

THE IRIS CENTER

FOR FACULTY ENHANCEMENT

On-line course enhancement modules and materials
for use in the preparation of education professionals

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Abstract

A growing number of students with disabilities receive their education in general education classrooms. At the same time, general education teachers have consistently voiced apprehension about their ability to adequately meet the educational and behavioral needs of these students. The IRIS (**I**DEA and **R**esearch for **I**nclusive **S**ettings) Center for Faculty Enhancement was established by the U.S. Department of Education's Office of Special Education Programs to address these concerns. The IRIS Center develops and provides course enhancement materials related to the needs of special education students for non special education (e.g., general education) faculty to use in college-level teacher education courses. These resources are available on the Internet free of charge at <http://iris.peabody.vanderbilt.edu>. This paper describes the work of the IRIS Center for Faculty Enhancement. The underlying cognitive theory of the IRIS *STAR Legacy* modules is described as well as preliminary evaluation data of students' perceptions of their own learning after working through some of the IRIS modules. Each of the IRIS resources (i.e., the case study sets, activities, information briefs, and *Web Resource Directories*) is then described.

The IRIS Center for Faculty Enhancement: On-line course enhancement modules
and materials for use in the preparation of education professionals

A growing number of students with disabilities attend their neighborhood schools and receive their education alongside classmates without disabilities. The responsibility for the delivery of an appropriate education to every student with special needs no longer rests solely, or even mostly, with special education teachers. At the same time, general education teachers, administrators, counselors, and other school personnel have consistently voiced apprehension about their ability to adequately meet the educational and behavioral needs of these students (Keefe & Moore, 2004; Praisner, 2003). The IRIS (**I**DEA and **R**esearch for **I**nclusive **S**ettings) Center for Faculty Enhancement (Project # H325F010003) was established by the U.S. Department of Education's Office of Special Education Programs¹ to address these concerns. The mission of the IRIS Center is to help university and college faculty preparing future general education teachers, school administrators, school nurses, and school counselors (the IRIS constituent groups) to include information about the education of students with disabilities in their courses. To this end, the IRIS Center develops and provides faculty with free course enhancement materials related to the needs of special education students via the Internet. The IRIS Center makes available to instructors web-based modules, case study sets, and other course supplements that are easily incorporated into college classes. In summary, the objective of the IRIS Center is to ensure that all school personnel, not just special education teachers, are well prepared to provide an appropriate education to students with disabilities. In addition, teachers, parents, and others interested in topics related to the academic needs of students with disabilities can access these materials from the IRIS website <http://iris.peabody.vanderbilt.edu>.

In creating these materials, the guiding philosophy is to develop content based on practices that have been demonstrated through research to improve the outcomes of students with disabilities participating in inclusive settings. In addition, the content and format of the web-based modules follow the “How People Learn” (HPL) model, a cognitive research-based description of how best to design highly effective learning environments (Bransford, Brown, & Cocking, 1999).

In this paper, we first summarize the guiding principles and underlying research for the HPL framework and the *STAR Legacy Cycle*, the structure for IRIS modules. We then describe the other types of materials developed by IRIS and the range of topics covered by the various IRIS resources. We conclude with information on the dissemination of IRIS materials.

The “How People Learn” Framework

The “How People Learn” (HPL) framework takes the form of four overlapping lenses (see Figure 1) that can be used to analyze and enhance any learning situation (Bransford et al., 1999). Harris, Bransford, and Brophy (2002) describe the following dimensions of HPL learning environments:

1. *Learner centeredness*. Instruction is tailored, based on a consideration of learners’ prior knowledge as well as their prior experiences, misconceptions, and preconceptions about an instructional topic.
2. *Knowledge centeredness*. Issues related to what learners need to know are emphasized, along with how knowledge is structured and applied in various contexts. (This lens has implications for how instruction should be sequenced to support comprehension and use of this knowledge in new situations.)

3. *Assessment centeredness*. Frequent opportunities to monitor students' progress toward the learning goals are provided. Results are fed back to both instructors and learners.
4. *Community centeredness*. This HPL lens recognizes that students are members of multiple communities, including their classrooms, their departments, and their future professions. Opportunities encourage students and instructors to share and learn from each other.

