

Starting Point: Pedagogical Resources for Teaching and Learning Economics



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Abstract

This paper describes a new National Science Foundation (NSF) project (DUE 0817382) that makes innovative pedagogical resources and effective teaching practices easily accessible to economists via a web-based pedagogic portal – *Starting Point: Teaching and Learning Economics*. The *Starting Point* site introduces economists to teaching innovations both within and beyond the discipline, provides instructors with the tools to begin integrating and assessing these innovations in their own classrooms, and encourages the sharing of teaching innovations.

The *Starting Point: Teaching and Learning Economics* project team is developing a total of sixteen pedagogical modules for economists: Classroom Experiments; Context-Rich Problems; Cooperative Learning; Documented Problem Solving; Effective Use of Classroom Response Systems; Interactive Lecture Demonstrations; Interactive Lectures; Interdisciplinary Approaches to Teaching; Just-in-Time Teaching; Service-Learning; Teaching with Cases; Teaching with Computer Simulations; Spreadsheets Across the Curriculum; Student Research; Using Media to Enhance Teaching and Learning; and Quantitative Writing.

Each module contains a general description of the pedagogical method, summaries of research demonstrating student learning gains, classroom implementation guides, and a library of economics-based examples that illustrate the teaching method in action. In addition, each module includes a process for faculty to contribute new teaching examples. This paper provides an overview of the project, describes existing and planned pedagogical resources, and outlines ways that economics instructors can benefit from, as well as contribute to, these resources.

Note: *The authors wish to acknowledge the contribution of Paul Grimes, College of Business and Industry, Mississippi State University, who conducted the web survey discussed in section 7 of the paper. Paul is one of two external evaluators included in this NSF project.*

1. An Overview of the *Starting Point* Project

National surveys conducted over the past decade verify that economists continue to rely heavily on lecture-style teaching pedagogy, an instructional format that, according to Becker and Watts (1998b, p. 4), has been “established by convenience, custom, and inertia rather than efficiency or, especially, by what represents effective teaching practices in today’s undergraduate curriculum.”¹ With few exceptions, science, technology, engineering and mathematics (STEM) disciplines are moving more quickly than economics to supplement or replace lecture-based instruction with teaching methods that more actively engage students in the learning process.² Physics education, in particular, has led the effort to develop more interactive teaching methods, in the process developing a rich, cumulative knowledge base of effective teaching strategies and curricular resources theoretically grounded in the learning sciences and empirically tested in the classroom (Simkins and Maier, 2008). We believe that there is much to gain by making economists aware of STEM-based pedagogical innovation and promoting its adaptation and assessment in economics.

This idea is central to our development of *Starting Point: Teaching and Learning Economics* (hereafter referenced simply as *Starting Point*), a web-based pedagogic portal that provides a single source for pedagogical resources supporting undergraduate economics instruction. Building on past National Science Foundation (NSF) investment in pedagogical innovation in the STEM disciplines, *Starting Point* highlights a variety of research-based teaching innovations that can be readily adapted to economics instruction. The *Starting Point* site will make it easier for economists to learn about teaching innovations both within and beyond their discipline and provide them with the tools to begin integrating and assessing these innovations in their own classrooms. Additionally, *Starting Point* encourages faculty members to share their own pedagogic examples, creating a dynamic teaching and learning resource that will continue to grow and develop over time.

The *Starting Point* site not only serves as a repository for pedagogical resources, but also as a guide to more intentional and reflective teaching informed by learning science research and classroom practice. Each pedagogy highlighted in *Starting Point* includes not only a description of the pedagogic practice, but also research-based justification for the teaching strategy and suggestions for effective classroom use that directly address critical student learning areas such as expert-novice learning, misconceptions, transfer of learning, and metacognition.³ *Starting Point* encourages instructors to think carefully about student learning objectives and what pedagogic practices can help students achieve those objectives, both in terms of economics and more generally. That is, the pedagogic practices highlighted in *Starting Point* are more than simple how-to’s or teaching tips; they represent and illustrate intentional educational processes grounded in an understanding of how students learn.

¹ See also Becker and Watts (1996, 1997, 1998a, 2001, 2007), Siegfried, et. al., (1996), and Benzing and Christ (1997).

² One notable exception is the growing use of economic experiments for classroom instruction.

³ These are four critical areas highlighted in *How People Learn: Brain, Mind, Experience and School* (2000), a concise but comprehensive summary of classroom-applicable research findings from the learning sciences over the past thirty years.

The long term goal of this *Starting Point* project is to enhance student learning in economics, taking advantage of existing efforts in other disciplines and research findings from the learning sciences. Key to achieving this goal will be how the project supports development of new learning materials, introduction of teaching strategies to economics, enhancement of faculty expertise, implementation of educational innovations, and creation of a community of teacher-scholars. The description that follows demonstrates how the project is dedicated to each of these components, from its foundations through to its deliverable products.

2. The Foundations of the *Starting Point* Project: Building on Previous Work

Starting Point builds on a variety of previous projects focused on adapting pedagogical innovations initially developed in other disciplines, disseminating classroom-tested teaching practices, and promoting a shared interdisciplinary teaching commons.

