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RESEARCH & PRACTICE IN ASSESSMENT

The goal of *Research & Practice in Assessment* is to serve the assessment community as an online journal focusing on student learning outcomes in higher education. It is dedicated to the advancement of scholarly discussion amongst researchers and practitioners in this evolving field. The journal originated from the Board of the Virginia Assessment Group, one of the oldest continuing professional higher education assessment organizations in the United States. *Research & Practice in Assessment* is a peer-reviewed publication that uses a blind review process. Approximately fifty percent of submissions are accepted for issues that are published twice annually.

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Research & Practice in Assessment is currently soliciting articles and reviews (book, media, or software) for its Summer 2012 issue. Work submitted for review in RPA may be related to various higher education assessment themes; whereas articles submitted for peer review should address topics related to student learning outcomes. Contributions will be evaluated by the RPA editorial board and should be submitted no later than April 1, 2012. Items should comply with the RPA Submission Guidelines and be sent electronically to:

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FROM THE EDITOR

Whereas Western art focuses upon the freedom to move images around on paper or canvas to create fixed patterns, origami ignores the separation between the image and the paper. The paper becomes part of the image, and is twisted and folded until it is the picture, not merely the surface on which it lies.

-John D. Barrow, The Artful Universe

Just as the artist of origami has a different approach to perceiving the relationship between image and paper, the thematic focus of this issue invites inquiry as to whether assessment might adopt similar connecting paradigms. In establishing and executing assessment initiatives, there are places where our focus is predominantly one of separation - our rubrics have multiple levels of competencies, item correlation allows us to maximize the efficiency of our scales, and purpose statements or objectives are arranged in a structured hierarchy. We strive for increased validity and reliability, but even good research techniques possess implications regarding their social, psychological, and educational contexts. There is an ongoing tension between focusing on the trees while at the same time giving appropriate attention to the forest.

As such, it is worth considering, to what extent can assessment also function as a mechanism that connects broader realms rather than one which at times is noted for solely focusing on measurement or standardization? In addition to its dominant descriptive or defining properties, is it possible for assessment to also possess generative properties? I am not positing these philosophical assessment questions to establish rigid dichotomies. In fact, it may be more beneficial for me to ask these of my own assessment practices. While aiming to achieve the utilitarian ideals of efficiency and effectiveness, is it also possible for me to construct my assessments in a manner that advances good human behavioral, educational, and social theory? Is it really possible for me to look at a Scantron sheet in a manner that resembles the philosophical paradigm of the origami artist?

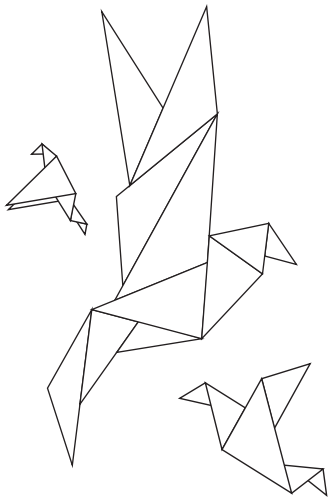
In this vein, the current issue of RPA begins with a special feature by Linn and Chiu who seek to advance the development of science tests in the form of "learning tests." Learning tests function as learning opportunities to engage students in the knowledge integration process, while at the same time assessing student progress. A second featured piece by Michaels, Hawthorne, Cuevas and Mateev posits that assessment has the potential to connect disparate realms of education policy, specifically the existing information asymmetry between the P-12 and higher education systems. This is followed by a similar P-12/higher education collaborative effort where Barnes and Burchard focus on the construction of the multi-tiered instruction self-efficacy scale (MTISES) for the purpose of improving teacher preparation and development. In their qualitative study, Blaylock and Bresciani seek to explore connections between two-year and four-year institutions for the purpose of addressing transfer student needs. Finally, I would like to draw your attention to a generative art piece entitled "Assessment Day" that is showcased in Ruminate, the concluding section of this issue. In Jungian form, it highlights unsolicited student responses to their university testing experience.