Insert Figure 1 about here

Practical Importance: Implications for instruction

Many college faculty find it difficult to balance all four HPL lenses. For example, large lecture classes usually provide learning environments that are knowledge centered, but not learner centered. That is, the information to be learned is clear, but individual students' prior knowledge and/or experiences are not considered. In such learning environments, a sense of community (i.e., community centeredness) frequently is not promoted either. College courses also tend to lack frequent opportunities for formative assessment and subsequent content review. Summative classroom assessments often fail to capture whether students are prepared for future applications of the material or whether they are prepared to take an outside test (e.g., a licensing exam). Therefore, the *STAR Legacy* model was designed to facilitate balancing the features of learner, knowledge, assessment, and community centeredness in instructional settings.

STAR Legacy modules

Research findings demonstrate that effective instruction often introduces the lesson with an engaging challenge or scenario that encourages student inquiry (Barron et al., 1998; Cognition and Technology Group at Vanderbilt [CTGV], 1997; Duffy & Cunningham, 1996; National Research Council [NRC], 2000; Kolodner, 1997; Reiser et al., 2001; Williams, 1992). Inquiry-based instruction (e.g., problem-, project-, case-based approaches) incorporates complex sets of learning activities which run the risk of not providing integrated learning; thus leaving learners' new knowledge disconnected to the material. Because the *STAR* (*STAR* stands for "Software Technology for Action and Reflection") *Legacy* modular approach organizes learning activities into an inquiry cycle that anchors learning, it is easy to understand and is pedagogically sound (Schwartz, Brophy, Lin, & Bransford, 1999a).

IRIS Modules. The IRIS Center adopted the *STAR Legacy* learning cycle, which incorporates principles that have repeatedly been supported in educational research as important facilitators of learning, as the means to teach students preparing to become education professionals about the instruction and special needs of students with disabilities (Schwartz 1999b). Each IRIS *STAR Legacy* module has the five components shown in Figure 2 and discussed below, while also including activities designed to encourage problem solving and critical thinking.

Insert Figure 2 about here

1. A **Challenge** video introduces the module with a content specific realistic scenario, highlights the knowledge students should gain at the completion of the module, and helps answer students' often unstated question, "Why do I need to know this?" For example, in the first IRIS module on comprehensive behavior management plans, "Who's in charge?," the challenge features Ms. Rollison, a beginning teacher who is excited about her first year of teaching but has doubts about her ability to manage classroom behavior.
2. The **Initial Thoughts** component gives students the opportunity to explore what they currently know about the challenge situation, even prompting their naive ideas about the topic. By generating their ideas first, students are often more appreciative of the contrast between their initial observations and their later understanding of the challenge. In the first behavior management module (mentioned above), students are asked to write down the advice they would give Ms. Rollison to help reduce her concerns about managing students' behavior.
3. The **Perspectives and Resources** section features experts' comments, allowing students to compare their initial thoughts with the insight of the experts. Additional resources include video clips of a teaching strategy, engaging activities, or other materials to help students meet the learning objectives outlined in the module. In this behavior management module, the *Perspectives and Resources* section includes text about cultural influences on behaviors, the five components of a comprehensive behavior management plan, and audio clips from experts Drs. Michael Rosenberg of Johns Hopkins University and Lori Jackman now of George Mason University who

developed the module's content. Also included in this module is an interactive game where students sort consequences into three groups (positive, negative, or inappropriate); as students sort the consequences, they hear Dr. Rosenberg explain why the choice was correct or incorrect. The second level of the game allows students to put the negative consequences into a hierarchy, from least to most severe.