Adapting pedagogical innovations across disciplines. Over the past decade Mark Maier and Scott Simkins have been exploring the adaptation and adoption of STEM-based teaching innovations in economics through a series of NSF-funded research projects. Their initial work (DUE 00-88303) explored the adaptation of Just-in-Time Teaching (JiT) in economics (Simkins and Maier, 2009, 2004), while a second project (DUE 04-11037) examined the applicability of a broader base of pedagogic practices for economics instruction, including context-rich problems (Heller *et al* 1992), interactive lecture demonstrations (Sokoloff *et al* 1997) and peer instruction (Mazur 1997). *Starting Point* provides an opportunity to make economists aware of these (and other) pedagogical innovations, which otherwise might remain unknown because of their development outside of economics. Because economics students encounter many of the same learning challenges as their peers in the STEM disciplines (e.g. developing facility with multiple representations of theoretical concepts, analytical problem solving, conceptual modeling, and transfer of concepts from one setting to another), we believe that these pedagogical practices can successfully enhance student learning in economics in the same ways that they have in STEM disciplines. The interdisciplinary nature of the *Starting Point* project is a natural outgrowth of these earlier projects.

Disseminating interactive teaching practices. During the past six years, the NSF-funded Teaching Innovations Program (TIP) in economics (DUE 03-38482) provided over 300 instructors with an opportunity to learn about innovative pedagogies through workshops, mentored classroom implementation, and classroom-based scholarship of teaching and learning (SoTL).⁴ Historically, most scholarship on economic education has required formal presentation of quantitatively estimated impacts of pedagogical changes on student learning. *Starting Point* is specifically designed to enhance the shared understanding of teaching practice by providing a venue for instructors to share their work at *all* stages of development, including reflective enhancement of existing courses and formative evaluation of student learning. Moreover, *Starting Point* encourages the submission of classroom examples that illustrate the use of pedagogical practices highlighted on the site.

⁴ The TIP program is described at: <http://www.vanderbilt.edu/AEA/AEACEE/TIP/TIP.htm>

Promoting the teaching commons. In their reevaluation of the economics major in light of liberal education values, Colander and McGoldrick (2010) identify the need for a “teaching commons” to promote a shift from current dominant lecture teaching methods to more active pedagogic practices. Such a teaching commons is “a conceptual space in which communities of educators committed to inquiry and innovation come together to exchange ideas about teaching and learning and use them to meet the challenges of educating students.” (Huber and Hutchings, Carnegie Foundation for the Advancement of Teaching, 2005) The “teaching commons” Huber and Hutchings envision serves as a public space for sharing – and commenting on – teaching examples, techniques, and ideas. Unlike journal publications, which require rigorous proof of student learning, a teaching commons provides a collection of documented examples, organized through an intentional framework, illustrating “pedagogy in action.” Such examples include comprehensive descriptions of learning objectives, instructional context, required pre-requisite knowledge, and assessment guidance, in addition to a description of the activity. *Starting Point* seeks to function as a type of “teaching commons” for economics, where instructors come to the site not only to benefit from others’ examples, but also to contribute their own as part of a growing library of pedagogical examples focused on economics instruction.

3. The *Starting Point* Pedagogical Portal: Building and Revising a Collection of Reusable Pedagogic Modules

Highlighting the interdisciplinary nature of this project, the *Starting Point* pedagogic portal has been developed in collaboration with the Science Education Resource Center (SERC) at Carleton College. Over the past decade SERC has developed a flexible content management system that makes pedagogical *modules* developed by SERC partners accessible on the web via a pedagogical database. Originally developed for the geosciences, this pedagogic database now supports a discipline-generic *Pedagogy in Action* web portal that includes pedagogic modules for over 40 teaching methods.⁵ Each pedagogic module includes information about the teaching method, theoretical and empirical support for its use, detailed guidance on its use in the classroom, references, and a library of examples of the teaching method. The pedagogic modules are part of a central pedagogic database that serves out pedagogic content dynamically through a *Pedagogic Services* framework.⁶

The *Starting Point* project uses the underlying module framework developed by SERC, but focuses on sixteen teaching practices that we believe are most applicable to economics. Nine of the sixteen pedagogic modules we are developing in this project are new and will become part of SERC’s comprehensive pedagogic library, while seven involve extensive revisions of existing SERC pedagogic modules, which will replace the current SERC modules in the library. In addition, for *each* of the modules we are developing a section, “Using X in Economics”, where X denotes the pedagogy being highlighted in the module. Thus, each module contains both generic information about a specific teaching method as well as discipline-specific information about that teaching method’s use in economics.

⁵ See <http://serc.carleton.edu/sp/index.html> and <http://serc.carleton.edu/sp/library/pedagogies.html>.

⁶ Find out more about SERC’s NSF-supported *Pedagogic Service* project, part of the National Science Digital Library (NSDL), at: <http://serc.carleton.edu/sp/service/index.html>.