Each issue has its backstage performers who warrant special recognition. In this case, I am grateful for the diligent and professional contributions made by: Patrice Brown, Katie Busby, Alysha Clark, Rachel Eby, Kathryne Drezek McConnell, Terrell Perry and each of the contributing authors. As you refine your own contribution for the larger assessment dialogue, I hope you might consider submitting your scholarly piece to *Research & Practice in Assessment.*

Regards,

Joshua T. Brown

Liberty University



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AUTHORS

Marcia C. Linn, Ph.D.
University of California, Berkeley

Jennifer Chiu, Ph.D.
University of Virginia

CORRESPONDENCE

Email
mclinn@berkeley.edu

COMBINING LEARNING AND ASSESSMENT TO IMPROVE SCIENCE EDUCATION

High-stakes tests take time away from valuable learning activities, narrow the focus of instruction, and imply that science involves memorizing details rather than understanding the natural world. Current tests lead precollege instructors to postpone science inquiry activities until after the last standardized test is completed—often during the last week of school. Students spend countless hours practicing and taking multiple-choice tests that have little educational value. Even college courses now devote class time to multiple choice clicker questions and often rely on similar items for course grades. Instead we need learning tests that help students understand science while at the same time measure progress.

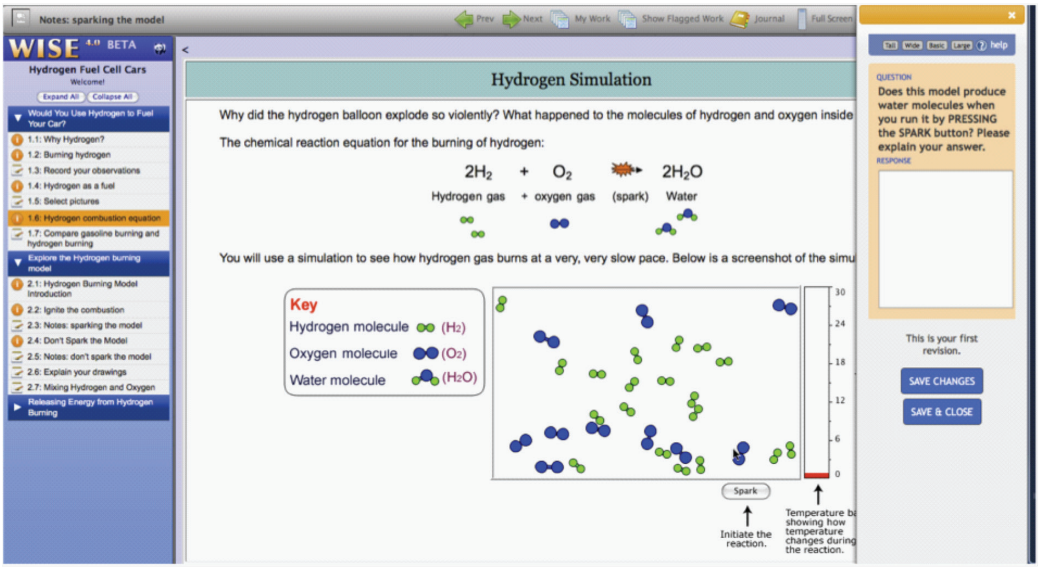
For example, an item on the California eighth grade science assessment asks: Which of the following best describes an atom?

a) protons and electrons grouped together in a random pattern
b) protons and electrons grouped together in an alternating pattern
c) a core of protons and neutrons surrounded by electrons
d) a core of electrons and neutrons surrounded by protons

These detail-oriented questions motivate teachers to stick to the textbook where students can access this information. Assignments ask students to memorize rather than encouraging them to understand the role of atoms and molecules in scientific processes such as recycling. Learning tests could ask students to design experiments to test their ideas about chemical reactions, to create concept maps to distinguish between energy transfer and energy transformation, or to construct an argument explaining how the chemicals in detergents can help clean up oil spills.