4. In the **Assessment** section, students have the opportunity to test themselves and evaluate what topics they need to study further. Assessments include homework questions, online games or quizzes, or a discussion or essay to synthesize ideas students have studied in the *Perspective and Resource* section. Students are encouraged to move between the *Perspectives and Resources* and the *Assessment* sections until they are able to solve the assessment questions and opening *Challenge*. In the module, "Who's in charge?," the *Assessment* section contains questions for students to answer about material they should have learned in the *Perspectives and Resources* section. Faculty can use these questions as they wish—for in-class discussion, a homework assignment, an opportunity for grading, for students to conduct a self-assessment of their learning, or for faculty to evaluate their methods of instruction.
5. The **Wrap Up** section concludes the module with a summary presentation of the materials in the *Perspectives and Resources* section. The *Wrap Up* also includes a re-statement of the *Initial Thoughts* questions to allow students to explicitly consider what they have learned from the module. In the first behavior management module, the *Wrap Up* includes a video segment with commentary by Dr. Michael Rosenberg that explains why comprehensive behavior management plans have been shown to be effective. A key component of the integration of the HPL framework and *STAR Legacy* cycle is the

students' comparison of their *Initial Thoughts* to their *Final Thoughts* during the *Wrap Up* section. Learning is demonstrated when a disparity between *Initial* and *Final Thoughts* exists – greater disparity indicates greater learning (e.g., Bransford, 1979; Schwartz & Bransford, 1998).

Although relatively new, the HPL and *STAR Legacy* cycle models have been used successfully in a variety of learning environments and with a range of content areas, such as bioengineering education (Roselli & Brophy, 2003), teacher education (PT³ group at Vanderbilt, 2002), and corporate training (Vye, Burgess, Bransford & Cigarran, 2002). In addition, these models were used to design the challenge-based agenda for the 2002 National Gates Convening, a meeting of top educational leaders from every state.

IRIS Content Strands

All IRIS materials and resources are organized by strands and are available through the IRIS website (<http://iris.peabody.vanderbilt.edu>). These organizing content strands are:

- Accommodations
- Behavior
- Collaboration
- Differentiated Instruction
- Disability
- Diversity
- Transition

Content strands and related topics for each material or resource were determined through a comprehensive planning process. The process included faculty surveys, textbook analyses,

parent focus groups, professional focus groups, IRIS board members, and members of the IRIS strategic planning team. Topics were prioritized by those most in need of coverage and with the highest potential demand. In response to this input, the IRIS Center has and is creating materials about classroom behavior management, diversity, differentiated instruction, disability awareness, accommodations, adapting the physical environment, and high stakes testing. Table 1 lists and describes IRIS *STAR Legacy* modules.

Insert Table 1 about here

STAR Legacy Module Evaluation

Initial research about the HPL framework and *STAR Legacy* cycle is promising for instructional delivery in college classrooms. Although learning outcomes were not examined in these early studies, the use of modules with these design features in an undergraduate biomechanics course was rated positively by students in terms of effectively communicating key concepts and stimulating interest (Roselli & Brophy, 2003). In addition, these researchers conducted systematic and structured observations of a sample of class sessions and compared those that relied on traditional taxonomy-based instruction with those whose instruction was based on HPL. Seventy percent of the students in the “HPL courses” rated communications-effectiveness as “high,” compared to only 34% of students in the traditional courses (Roselli & Brophy, 2003). In addition, when compared to traditional instruction, students gave higher positive ratings to both the HPL course and the HPL instructor in their final course evaluations (Roselli & Brophy, 2003).

The IRIS Center conducted a comparable evaluation of students' perceptions about their own learning after they had worked through an IRIS module. During the 2003 Winter and Spring quarters, four IRIS modules were field tested by a total of 220 students in five sections of two teacher preparation classes at California State University, Los Angeles. The four IRIS modules and the number of student respondents using each were: **Who's in charge?**: Components of a comprehensive behavior management plan (31 students), **See Jane read**: Teaching reading to young children of varying disabilities (30 students), **A clear view**: Setting up your classroom for students with visual disabilities (31 students), and the **Vision Grand Challenge** modules (128 students).

Following the completion of each module, students were asked to respond to a questionnaire. Students were asked to rate on a five-point scale how much they agreed or disagreed with a series of statements that were constructed to tap perceived learning after viewing a module. In Table 2, the percentages of students who agreed that a specific benefit had occurred are summarized.