The modular framework of the underlying content management system developed by SERC means that pedagogic modules can be simultaneously *shared* across a variety of portals. That is, the same pedagogic content developed for the *Starting Point* project can be re-used by the *Pedagogy in Action* site and other SERC *Pedagogic Service* partners.⁷ For example, the same content from the cooperative learning pedagogic module can simultaneously appear in multiple web portals, as illustrated in Figure 1 on the following page. In addition, the modular framework of the underlying pedagogic database, in conjunction with the new “Using X in Economics” module component in the *Starting Point* site, makes it easy for other disciplines to create their own pedagogic portals. For example, a discipline such as sociology could create its own pedagogic portal by re-using the generic pedagogic resources from the general module library and substituting its own “Using X in Sociology” module component for discipline-specific pedagogical information. Thus, the *Starting Point* project is advancing SERC’s role as a primary pedagogic resource provider in two ways: (1) By contributing new pedagogic modules to SERC’s pedagogic resource library, our project is making available new pedagogic resources to multiple portals; and (2) By developing a discipline-based pedagogic portal that includes both discipline-generic pedagogic information as well as a “Using X in Economics” module component, the *Starting Point* portal provides a framework that makes it relatively easy for other disciplines to develop their own pedagogic portals.

The sixteen pedagogic modules included in the *Starting Point* portal, along with a timeline of their planned availability and the economists coordinating development of the modules, are listed below.

Fall 2009

- **Context rich Problems** - Joann Bangs, College of St. Catherine
- **Just-in-Time Teaching** - Scott Simkins, North Carolina A&T State University
- **Quantitative Writing** - Steven Greenlaw, University of Mary Washington
- **Teaching with Cases** - Ann Velenchik, Wellesley College
- **Cooperative Learning** - KimMarie McGoldrick, University of Richmond

Spring 2010

- **Classroom Experiments** - Sheryl Ball, Virginia Polytechnic Institute and State University
- **Teaching with (Computer) Simulations** - Betty Blecha, San Francisco State University
- **Effective use of Classroom Response Systems** - Joseph Calhoun, Florida State University
- **Interactive Lecture Demonstrations** - Mark Maier, Glendale Community College
- **Student Research** - Elizabeth Perry-Sizemore, Randolph College

⁷ For a list of current SERC Pedagogic Service partners, see:
<http://serc.carleton.edu/sp/service/partners.html>.

Figure 1: The Power of Sharing One Module, Three Simultaneous Instances

Cooperative Learning Module - Pedagogy in Action



Pedagogy in Action
the SERC portal for Educators

Pedagogy in Action > Library > Cooperative Learning

Cooperative Learning

This material was originally created for [Starting Point: Introductory Geology](#) and is replicated here as part of the [SERC Pedagogical Service](#).
Developed by [Rebecca Teed](#), [John McDaris](#), and [Cary Roseth](#)

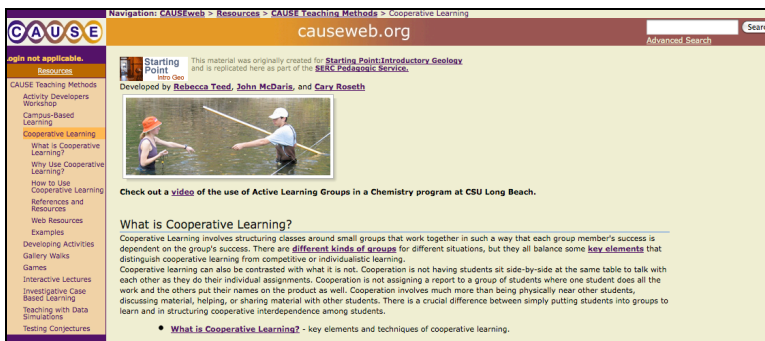
Check out a video of the use of Active Learning Groups in a Chemistry program at CSU Long Beach.

What is Cooperative Learning?
Cooperative Learning involves structuring classes around small groups that work together in such a way that each group member's success is dependent on the group's success. There are [different kinds of groups](#) for different situations, but they all balance some [key elements](#) that distinguish cooperative learning from competitive or individualistic learning.

Cooperative learning can also be contrasted with what it is not. Cooperation is not having students sit side-by-side at the same table to talk with each other as they do their individual assignments. Cooperation is not assigning a report to a group of students where one student does all the work and the others put their names on the product as well. Cooperation involves much more than being physically near other students, discussing material, helping, or sharing material with other students. There is a crucial difference between simply putting students into groups to learn and in structuring cooperative interdependence among students.

- [What is Cooperative Learning?](#) - key elements and techniques of cooperative learning.

