elective—nice addition.

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Appendix:
(second file)