In terms of learning, between 79% and 87% of students (depending on the module viewed), believed that they had "learned a lot from the module" that they viewed. Responses for the module helping them to learn factual knowledge and fundamental principles, generalizations, or theories depended on the specific module. In terms of factual knowledge, the **A clear view** and the **Vision grand challenge** modules received stronger endorsements (88% and 72%, respectively) than did the other two modules, particularly the **See Jane read module** (only 37% agreed with the statement). In contrast, the **See Jane read** and **Who's in charge?** modules appeared to be superior in terms of facilitating the learning of fundamental concepts or principles (93% and 90% as compared to 63% for the other two modules). However, only 43% of the

students who worked through the **Who's in charge?** module agreed that they learned more from the module than they would have from a lecture or textbook; 37% neither agreed nor disagreed with this statement.

Students also judged the modules with regard to various aspects of learning that are viewed as specific products of using the HPL framework. Items in this section assessed dimensions such as the degree to which the module presented information in a way that maximized the inter-relatedness of the concepts and whether students could “see” the change in their understanding of the concepts presented (i.e., meta-cognition). Large majorities of students believed that the challenge helped them to better grasp the connections between key concepts (see Figure 3). The **See Jane read** and **Who's in charge?** modules were rated higher than the other two modules (87% and 79% agreement vs. 66% and 61% agreement; see Figure 3) in terms of encouraging students to ask questions and seek answers on their own. Many researchers who study learning consider the latter as an indicator of mastery rather than a superficial attainment of learning (NRC, 2000). Finally, between 47% and 60% of the students who worked the various modules concurred that their *Final Thoughts* answers were significantly different from their *Initial Thoughts* answers to the opening challenges; a strong indicator, according to the HPL theory, of student learning.

Insert Table 2 about here

IRIS Case Study Sets

In addition to the interactive *STAR Legacy* cycle modules, the Center also develops and provides case studies for use in personnel preparation courses. Case study sets provide faculty with a series of 4-6 realistic problem-based scenarios, or case studies, on topics related to the education of students with special needs. The case study sets are designed to strengthen students' understanding of each topic (e.g. classroom organization, reading, math) as well as to enhance their problem-solving skills while exploring new content. Each set is divided into three levels allowing students to progress from:

Level A - information gathering, to

Level B - analyzing the information, and eventually to

Level C - synthesizing the information.

The sets consistently present students with standard components as they work through each case.

Table 3 lists the IRIS case study sets. A description of these features follows:

- **Background** – Information (e.g., name, age) about the featured student(s) central to the cases is provided.
- **Scenario** - A hypothetical teaching situation that requires a response is presented. In Levels A and B of each set, goals for the target child are provided. At Level C, *no* goals are provided because identifying goals are part of the assignment. To assist in the development of goals at Level C, *Areas of Strength* for the target student are stated.
- **Possible Strategies** - Multiple strategies are suggested to respond to each scenario. For each strategy, a **STAR (Strategy And Resources) sheet** describes the procedures and may be used across scenario levels. In addition, STAR sheets explain how the strategy is implemented, what research says about it, gives resources and references, and availability

of research-based programs. These sheets give students the information they need to work the case and answer its questions.

- **Assignments** – Each level in a case study set includes a different type of assignment. At Level A, assignments allow students to demonstrate an understanding of possible strategies that might apply to the case. At Level B, students are required, in addition, to analyze the information presented in the STAR sheets. At the most complex level, Level C, the assignments ask students to compare and defend their choices and applications of specific strategies.
- **Faculty Guide** - An answer key to aid faculty in assessing students' assignments is available from the IRIS Center upon request.

Insert Table 3 about here

IRIS Activities

IRIS activities were created to enhance lectures and provide “hands on” learning opportunities. They cover a wide range of topics related to special education and to disabilities. They focus on elementary as well as secondary education students. The types of activities provided include: small group activities, class discussion topics, independent assignments, book activities, film activities, case-based activities, games, and web activities. Each activity includes a learning objective, an overview of the activity, and step-by-step directions for how to implement the activity. Faculty guides are available upon request for the case-based, book, and film activities.