Emerging cyberlearning technologies can deliver and score learning tests continuously as students study complex science topics. Systems such as the Web-based Inquiry Science Environment (WISE, see WISE.Berkeley.edu) engage students in science units featuring learning tests, grade performance, guide students to refine their understanding, encourage students to monitor their progress, and diagnose class achievements for teachers (Figure 1).

Figure 1. A screenshot of the WISE: Web-based Inquiry Science Environment hydrogen cars project that includes visualizations of chemical reactions.



Learning tests in systems like WISE enable teachers to gather evidence about how their students learn. Teachers can use this information to identify places where students are struggling, provide feedback tailored to individuals or groups, and plan class discussions about topics that many students find difficult. When teachers use this kind of information to improve their practice, their students make substantial progress (Gerard, Varma, Corliss, & Linn, 2011).

Learning Test Goals

Learning tests combined with insights into how students learn have the potential to measure lifelong learning skills. Science courses need to produce lifelong learners who are capable of expanding their knowledge throughout their lives. Students need the ability to make sense of contemporary issues such as genetic engineering, global climate change, new cancer treatments, and alternative energy sources. Yet consistent with the emphasis on memorization, many adults claim they have forgotten any science they might have learned. To make the curriculum more relevant, science courses need to prepare students to use and refine their knowledge while improving the quality of their lives.

Research with thousands of students and hundreds of teachers shows that when students explore contemporary science issues like recycling, global climate change, and genetic inheritance using online units featuring scientific visualizations they learn more than students who study the same topics using the textbook (Linn, Lee, Tinker, Husic, & Chiu, 2006). Students who study these units learn to distinguish among alternative disease treatments, critique experiments about climate change, and reason about dilemmas such as designing an energy-efficient house. In addition, students prefer units with online visualizations to their textbook because visualizations (of phenomena such as chemical reactions) allow them to see how science works and test their ideas. By incorporating learning tests into online environments we can strengthen science learning and assess students at the same time.

"Learning tests combined with insights into how students learn have the potential to measure lifelong learning skills."

Promoting and assessing skills necessary for lifelong learning can prepare students to use science in their lives. We expect that when students learn to read they will use and expand their abilities every day. We prepare students to use mathematics regularly (although many complain that they have no need for calculus). We can change science courses so they prepare students to revisit their ideas and build more complex understanding. To accomplish this, we need to align curriculum, assessment, and professional development.

Teaching and Assessing Lifelong Learning

Teaching for lifelong learning is complicated because students come to science class with lots of intuitive, incomplete, contradictory, and idiosyncratic ideas. Research offers convincing evidence that adding new ideas in lectures, experiments, or visualizations is not sufficient to improve student understanding. Students need to integrate new ideas with existing knowledge to make progress in science. To develop useful and generative understanding students need to engage in the process of knowledge integration (Linn & Eylon, 2011).

"By incorporating learning tests into online environments we can strengthen science learning and assess students at the same time."

The knowledge integration framework, a constructivist perspective, emerged from an extensive longitudinal study to show that students need to not only comprehend new ideas but also to distinguish them from their existing ideas and to figure out how to incorporate them into a coherent account of the topic (Linn & Hsi, 2000). Knowledge integration has roots in studies showing that students maintain conceptual ecologies that include p-prims, analogies, epistemological beliefs, facets, facts, and intuitions.

Essentially, for any topic, students have developed multiple ideas along with evidence to support their existing views at home, in school, and in cultural activities. They may equate heat and temperature because they use the words interchangeably. They may argue that heat is a characteristic of a high temperature when discussing the weather. Furthermore, students tend to limit the applicability of their ideas to specific situations. Thus students may explain that objects in motion remain in motion in science class but come to rest on the playing field.