Cooperative Learning Module - CAUSEweb.org



CAUSE Navigation: [CAUSEweb](#) > [Resources](#) > [CAUSE Teaching Methods](#) > [Cooperative Learning](#)

causeweb.org

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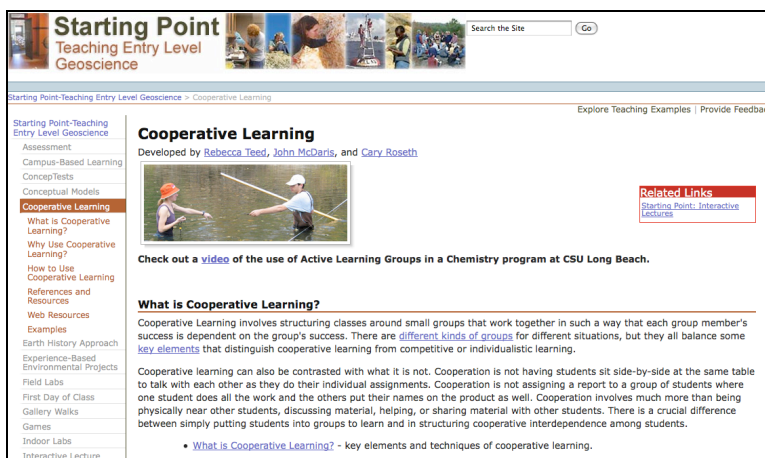
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- [What is Cooperative Learning?](#) - key elements and techniques of cooperative learning.

Cooperative Learning Module Starting Point: Teaching Entry Level Geoscience



Starting Point
Teaching Entry Level Geoscience

Starting Point-Teaching Entry Level Geoscience > [Cooperative Learning](#)

Cooperative Learning
Developed by [Rebecca Teed](#), [John McDaris](#), and [Cary Roseth](#)

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Related Links
[Starting Point: Introductory Geology](#)
[Interactive Lectures](#)

Fall 2010

- **Interdisciplinary Approaches to Teaching** - Art Goldsmith, Washington and Lee University
- **Service-Learning** - Andrea Ziegert, Denison University
- **Spreadsheets across the Curriculum** - Miles Cahill, College of the Holy Cross
- **Documented Problem Solving** - Linda Wilson University of Texas-Arlington
- **Using Media to Enhance Teaching and Learning** - Dirk Mateer, Penn State University
- **Interactive Lectures** - Gail Hoyt, University of Kentucky

4. Common Pedagogic Module Design


Each pedagogic module in the *Starting Point* portal includes the following components, which appear as separate sets of web pages on the site, linked using a common navigation menu:

- (a) Module introduction
- (b) Description of the pedagogic practice
- (c) Effectiveness in promoting student learning
- (d) How to implement the pedagogic practice
- (e) Using the pedagogy in economics courses
- (f) Examples of the pedagogy being used in economics
- (g) References/Resources

The introductory page for one of the modules included in the *Starting Point* site, context-rich problems, is illustrated in Figure 2 on the following page. The figure shows the page, currently in the development stage, as part of the *Pedagogy in Action* site; when complete it will be included in the *Starting Point* portal. Note the left-hand-side navigation menu that includes each of the components listed above. A similar menu appears on every web page within the *Starting Point* site, making it quick and easy for visitors to the site to find the information that they are seeking from anywhere in a module. Like the illustrated menu, the *Starting Point* navigation menu will also include the full library of modules available at the site.

The goal of each pedagogic module is to provide the full range of information that a faculty member needs to successfully implement a specific teaching method. The common modular format developed and evaluated by SERC makes it easy for instructors to browse across multiple teaching methods. As noted previously, each module includes both discipline-independent content (related to the general pedagogical practice) and discipline-specific issues and examples illustrating how the pedagogical practice is used in economics.

Figure 2
Top-level Page – Context-Rich Problems Module
(Development Version)



Pedagogy in Action

the SERC portal for Educators

[Pedagogy in Action](#) > [Library](#) > [Context-Rich Problems](#)

Pedagogy in Action

- Library
 - Academic Civic Engagement
 - ...click to see 7 more...
- Conceptual Models
- Context-Rich Problems**
 - What are Context-Rich Problems?
 - Why Teach with Context-Rich Problems?
 - How to Teach with Context-Rich Problems
 - Teaching Economics with Context-Rich Problems
 - Examples
 - References
- Cooperative Learning
- Course Design
 - Creating Science Professionals through Communications Curricula
- Earth History Approach
- Engaging Students with Visual Rhetoric
- Experience-Based Environmental Projects
- Field Labs
- First Day of Class
- Gallery Walks
- Games
- Guided Discovery Problems
- Guided Inquiry
- Indoor Labs
- Interactive Lecture Demonstrations
- Interactive Lectures


Context-Rich Problems

Developed by [Joann Bangs](#), St. Catherine University
Enhanced by [Jennifer Docktor](#), University of Minnesota, [Ken Heller](#), University of Minnesota, [Brian Peterson](#), Central College and [Rochelle Ruffer](#), Nazareth College

What are Context-Rich Problems?

Context-rich problems are short realistic scenarios giving the students a plausible motivation for solving the problem. The problem is a short story (beginning with "you") in which the major character is the student. Context-rich problems are more complex than traditional problems, reflecting the real world, and may include excess information, or require the student to recall important background information.