IRIS Information Briefs

A collection of existing materials available from organizations, agencies, clearinghouses, and technical assistance centers comprise the IRIS Information Briefs. These briefs are provided through the IRIS website as supplemental materials for both faculty and students. Approximately 80 information briefs are currently available. The following list includes the organizations that have given the Center permission to disseminate their materials.

- Consortium for Appropriate Dispute Resolution in Special Education (CADRE)
- The Council for Learning Disabilities (CLD)
- The Cystic Fibrosis Foundation (CFF)
- Educational Resources Information Center, The ERIC Clearinghouse on Disabilities and Gifted Education (ERIC)
- Families and Advocates Partnership for Education (FAPE)
- Ideal Lives Project
- The National Clearinghouse for Professions in Special Education (NCPSE)
- National Center on Secondary Education and Transition (NCSET)
- National Federation of the Blind (NFB)
- National Information Center for Children and Youth with Disabilities (NICHCY)
- Parent Educational Advocacy Training Center (PEATC)
- U.S. Department of Education

IRIS Web Resource Directories

Two IRIS *Web Resource Directories* were developed by the Center: one for faculty and one for students. These searchable databases of online resources allow individuals to perform categorical searches to find websites with information on special education or disability topics. The descriptions of each website found in the *faculty version* were written for instructors. They point out websites that contain resources useful in university courses. The *student version*, also annotated, describes and links to websites that have resources (e.g., lesson plans) of particular value to students. In addition, for the larger categories (i.e., those that contained 20 or more websites) the top five websites are marked with an iris. These top rankings were determined by 30 faculty from across the nation; each category had two reviewers who scored each according to its potential usefulness in college course instruction.

Conclusion

IRIS resources and course enhancements are disseminated primarily through the Center's IRIS website (<http://iris.peabody.vanderbilt.edu>). For faculty who are members of the four constituent groups (e.g., college faculty preparing future general education teachers, school administrators, school nurses, and school counselors), CD and print versions of resources and materials may be obtained directly from the Center. News about newly developed course enhancement materials is conveyed via conference presentations, the IRIS website, and the Center's listserv. (To subscribe to the listserv email the Center at: iris@vanderbilt.edu.) As of September 2004, approximately 1000 faculty from 760 colleges and universities, along with over 250 others from partner-organizations, state agencies, and parent groups receive information about the Center through its list serv. The course enhancement materials, including the problem-based modules, are available at no cost to all whom access them through the Centers' website:

<http://iris.peabody.vanderbilt.edu>. The purpose of developing and making these resources easily available helps better prepare the next generation of school personnel to meet the unique learning needs of students with disabilities being educated alongside their peers without disabilities.

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Footnote

¹ The contents of this paper do not necessarily reflect the views or policies of the U.S. Department of Education, nor does the mention of trade names, commercial products, or organizations imply the endorsement of the federal government.