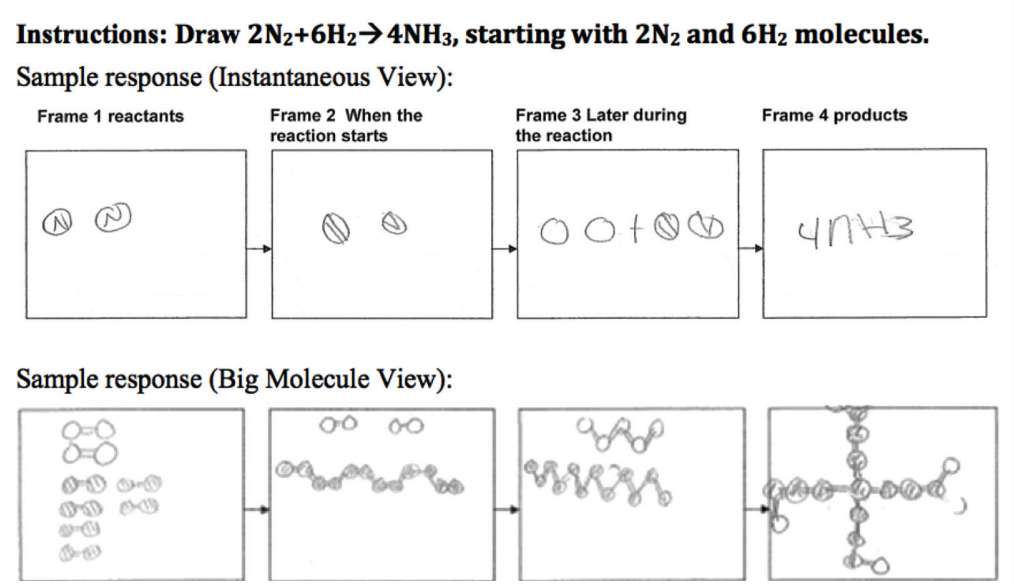
To gain more integrated understanding, students need to refine their repertoire of varied, often contradictory, and contextualized ideas. To help curriculum designers create knowledge integration based instruction, researchers have identified design principles (Kali, Linn, & Roseman, 2008). These principles have recently been synthesized in the knowledge integration pattern (Linn & Eylon, 2011). The pattern involves articulating existing ideas, adding new ideas, distinguishing new ideas from existing ideas, and building a coherent argument by reflecting on the evidence for the ideas in the repertoire. To reform science instruction so that it promotes lifelong learning we need curriculum materials that implement this pattern and learning tests that measure the integration of knowledge. We illustrate how this works for activities featuring visualizations, concept maps, and essays.

Visualizations and Assessment

Scientific visualizations can illustrate phenomena that are too fast, small, or vast to observe such as chemical reactions (See Figure 1). By themselves, visualizations are often deceptively clear—motivating students to report that they understand when, in fact, they lack deep insights (Chiu & Linn, in press). Instruction can overcome deceptive clarity by using the knowledge integration pattern (Linn & Eylon, 2011). Learning tests can increase the efficiency and effectiveness of the instruction.

Using the knowledge integration pattern to overcome deceptive clarity starts with asking for predictions to elicit existing ideas about the visualization topic. Students need to make predictions to generate their existing ideas. When they make predictions they are ready to compare these ideas to the ones introduced in the visualization. When making predictions students may report that chemical reactions involve breaking molecules into individual atoms and then recombining them in a new configuration based on their interpretation of symbolic equations (Figure 2). Consistent with the knowledge integration pattern, students use the visualization to add new ideas. Chiu and Linn (in press)

Figure 2. Examples of student drawings of chemical reactions



found that students often reported that they understood after viewing the visualization but assessments revealed that this was not the case.

Following the knowledge integration pattern, helping students to distinguish the new ideas from their existing ideas (and test their understanding) can overcome deceptive clarity. Zhang and Linn (in press) showed that asking students to make drawings of a sequence of events is far more effective than exploring the visualization alone (see Figure 2). Students often run the visualization multiple times to complete their drawings (Chiu, 2010), revealing the value of the visualization.