[► Show an example of a context-rich problem](#)



[learn more about the characteristics of context-rich problems](#)

Why Teach with Context-Rich Problems?

Context-rich problems offer students opportunities to develop skills that extend beyond the problem in the question. Students learn problem-solving techniques they can apply in real life situations. By engaging in this type of problem solving, students develop expert-like thinking in the discipline.

[learn more about the advantages of context-rich problems](#)

How to Teach with Context-Rich Problems

As you prepare to use context-rich problems, you will need to consider how to select or create an appropriate problem, implement context-rich problems in your class and assess what your students have done. There are [context-rich problems ready-to-use](#) for a number of topics, or you may wish to [create your own context-rich problems](#). Note that students accustomed to working with traditional textbook questions will benefit from help in [developing an effective problem-solving strategy](#) as they learn to work with context-rich problems.

[learn more about selecting, implementing and assessing context-rich problems](#)

Examples of Teaching with Context-Rich Problems

Ready to use examples from Economics and Physics are available. Reviewing examples from your own and other disciplines helps to reinforce the characteristics of a context-rich problem and can help you develop your own context-rich problems.

[See examples of context-rich problems](#)

References

A wide range of sources including [journal articles and web sites](#) are available.

Below we briefly describe the purpose and content of each module component, which are common across all pedagogic modules.

(a) Module introduction. The module introduction page serves as a table of contents to the module and contains a concise definition of the pedagogical practice as well as a brief summary of (and links to) the five remaining components.

(b) Description of the pedagogic practice. Designated as the “what is?” page, this component of the module describes the teaching method and its distinguishing features. This section answers questions such as:

- What are the central attributes of this method?
- What differentiates this teaching method from others?
- What conditions are optimal for this teaching method? (Class size, learning environment, etc)
- Are there any required resources or technology (or other traits of a logistical nature)?

(c) Effectiveness in promoting student learning. This is designated as the “why use?” page and describes when and why the method is particularly effective, with references to theoretical and empirical educational (general and economics-specific) and learning sciences research. A critical role of this page is to create a bridge between practical faculty interest in effective teaching methods and educational research that provides critical insight into teaching and learning outcomes (and how this pedagogy can help achieve those outcomes). Thus, this page provides answers to questions such as:

- What are the potential learning outcomes promoted by this teaching method?
- What learning sciences areas (e.g. misconceptions, expert-novice learning, transfer of learning, metacognition) does this teaching method address?
- What is the potential for assessment of learning outcomes (using this teaching method)?
- What does current research (generally or discipline-based) have to say about this teaching method?
- What is the evidence (qualitative and/or quantitative) that this methods works? Under what circumstances does it enhance student learning? Why does it enhance learning?

(d) How to implement the pedagogic practice. This “how to” page, the most popular destination for instructors according to research conducted by SERC, describes how to use the method effectively and includes tips for the instructor. This section works together with the specific examples to enable the instructor to use the method effectively. Instructions, framing, and tips that apply to all examples are summarized at this level in the module, providing critical assistance for novice users. SERC analysis of existing modules includes user comments on the importance of this section in providing enough guidance to generate confidence to try the method, clear instruction on

where/how to start with the method, and a framework for thinking about full implementation of the teaching method. Thus, this section is generally prescriptive and includes:

- step-by-step instructions
- formative assessment activities to assess student learning
- list of challenges
- tips for first time use
- classroom management techniques
- suggestions for types of content best suited for this method

(e) Using the pedagogic practice in economics. This component is a new feature of the pedagogic modules being developed as part of this project. This page goes beyond the generic pedagogic advice included in the “how to use” page, and provides discipline-specific advice on how this pedagogy can be used most effectively within the discipline. Thus, this page provides answers to questions such as:

- Why makes this pedagogy especially useful in economics? Under what conditions? For what concepts, topics, ideas, and skills?
- How can this pedagogy be used to assess and address student pre/misconceptions in economics? To help economics students transfer learning to new situations?
- How might this pedagogy be used to help overcome bottlenecks in students’ learning of economics concepts?

(f) Discipline-based teaching examples. This page contains links to a collection of examples illustrating how the pedagogic practice can be used in economics courses. The examples provide a bridge between general module content and the actual day-to-day teaching experience of economics instructors. They make the module relevant and understandable by illustrating how to use the pedagogy in an actual class. Each example is intended to be self-contained, providing full instructions on how to implement the example, along with any required materials and teaching tips. When complete, each module will contain a minimum of ten (10) examples, although we expect this number to grow as *Starting Point* users submit new examples to be posted on the site.

Ultimately, each teaching method will have a collection of examples that provide a broad range of ideas for using the method in economics courses. A template for developing examples/activities is used to ensure uniformity and completeness of the material (e.g. handouts and worksheets, instructions, instructor notes) and to ensure that examples can be easily found through the use of common web search engines, as well as through the *Starting Point* site itself. Each example includes a title, author contact information, a brief summary of the exercise, content and concepts that students should learn from the exercise, context for use (educational level, class size, institution type, time needed for the exercise, background skills needed by students, etc), a narrative describing the mechanics of the exercise, materials needed to implement the exercise, teaching notes addressing common problems or exercise

extensions and providing tips, formative and summative assessment activities, and references.