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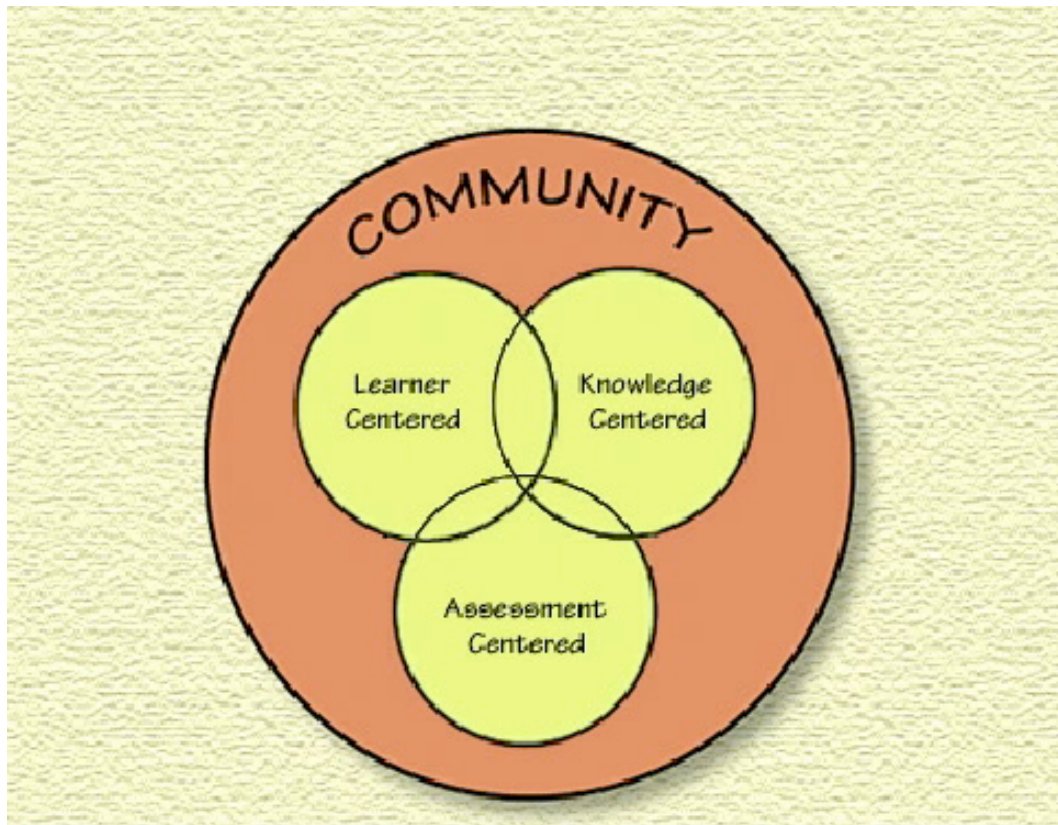


Figure 1. The “How People Learn” framework.

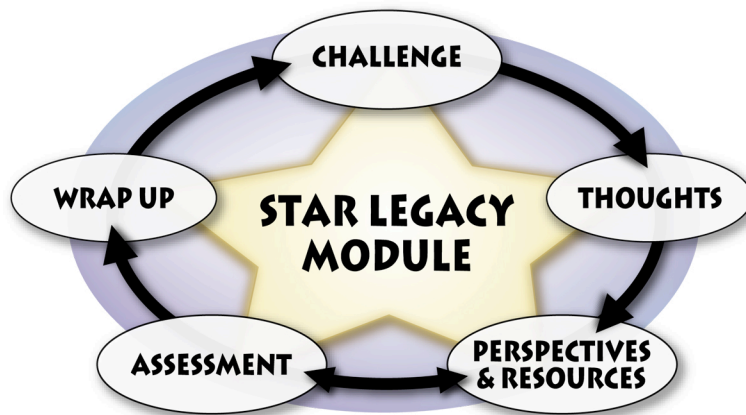


Figure 2. The *STAR Legacy* learning cycle.

List of Tables

1. IRIS *STAR Legacy* Modules
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CONTENT STRAND	NAME	DESCRIPTION
ACCOMMODATIONS	A clear view: Setting up your classroom for students with visual disabilities	The resources in this module provide helpful tips on setting up the physical aspects of classrooms and introduces types of equipment used by students with visual disabilities.
	Success in sight: Accommodations to the learning environment for students with visual disabilities	This module highlights tips to modify lessons making them accessible for students with visual disabilities.
	Accountability: High stakes testing for students with disabilities	This content presents information about legal requirements and accommodations for testing students with disabilities and interpreting performance data.
	Accessing the general education curriculum: Inclusion considerations for students with disabilities	This module describes conditions that promote students' with disabilities learning important knowledge and skills needed to become successful adults.
BEHAVIOR	Who's in charge?: Components of a comprehensive behavior management plan	This module discusses the importance of establishing a comprehensive classroom behavior management system by using the PAR model.
	You're in charge! Developing your own comprehensive behavior management plan	This module applies knowledge gained in "Who's in Charge?" by allowing students to create their own management plan, which is stored by IRIS and can be included in the student's portfolio.