Distinguishing ideas is helpful but students also need to consolidate their ideas. The final step of the knowledge integration pattern involves having students reflect on their investigations and create a coherent argument. Research shows the value of asking students to explain things like greenhouse gas accumulation in terms of chemical reactions (Chiu, 2010).

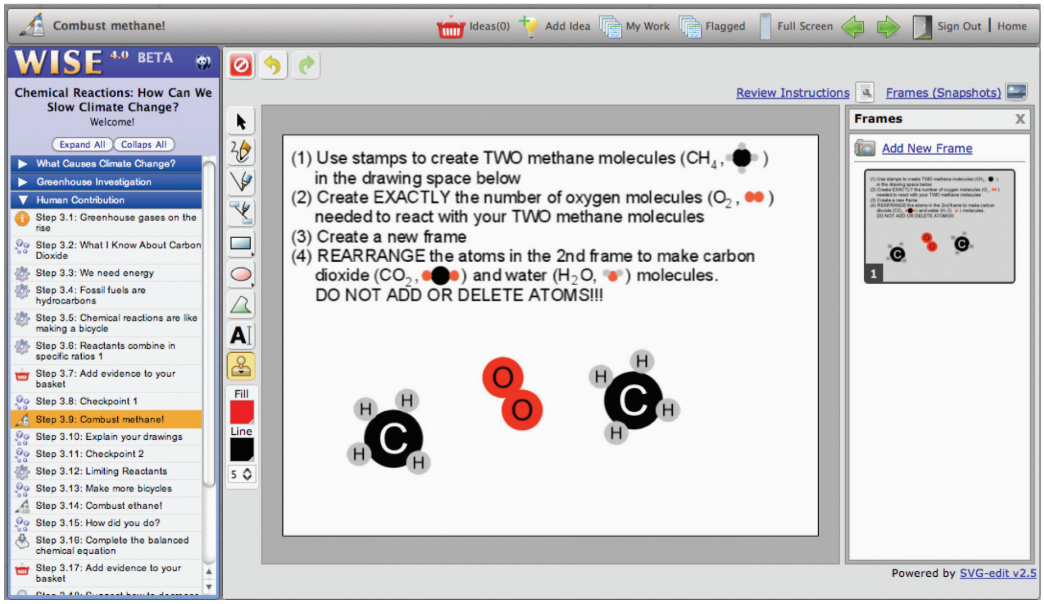
Several learning tests occur in chemical reactions. The drawings help students distinguish ideas and also assess their progress. Scoring the drawings, however, is time consuming. We have tried two ways to make scoring more automatic. Using WISE Draw we could analyze drawings (Figure 3). As discussed below, we can also score the essays students write when they explain phenomena using their understanding of chemical reactions.

Recently, Zhang (2011) created a learning test using a selection task. She identified 12 drawings that captured most of the variations generated by participating students when they were asked to create four drawings that capture the main events in the visualization. In the selection task, students selected among these drawings to illustrate four main events in the chemical reaction. There are over 12,000 possible sequences so it is unlikely that students will succeed by chance. She reported that students had difficulty selecting a valid sequence. The drawings in the selection task expanded the alternatives students considered. Zhang found that the selection task was just as effective as the drawing task for advancing student understanding but was also very easy to score automatically.

"The activity and the embedded learning test improved student understanding while also providing students and teachers with valid, automated scores to gauge their progress."

In summary, designing instruction using the knowledge integration pattern can overcome the deceptive clarity of the chemical reactions visualization. In addition, designing a selection task by examining the drawings that students construct spontaneously resulted in a learning test that encouraged students to distinguish ideas. Furthermore, the activity and the embedded learning test improved student understanding while also

Figure 3. Example of how students could use WISEDraw to make their predictions.