(g) References and Resources. This section provides references to resources cited throughout the module, as well as links to other resources related to the module's specific teaching method.

5. *Starting Point* and Existing Pedagogical Resources in Economics

Surprisingly, there is no single resource for college-level economics instructors interested in exploring existing or new pedagogical techniques in their courses. As a result, most economists practice their craft in relative isolation. The extent to which techniques and examples are publicly discussed is typically limited to formal presentations at disciplinary conferences, refereed journal articles, and special book volumes. Although there is a long-standing tradition of economics education and a few general online resources on pedagogy available to economics instructors, these resources are widely scattered, limiting further adoption.⁸ The result is an underutilization of existing resources and little cumulative impact on teaching practices in the discipline.

In addition, currently available resources typically stand in isolation from other disciplines and from research on student learning, further limiting their effectiveness. Consequently, economists are often unaware of educational developments within their field (or across disciplines) and lack the deep sense of cumulative knowledge building that characterizes some STEM disciplines, in particular physics education research. *Starting Point* brings together research-based pedagogical resources for economics instructors in a purposeful and organized manner that complements existing pedagogical resources and allows economics instructors to share successful examples of pedagogical practice with their peers.

Taking a broader view of student learning. *Starting Point* pedagogic modules take a broader view of practice than most pedagogical resources in economics. In addition to promoting learning of economic content knowledge, pedagogies featured in *Starting Point* are explicitly linked to research on student learning, such as that summarized in *How People Learn* (Bransford, Cocking, and Brown, 2000). For example, the module on Just-in-Time Teaching (JiTT) features a discussion of how this pedagogy can help uncover and address student mis/preconceptions; the module on context-rich problems links this pedagogic practice to research on knowledge transfer; and the module on interactive lecture demonstrations illustrates how this pedagogy intentionally builds students' metacognitive skills. Each of these learning challenges – mis/preconceptions, transfer of learning, and metacognition – plays a central role in learning sciences research. The *Starting Point* modules help to inform economists of this research and how it can be intentionally used to produce deep and durable student learning.

⁸ See, for example, the *Journal of Economic Education* and its online section, *JEE Online* [<http://www.heldref.org/pubs/jeece/online-accepted.html>]; *Resources for Economists* [<http://rfe.org/>]; the Social Science Research Network's (SSRN) *Economics Research Network Educator: Courses, Cases and Teaching Abstracts* [<http://ssrn.com/ern/index.html>] and the Higher Education Academy's (HEA) *Economics Network* (United Kingdom) [<http://www.economicsnetwork.ac.uk>].

Learning from other disciplines. *Starting Point* pedagogic modules also cross discipline boundaries, enabling economic educators to learn from research advances and pedagogical innovations across the academy, while at the same time making it possible for economists to share their own insights with educators in other fields, most notably with regard to classroom experiments and the use of quantitative assessment tools to carry out discipline-based education research

6. *Starting Point* Benefits for Economics Instructors

We started this paper by arguing that economists are moving more slowly than their colleagues in STEM disciplines in adopting and adapting new pedagogical practices grounded in both classroom and learning-sciences research. Why the reluctance to implement new teaching innovations, even when evidence suggests that the new practices are likely to enhance student learning? From an economic perspective, adopting new teaching methods is a costly decision. It takes time to learn about new pedagogies, adjust classroom teaching practices, and prepare activities and assessments that are consistent with the new practices. These marginal costs are real and up-front and take away from other alternative activities, such as research. At the same time, the expected marginal benefits, in terms of student learning gains (ignoring the intrinsic benefits of learning about potentially more effective teaching strategies) are uncertain, in the future and accrue to other parties. Thus, it appears that for most people, the odds are stacked against pedagogical change unless the marginal cost of changing teaching methods can be reduced or the expected marginal benefit increased.

So, given the low probability of changing pedagogies (as illustrated by the discipline's continuing reliance on lecture methods), why come to the *Starting Point* site in the first place? On the cost side, *Starting Point* offers a one-stop pedagogic portal, saving busy economics instructors valuable time in searching for information on effective teaching pedagogies and high-quality classroom examples. For instructors seeking ready-to-use material for a specific pedagogic technique that can be incorporated into their next class, the example pages – searchable by content area – provide a full set of resources, including student handouts and instructor guides, as well as information about the appropriate class size, time needed to complete the activity, and level of prerequisite knowledge. For instructors who are exploring alternative pedagogies, the *Starting Point* navigation provides a common format (what is? why use? how to?) that reduces the learning curve associated with finding and evaluating the appropriateness of a wide range of techniques. This structure, tested and proven effective by SERC, has led over one-third of all college-level geoscience instructors to make use of the pedagogic modules in the *Starting Point: Teaching Entry-Level Geoscience* pedagogic portal (Iverson 2009).

