# THE ADOPTION OF SPECIALIZED HIGH SCHOOL LEVEL FINANCIAL LITERACY CURRICULUM MODULES

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# ABSTRACT

## THE ADOPTION OF SPECIALIZED HIGH SCHOOL LEVEL FINANCIAL LITERACY CURRICULUM MODULES

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The purpose of this research paper is to explore issues in the implementation, at the high school level, of sophisticated financial literacy teaching materials developed specifically for delivery in a high technology environment for a high school audience. Considerable research has been devoted to both understanding generally why innovation does or does not get adopted by the target population and, specifically, aspects in the implementation of new curriculum materials at the high school level. This paper looks at recent work evaluating the successes and failures in the implementation of new curriculum for foreign languages, mathematics, physics and general science. Can inferences be drawn from this work to assist in an implementation program for the financial literacy modules? Questions of the following types are addressed: Are there risks to the teacher in adopting novel curricula? Does extensive professional development need to accompany new curriculum adoption? Are there psychological hurdles that teachers need to address before adoption? Could there be institutional impediments present? How does the teacher work environment affect adoption?

## INTRODUCTION

On December 1, 2005, the Southern New Hampshire University (SNHU) Center for Financial Studies (CFS) was awarded a grant from the National Association of Securities Dealers (NASD) Investor Education Foundation entitled, *Financial Literacy Training for High School Students*. The purpose of the grant was (1) to develop for the high school audience eight self-contained curriculum modules that focus on investor literacy topics and (2) to implement the curriculum modules in conjunction with the Montgomery County (Maryland) Public School (MCPS) System.

The impetus for the grant came from a successful high school field trip program that was being run at SNHU's CFS. The CFS is a state-of-the-art, high technology academic trading room that SNHU built in 2001. From the beginning, the university decided that the Center should provide services to the southern New Hampshire community at large, as well as our university community. To that end, we began to invite local high schools to bring their students to our campus, and specifically our CFS, on field trips. At the field trip events in the CFS, we deliver various financial literacy lessons, taking full advantage of the specialized assets in our Center – thirty individual trading stations with dual monitors, electronic data boards and stock ticker, and sophisticated audio visual equipment. Financial literacy topics range from diversification in investing to investing for retirement to using credit cards effectively. The lessons were developed to be highly interactive and hands-on. In most cases, the students were doing computer analysis within the first ten minutes of class, typically using internet calculators, worksheets and data sources.

Since our Center opened in 2001, we've hosted about thirty-five field trips, servicing almost 600 students. These sessions have been very well received by both students and teachers. In fact, our field trip program has become a self-sustaining annuity! We see the same teachers bringing new students to the CFS every year (and sometimes every semester). Through time, it became clear to us that virtually all of the value-added in our field trip program could be delivered in any internet-ready computer room and that there was an opportunity to "export" our concept beyond the CFS, delivering the lessons anywhere an internet-ready room was available.

In our discussions with the NASD Investor Education Foundation, it was decided that the logical first step was to formalize the development of the curriculum materials, insuring that each module contained not only subject matter content, but also teaching strategies and ancillary support materials for the teachers. Titles of the eight financial literacy modules are:

*Creating and Monitoring a Diversified Stock Portfolio*

*Investing for Retirement*

*Portfolio and Risk Management*
*Asset Allocation and Security Selection*

*Investing in Mutual Funds*

*Internet Resources for Bond, Bond Mutual Fund and Exchange-Traded Fund (ETF) Investors*

*Personal Financial Statements*

*Selecting a Financial Advisor*

During the grant period from December, 2005, through early fall, 2006, we prepared the eight curriculum modules and visited MCPS several times to beta test selected modules in high school classes, to discuss the modules with teachers and staff, and to set the stage for the potential adoption of the modules by MCPS teachers. As with our field trip programs at SNHU, the beta tests were highly successful, and the teachers and staff were enthusiastic about the curriculum materials. Discussions with the teachers generally focused on minor refinements to the modules, but more importantly, how the curriculum materials would mesh with existing courses. During this time period, we also received high quality feedback from the NASD Foundation on module content.