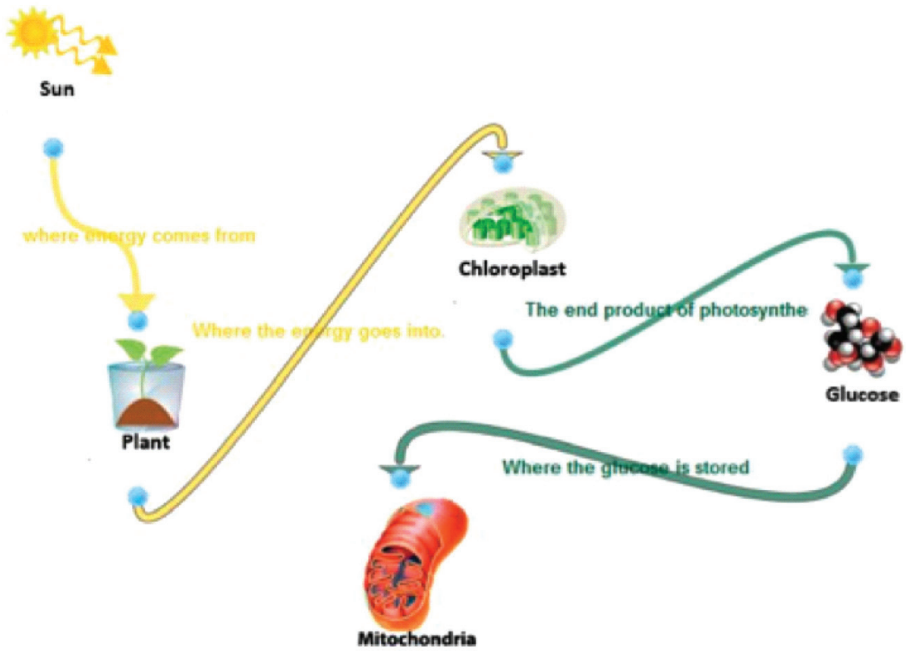
providing students and teachers with valid, automated scores to gauge their progress.

Teaching and Assessing with Concept Maps

Concept mapping activities can help students distinguish among their ideas just as we showed for drawings of chemical reactions (Linn & Eylon, 2011). MySystem, an open source WISE activity developed by the Concord Consortium supports a form of concept mapping. Students diagram connections and characterize the transformation of energy within systems (Figure 4). MySystem works best when embedded in the knowledge integration pattern.

To illustrate, in the photosynthesis unit learners use MySystem to explain to a new student how a rabbit gets and uses energy from the sun (Ryoo & Linn, 2010). Students first make predictions about energy transfer and transformation. They then interact

Figure 4. MySystem diagram. Students can select icons and label links to illustrate energy transfer and transformation.



with a visualization of photosynthesis to get new ideas. To distinguish their ideas they create a MySystem diagram. To sort out their ideas they write an energy story (see sophisticated example in Figure 5). Both the MySystem diagram and the energy story can serve as learning tests. WISE can compute an overall score capturing the coherence of a diagram as well as distinct scores for how well the diagram represents *energy source, direction of energy flow, modes of energy transfer,* and *thermodynamic properties*. It is possible to score MySystem diagrams while students are learning and to give students guidance to help them revise their ideas.

Essay Questions, Learning, and Assessment

Short and long essay questions require students to generate coherent arguments and explain complex phenomena. Research shows that they capture deep understanding in ways that multiple-choice items cannot (Lee, Liu, & Linn, 2010). Furthermore, studies show that asking students to write essays, even if they are not graded, can improve learning outcomes (Karpicke & Blunt, 2011). As learning tests, essay questions are important to help students consolidate their ideas.

Many teachers neglect essays because they do not have the time to grade them. It is common for middle school science classes to exceed 40 students and for teachers to have five or six sections of a class, yielding over 200 essay responses to each question

Figure 5. Photosynthesis science essay in response to: "Write a story about how the rabbit gets and uses energy from the sun."