In terms of increasing the marginal benefit of adopting new teaching methods, the *Starting Point* site provides a focused set of pedagogic practices that have been shown to be effective at enhancing student learning. That is not surprising, given the grounding of these practices in research from the learning sciences. Of course, adopting or adapting these pedagogies for use in economics instruction provides no guarantee of increased student learning; rather, adoption of these methods and assessment of student learning outcomes provides additional opportunities for scholarship and a better understanding of when

these pedagogies are most effective. In addition, the opportunity to contribute peer-reviewed examples to the *Starting Point* site provides additional forms of scholarship.

7. When We Build It, Will They (You) Come?

It's one thing to point out the benefits of *Starting Point* to potential users, but quite another to get users to (a) actually visit the site, and (b) use the resources located there. In an attempt to gain insight about potential usage of the *Starting Point* site, Paul Grimes, one of two external evaluators for the *Starting Point* project, conducted a web-based survey in fall, 2009 with multiple online communities of economic educators likely to be early adopters of *Starting Point* resources.⁹ The survey focused on economics instructors' teaching practices, familiarity with teaching pedagogies included in the *Starting Point* project, openness to pedagogical experimentation, and barriers to adopting alternative pedagogical practices. The 135 respondents are primarily male (61%), experienced (50% with 15 or more years teaching experience, and 36 % with 20 or more years), and hold positions at public institutions (70%) with a wide range of admission standards (16% exclusive or highly selective and 31% with open admissions). As expected, the respondents are actively engaged in pedagogic reflection: 26% frequently discussed teaching methods with departmental colleagues and 37% had attended five or more teaching workshops in the past decade.

Consistent with discipline-wide surveys conducted over the last decade (Becker and Watts, 2007), Grimes' survey results indicate significant use of instructor-centered, lecture-based teaching practices. However, 20% of survey respondents reported that they were dissatisfied with their "current overall approach to teaching undergraduate economics," citing reasons such as "chalk and talk loses many more students than it enthralls," or "I sometimes question if what I am doing is the best way." The survey results also revealed a striking drop-off when moving from knowledge of specific teaching techniques, to classroom experimentation, to full adoption. As shown in Table 1, respondents reported being familiar with a wide range of the sixteen pedagogies included in the *Starting Point* project. However, with the exception of classroom experiments, adopted by 58% of respondents, no technique was widely used by more than one-half of the respondents. Overall, about half of the survey respondents indicated that they had experimented with different pedagogies during the past five years.

⁹ The online communities invited to participate in the survey included the tch-econ listserv, NAEchat listserv, Teaching Innovations Program (TIP) participant listserv, and Economics for Teachers blog.

Table 1
Familiarity and Use of Pedagogic Practices (135 Survey Respondents)

Pedagogic Practice	Familiar	Experimented	Adopted
Context Rich Problems	50%	33%	25%
Just-In-Time Teaching	26%	10%	4%
Quantitative Writing	20%	14%	11%
Teaching with Cases	74%	40%	22%
Cooperative Learning	73%	61%	47%
Classroom Experiments	93%	77%	58%
Computer Simulations	60%	35%	14%
Personal Response Systems	59%	21%	12%
Guided Inquiry	27%	11%	6%
Student Research	68%	50%	36%
Service Learning	51%	11%	5%
Spreadsheets Across the Curriculum	11%	6%	2%
Documented Problem Solving	14%	8%	5%
Media-based Teaching	45%	34%	26%
Interactive Lecturers	50%	34%	31%
Interdisciplinary Approaches	45%	23%	17%

The survey results suggest that a significant number of economists are open to pedagogical changes in their classroom and could therefore benefit from the resources provided at the *Starting Point* site. So why don't more instructors actually adopt one or more of these innovative pedagogical practices that have been shown to improve student learning? As noted in the last section, adopting new pedagogical practices is costly. Echoing that sentiment, nearly 40% of survey respondents believe that significant barriers exist for economists to integrate alternative pedagogies in their classrooms. Most cited among those barriers: (1) the opportunity cost of time to learn and adopt, (2) perceived trade-offs with topic coverage, (3) inertia, (4) lack of incentives for change, and (5) textbook and other course materials not readily adaptable to changes in pedagogy. However, as we also pointed out in the previous section, one of the primary objectives of the *Starting Point* site is to reduce instructors' costs associated with learning how to implement effective new teaching practices in their economics courses, thereby lowering the marginal cost of adoption.

As shown in Table 2, survey respondents cite a wide range of sources from which they learn about alternative teaching methods. Perhaps not surprisingly, a majority identified colleagues in their discipline (67%), disciplinary workshops (62%), and disciplinary professional conferences (51%) as sources of information about new pedagogic practices. Interestingly, while respondents identified disciplinary workshops (27%) and their colleagues (21%) as the most beneficial sources of information on alternative teaching methods, they also ranked general teaching and education conferences (15%) higher than disciplinary professional conferences (8%) as the best sources of innovative pedagogical information.