As a final deliverable for the NASD grant, we met with relevant MCPS teachers (primarily those teachers currently working in the individual schools' Academy of Finance programs) for a full day training session to review module content and to assist with implementation. At this event, we:

- Provided all participants with a CD containing all curriculum modules and ancillaries,

- Delivered our versions of the classroom sessions for two modules (*Creating and Monitoring a Diversified Stock Portfolio* and *Investing for Retirement*), and

- Presented selected lessons from the other modules.

While most teachers indicated that they intended to implement some of the material in their upcoming classes, follow through to date has been spotty. Certainly the rate of adoption has not been consistent with the level of enthusiasm that the teachers projected for both the materials and this financial literacy program.

The purpose of this paper is to study aspects of the adoption of new curriculum by high school level teachers, including an evaluation of potential impediments to adoption. Section II reviews the relevant literature and relates this existing literature to the adoption of our financial literacy modules. We will highlight academic research that has addressed new curriculum adoption for the high school disciplines of foreign languages, mathematics, physics and general science. Section III is a very brief synopsis.

## I. LITERATURE REVIEW RELATING TO THE ADOPTION OF FINANCIAL LITERACY MODULES

Rogers (1995) presents a comprehensive evaluation of the adoption of innovation, and is a primary reference for much recent research on the topic. He explores how innovation propagates through a target population in wide ranging fields, studying elements which can both promote and impede the adoption of the innovation. It is useful to consider both attributes that are internal to the innovation and features that are present in the external environment which could affect adoption. Relevant internal attributes of an innovation would include specific features of the innovation itself that might correlate with the rate and level of adoption. Attributes of this type considered by Rogers include:

- Are the ideas and mechanisms in the innovation superior to existing solutions?
- Is the innovation complex and therefore difficult for new users to understand?
- Are both costs and benefits to the innovation readily observable?
- Is the mechanism of the innovation compatible with or similar to existing solutions?

Emphasizing this internal attribute evaluation approach, Fehr and Bristol (2006) report on the adoption of three complex financial innovations. By examining the internal attributes of (1) "real" option valuation techniques, (2) a proposed new paradigm for financial consulting predicated on the widespread use of sophisticated financial instruments, and (3) fixed income valuation systems based on complex extensions of the Black-Scholes methodology, Fehr and Bristol were able to mount arguments as to why these innovations have had a very poor track record.

This paper will not concentrate on internal attributes to evaluate the adoption of the financial literacy modules by high school teachers. While the modules are sophisticated in the sense that they make creative use of internet websites, end users of the curriculum will be quite comfortable with internet applications. Further, the financial concepts in each lesson are not complex but, in fact, quite elementary. The goal for our financial literacy program has always been to provide basic information, but in a format that will resonate with the high school audience.

Our emphasis is to explore issues external to the attributes of the financial literacy curriculum that will impact adoption by high school teachers. For example:

- Are there risks to the teacher in adopting novel curricula?
- Does extensive professional development need to accompany new curriculum adoption?
- Are there psychological hurdles that teachers need to address before adoption? Could there be institutional impediments present?
- How do embracing selected modules impact the overall curriculum?
- How does the teacher work environment affect adoption?

Cuban (1999) lists five impediments, some of which are based on technology issues, to the adoption of new curriculum by high school teachers. While our financial literacy curriculum modules have only a modest technology component, is it possible that the technology factor may cause teachers to hesitate to embrace the curriculum? Cuban points out that most teachers use computers much more extensively at home than at school, so the technology issue is not one of computer "phobia". In fact, Cuban's first of five impediments

(1) Contradicting advice from experts

speaks to one possible explanation for the hesitancy by teachers to adopt a technology-laden curriculum. Over the past twenty plus years, advice from experts has regularly changed. Cuban catalogues the progression from BASIC language programming to word processing and spreadsheet programs to hypertext approaches. While this is the reality of a rapidly changing computer/technology environment, it nonetheless imposes "learning curve" costs on teachers, which they increasingly may be unwilling to pay. Further, teachers often perceive an

(2) Inherent unreliability of technology

which will complicate adoption when teachers realize that adequate technical support at the high school will not be sufficient or available. At some point, teachers will refuse to face the inevitable software and hardware issues that arise.