BEHAVIOR (CONT.)	Part 1 – The acting-out cycle: Understanding and preventing disruptive and non-compliant behaviors	This module is students with disabilities for which the comprehensive classroom management strategies are not effective, providing alternate individual strategies for behavior management.
	Part 2 – Reducing the occurrence of disruptive and non-compliant behaviors	This is the second part of a 2-module series dealing with disruptive and non-compliant behaviors
COLLABORATION	Focus on the playbook: A collaborative team approach for serving students with visual disabilities	This module underscores the importance of teachers and specialists working together to provide services for students with visual disabilities.
	Addressing the revolving door: How to retain your special education teachers	This content highlights key elements instrumental for school administrators in supporting special educators and increasing teacher retention.
	Supporting beginning special educators	This module emphasizes the importance of administrative support for beginning special education teachers and demonstrates how supported teachers are more effective.
	Effective school practices: Promoting collaboration and monitoring student’s academic achievement	The focus here is on the entire school and partnerships between general education and special education resulting in a “collective responsibility” and shared high expectations.
DISABILITY	What Do You See?: Perceptions of disability	Students explore their own attitudes and beliefs about people with disabilities and learn more about the abilities of individuals with disabilities.

DIVERSITY	Teachers at the loom: Weaving together culture, family and instruction for culturally and linguistically diverse exceptional students	This module examines curricular considerations, teacher bias, and the role of general education teachers in the education of culturally diverse students.
DIFFERENTIATED INSTRUCTION	See Jane read: Teaching reading to young children of varying disabilities	This module focuses on three reading strategies (K-PALS, ICARE, pre-referral) effective in teaching beginning reading (grades K-2).
	The Reading blues: Strategies to help upper elementary students move from struggle to success	This module highlights three upper reading strategies (PALS, CSR, pre-referral) (grades 3-5).
FOR FACULTY	A Vision for victory: Strategies for including students with visual disabilities in the classroom (Grand Challenge)	This grand challenge is designed for use by faculty to connect the three modules on visual disabilities.

Table 2. Perceptions of Students About Various Learning-Related Outcomes by IRIS Module

ITEM	Percent Who Agreed with the Statement			
	Who's in charge? (n = 31)	See Jane read (n = 30)	A clear view (n = 31)	Vision Grand Challenge (n = 128)
This module focused on issues that interest me	97	93	94	81
After working through the module, there was a significant difference between my initial thoughts and my final response to the challenge	60	53	59	47
I learned a lot from this module	84	87	84	79
The module introduced stimulating ideas about the topic	87	93	94	77
What I learned from this module is related to my future life	87	87	65	59
This module helped me learn how to solve real-life problems	77	63	78	64
The challenge helped me better grasp the connections between key concepts	87	83	91	77
The module encouraged me to use the additional resources mentioned	57	63	72	52
I learned more from the module than I would have from a lecture or textbook	43	30	38	21
I gained factual knowledge (terminology or methods) by using this module	63	37	88	72
I learned fundamental principles, generalizations, or theories by using this module	90	93	63	63
I learned to apply course material by using this module	90	83	72	69
The module encouraged me to ask my own questions and seek answers about the topic	87	79	66	61

TABLE 3 IRIS CASE STUDY SETS		
CONTENT STRAND	NAME	DESCRIPTION
ACCOMMODATIONS	Effective Room Arrangement	This set of case studies includes engaging scenarios to introduce students to important concepts regarding classroom arrangement for effective classroom management.
BEHAVIOR	Encouraging Appropriate Behavior	This outlines positive behavior management techniques for students with behavioral concerns not addressed effectively by comprehensive classroom rules.
	Norms and Expectations	This set provides scenarios and strategies that focus on the establishment of classroom norms and expectations through the development of rules and procedures.
	Fostering Student Accountability for Classroom Work	Through realistic classroom scenarios, this case study set introduces five key components of an effective accountability system and offers guidance on how to implement these strategies in a classroom setting.
DIFFERENTIATED INSTRUCTION	Early Reading	Through the development of rules and procedures this case study set offers realistic scenarios that introduce students to reading strategies appropriate for kindergarten and first grade classrooms.
	Fluency and Word Identification Grades 3-5	This case study unit identifies strategies that may be implemented when students are having difficulties with word identification and fluency in the upper elementary grades.
	Comprehension and Vocabulary	This case study unit focuses on comprehension and vocabulary strategies that correspond with third through fifth grade reading curriculum.