One notable challenge for this project is the finding that only 39% of respondents indicated that they used the internet and web-based searches for information on pedagogical methods, with only 5% indicating that they were the most beneficial source. By bringing together a broad set of pedagogical resources in one web-based portal, we believe that the *Starting Point* site can change this. Creating a one-stop web-based site for high-quality pedagogical information will reduce the cost of locating and sorting through materials that are currently scattered across various sites, enhancing the probability of adoption. The survey results suggest that this is more than wishful thinking; when asked directly, 68% of respondents indicated that they would definitely visit the *Starting Point* site and 27% indicated a desire to contribute teaching examples to the site.

Table 2
Sources of Information on Alternative Teaching Methods
(135 Survey Respondents)

Source	Normal Source	Most Beneficial
Colleagues in Discipline	67%	21%
Colleagues in Other Disciplines	49%	6%
Internet and Web-based Searches	39%	5%
Internet-based Discussion Groups	25%	1%
Disciplinary Workshops	62%	27%
Disciplinary Professional Conferences	51%	8%
Teaching and Education Conferences	33%	15%
Disciplinary Professional Journals	31%	2%
Interdisciplinary Teaching and Education Journals	21%	2%
Impossible to Say; Sources are Interconnected		7%

8. Ways to Contribute to *Starting Point*

The *Starting Point* project seeks to engage the community of economics educators and promote the development of a teaching commons in multiple ways. We need your help to make *Starting Point* a dynamic resource that continues to provide value to economics instructors.

Feedback on module content. In particular, we seek feedback on module content. The community of economic scholars has much to contribute to the development of existing pedagogic modules and we want to engage their expertise. Each module includes a form that allows visitors to the site to provide constructive feedback and suggestions for enhancement.

Example submission. We are also interested in having instructors share their expertise through the submission of examples illustrating the use of teaching strategies included in the *Starting Point* site. Engaging in the scholarship of teaching and learning by making the private efforts of faculty more public will move the discipline more quickly away from the dominance of the lecture mode of teaching. To ensure the quality and adaptability of submitted examples, contributors will be asked to provide information for each of the example components described above using an online form. Example submissions will be reviewed before being accepted for inclusion on the *Starting Point* site.

Ideas for new modules. The *Starting Point* project is scheduled to have 16 pedagogic modules developed upon completion. Clearly, this is not an exhaustive list of potential modules and we encourage the community of scholars in economics education to submit ideas for new modules. This expansion of potential modules should not be limited to techniques well known in economics or in the U.S. For example, *concept tests* are well developed in a variety of STEM disciplines but are largely unknown in economics; similarly, the topic of *threshold concepts* is widely discussed in the United Kingdom, but remains a minor topic of interest in the U.S.

9. Summary

Starting Point will serve as a tool for building an interdisciplinary community of teaching scholars, although the primary focus will be on economics. The interdisciplinary focus of *Starting Point* and its development are features of this project that promise to stimulate broad dissemination of pedagogical innovations and create new interdisciplinary dialogues on pedagogical research, assessment procedures, and student knowledge-building. No other resource of this type is currently available to economists. We believe that economists can benefit from the valuable insights gained from decades of educational research in traditional STEM fields, which often focuses on student learning challenges that are common across a wide variety of disciplines.

As indicated in the introduction, we hope to achieve four primary objectives through the development and implementation of *Starting Point*.

- **Creating new learning materials and introducing innovative teaching strategies.** A key contribution of this project is the development of nine new pedagogical modules and enhancement of seven existing modules in SERC's pedagogic library. Having both general knowledge of effective teaching pedagogies

and an extensive collection of discipline-specific examples available in one web-based resource will draw economists to the *Starting Point* site and reduce the time cost of integrating new teaching methods in their courses.

- **Developing faculty expertise.** *Starting Point* will broaden economists' knowledge of effective teaching practices and encourage adaptation and implementation of teaching innovations in their own courses. In addition, *Starting Point* will make economists more aware of fundamental research findings from the learning sciences and the way that STEM researchers intentionally link both discipline-based educational research and pedagogical innovations to these findings to produce a cumulative knowledge base of pedagogical content knowledge, effective teaching practices, and curricular reform.
- **Implementing educational innovations.** Dissemination of effective, research-based teaching practices and implementation of these practices by economists is at the heart of the *Starting Point* project. Our aim is to make it easier for economics faculty to learn about and implement teaching strategies that previous research has shown to be effective and to encourage adoption of these strategies. We hope to spur ongoing educational innovation in economics, at both the individual and discipline level, with the goal of moving the distribution of teaching practices in the field away from "chalk and talk" and toward more "active-student-engagement."
- **Building a community of teacher-scholars.** *Starting Point* will serve as a valuable vehicle for promoting scholarly teaching and scholarship on teaching and learning by providing an outlet for educators to share discipline-specific examples. Assessment of the effectiveness of the SERC module system suggests that it has successfully engaged users who ultimately contribute additional examples to pedagogical modules.

The long-term goal for this project is to improve student learning in economics through recognition and implementation of effective, research-based teaching methods drawn from both inside and outside the economics discipline. In addition, we believe that increased knowledge and adoption of educational innovations will stimulate increased pedagogical assessment.

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