Realities of the day-to-day work environment for most teachers impact adoption decisions for both technology-based and conventional curriculum:

(3) Intractable working conditions

(4) Demands from others

Teachers generally face heavy teaching loads, multiple class preparations per day, a considerable grading load and large classes. In addition, they are responsible for classroom discipline, may be accountable for student performance on standardized tests, and have further responsibilities to their school district and state. Under these pressures, they may have neither the time nor the energy to undertake new curriculum adoption.

Finally, Cuban suggests that teachers hesitate because of

(5) Policymakers' disrespect for teachers' opinions

It is clearly counter-productive for teachers to be dictated to on curriculum and other academic matters. In fact, Cuban argues that technology and curriculum use implemented by fiat by administrators usually leads to unsatisfactory results.

Our approach to the implementation of the financial literacy curriculum modules is to address elements over which we can have some control. Factors (3) and (4) are operating realities present in most school districts. We have encouraged teachers, students and staff to provide feedback on our modules, and have built in considerable beta testing in the initial phases of the curriculum development process. Regarding the technology itself, we've had few problems during the beta tests and virtually no hesitation form teachers, although we have made clear to the teachers that internet connections may be slow and/or dropped, that the format of the relevant web pages may change through time and that close coordination will be required to insure that students progress through the lessons at the same pace.

Russell (1998) considers impediments to adoption that may be driven by teacher attitudes - her reference point is the introduction of new mathematics curriculum. Issues of concern to Russell include:

- Teachers may not want to learn to use new curriculum
- Teachers may not be prepared (academically) to teach new curriculum
- Teachers may believe that a traditional textbook approach is superior
- Teachers may not want to learn a new pedagogical approach
- Teachers may not want to explain curriculum changes to parents

Russell concludes that regular teacher training and professional development provide the highest probability for success in addressing these teacher issues. Curricular innovation is less likely to be successful if it is mandated, and more likely to be successful if teachers are part of the entire process. Again, we have built teacher training and consultation into all phases of our project. However, concern for the academic preparedness of teachers is appropriate. For example, Bristol, Fehr and Tripp (2003) report that less than 20% of social studies teachers in the state of New Hampshire have completed more than a single college-level economics course, but are nonetheless certified to teach economics. In our beta testing, it appeared that some teachers were not fully comfortable with the subject matter. The logical response is surely based on more training and professional development.

Russell goes further to explore how of the use the novel curriculum itself may be an attempt to compensate for unprepared teachers. Is it possible to give teachers highly scripted teaching materials and expect that the "materials themselves will improve student learning", independent of the quality of the teacher? Russell concludes that this approach is highly dangerous – the curriculum change will likely be cosmetic only, with students likely not reaping the full advantage of the new curriculum.

Further, teachers may well view the new curriculum as an 'activity" and not a serious component of learning when the curriculum is substituted for teacher responsibility.

It has been suggested to us by some teachers and administrators that inclusion of a regimented teaching script (including jokes and asides!) would promote the adoption of our curriculum. While we have attempted to make the modules teacher-friendly, including glossaries, lesson plans, handouts and complete ancillaries, we have not gone the fully scripted route. We believe that the teacher must be an actively engaged partner in both the adoption and delivery of the curriculum.

Having built the case for investing resources in comprehensive teacher training and professional development, Braslavsky (1999) presents insights as to how the training itself could affect curriculum adoption. Her description begins with the concept of 'isomorphism" in teacher training – the tendency for teachers to be trained solely in their fields of specialization. Since there is limited interdisciplinary training, there is the potential for a compartmentalized and rigid outlook by the teachers. If true, teachers would likely be less inclined to adopt new and novel curriculum. Further, at a more macro level, secondary education would be seriously fragmented as each teacher concentrates entirely on a specialized academic discipline. Braslavsky argues that isomorphism will be reduced only if teacher training concentrates on "horizontal learning". The current versions of our financial literacy modules and the format of our presentations to teachers may not go far enough along these lines. While we have not observed rigidity of the type described by Braslavsky, we expect to become more creative in our interdisciplinary efforts. For example, we have considered approaching mathematics teachers to use some of our covered financial techniques such as interest rate mechanics as case examples in their math classes.

Brown and Campione (1996) describe characteristics of successful instructional programs that promote learning in innovative environments:

- Emulate research
- Probe
- Engage in critical thinking
- Reflection

Our modules score very well on these attributes. Using our *Creating and Monitoring a Diversified Stock Portfolio* module as an example, students research industries and stocks to construct a suitably diversified portfolio (emulate research), are questioned as to the criteria that they used in the selection (probe), are asked to justify individual stock selections based upon the chosen criteria (engage in critical thinking), and set up ongoing monitoring of the portfolio to assess the decisions made (reflection). Similar components are present in all eight curriculum modules.

The Annenberg Media Learner publication, *Workshop 4 - Reworking the Curriculum*, argues that teachers may sometimes not feel 'safe" in adopting novel curricula. Teachers may perceive political pressure to stick with traditional approaches to learning. The *Workshop* argues that, in these situations, school administrators, particularly the principal, must be a "courage provider" to make it safe for teachers to

adopt the new curriculum. To date, this safety issue has been a non-factor in our program – we have not sensed any element of academic risk from the viewpoint of the teachers.

In addition to Russell's (1998) presentation on the adoption of new mathematics curriculum, selected studies have looked at curriculum adoption in foreign languages – Rose (1977), general science – Center for Curriculum Materials in Science (2005), and physics – Cushman (1998).

In the foreign language teaching profession, Rose (1977) contends that there is often considerable "separation" between university educators and high school teachers. He suggests that this can stem from the fact that high school teachers often deal only with elementary aspects of the discipline (based upon working with beginning learners), while their university counterparts operate at higher levels of instruction, hence the "separation". Since the university community often has a primary role in developing new curriculum, this potential antagonism can present a meaningful hurdle in the adoption process.

We have not experienced this phenomenon in our financial literacy work but would agree with Rose that the best way to improve communication between such groups is with comprehensive in-service teacher education programs conveniently scheduled for all parties.

In general science, the Center for Curriculum Materials in Science (2005) suggests that it is important that curriculum materials be sufficiently flexible so that teachers can tailor and adapt the materials to meet their individual needs. Further, the curriculum must be responsive to teachers' different levels of preparation and prior knowledge. Also, teachers must understand and embrace the underlying rationale for the innovation to be comfortable migrating to the new materials. As such, the curriculum materials should not be "handed down from the master", but rather teachers should be integral to the entire adoption process. As with our other references, the policy recommendation is to provide comprehensive professional development for teachers. Our modules would be highly ranked on these dimensions – the modules allow for great teacher flexibility, and teachers have been actively courted so that their feedback could be reflected in the final draft of the curriculum materials.

In her examination of new high school level physics curriculum, Cushman (1998) reinforces many of the points discussed above, including: the need for "courage" to adopt novel curriculum, concern for the level of teacher preparedness and interest, the importance of lessons in which students participate actively, and the importance of high quality teacher training.

## II. SYNOPSIS

An overriding theme emphasized in virtually all of the academic references cited above is the need for comprehensive and ongoing teacher training and professional development to facilitate new curriculum adoption. Based upon our beta testing of our financial literacy curriculum modules at the Montgomery County Public School system, we would concur with this emphasis. During an approximately six month period, we provided teachers with three training opportunities under different formats, some sessions with students and some without. Nonetheless, we believe that even more training will be required to insure widespread adoption of the curriculum materials.

Our project sponsor, the NASD Investor Education Foundation, is also well aware of the need for comprehensive teacher training. The Foundation recently sponsored the 2006 report of the National Association of State Boards of Education Commission on Financial and Investor Literacy entitled*, Who Will Own Our Children?* Recommendation #3 of that report which is titled, *Ensure that teachers and/or staff members teaching financial literacy concepts are adequately trained*, states:

"The Commission recommends that states, school districts, and/or schools provide the resources to ensure that individuals teaching financial and investor education concepts are adequately prepared. This includes providing the professional development needed to meet the goals identified for the curriculum. The Commission also envisions that state boards of education contribute to preparing teachers by encouraging recertification".

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