The sun creates energy through nuclear fusion, which moves through wave lengths in space until it reaches earth. Most is reflected by the atmosphere but a tiny bit makes it through, and an even smaller fraction is absorbed by the chloroplasts. They use it to rearrange CO_2 and H_2O into glucose and by that process it turns into chemical energy. Chemical energy is stored in glucose, and when the rabbit absorbs the plant, and thus the glucose, it gains the chemical energy.

(WISE units usually have 10 or more essay questions). Fortunately, new technologies make it possible to automatically score essays for knowledge integration (see rubric in Figure 6). For example, c-rater, a recent cyberlearning technology developed at ETS can score short essays (e.g., Sukkarieh & Pulman, 2005). C-rater evaluates essays based on a set of clear, distinct concepts. These concepts are developed using a 4-part scoring process: (1) model building, where researchers identify key concepts for the item; (2) natural language processing, where student and model responses are analyzed for linguistic features; (3) main points identification, where the linguistic features are used to identify the concepts in the student responses; and (4) scoring, where scores are assigned to responses based on main points (Sukkarieh & Blackmore, 2009). The accuracy of the scores depends on the linguistic complexity of the responses. Short science essays are good candidates for c-rater scoring because they have constrained vocabulary and syntax. C-rater can provide an overall score for each response, and distinct scores on how well the response addresses each key concept.

"… essays that ask students to create coherent arguments are excellent learning tests and essential to full implementation of the knowledge integration pattern."

Figure 6. Example Knowledge Integration Rubric used in the photosynthesis unit.

KI Score	Typical Responses
1 Off task	The sun helps animals survive by giving heat.
2 No Link, Partial Link	The sun helps animals survive by producing energy and helping some plants grow which animals eat.
3 Full Link	The sun helps animals survive by giving them food. Together, the sun and plants make food. Without this food, animals would not be able to survive for very long. Animals cannot make their own food because they are not full of chloroplasts and chlorophyll. Plants have BOTH of these things so they can get through photosynthesis, unlike animals.
4 Complex Link	The sun helps animals survive by the plants absorb the energy and perform photosynthesis. After that the energy is used for food in the plant and when an animal eats it the energy is transferred from the plant to the animal.

A proof-of-concept study using c-rater, produced reliable knowledge integration scores for student essays (Linn, Gerard, Matuk, & Liu, 2011). For an item in the WISE Photosynthesis unit, where students were asked to "Explain how the sun helps animals survive," the Kappa value between the c-rater score and human score was close to .70, higher than the Kappa value between two human raters who received a half-day of training on the knowledge integration rubric.

In summary, essays that ask students to create coherent arguments are excellent learning tests and essential to full implementation of the knowledge integration pattern. Methods for automated scoring of essays can empower teachers to use them more regularly. An open question is how best to use these scores to provide guidance for students.

"Questions that ask for explanations or critiques and that feature multiple right answers could encourage respondents to distinguish among ideas."

Improving Assessment in Lecture Classes

College courses may reinforce the image of science as requiring memorization by using clicker questions and machine-scorable tests that emphasize recall of information. Clickers are widespread. A quick search of publisher websites reveals that these devices are mainly used for recall questions. For example, an astronomy item asks:

The time for one cycle of lunar phases is:

a) about one day.

b) about 24.8 hours.

c) about one year.

d) the same as the time for one cycle of the moon relative to the stars.

e) the same as the time for one cycle of the moon relative to the sun.

This question, like the one about atoms from the California assessment, focuses on science details. The use of questions like this helps explain findings that college students who completed astronomy courses were unable to illustrate the phases of the moon. Most students believed that the phases are caused by the moon passing through the earth's shadow, which occurs only during an eclipse rather by than explaining that half of the moon is illuminated by the sun and that the portion visible from the earth varies over time (Bell & Trundle, 2008). Research shows the value of embedding the clicker questions in

"Scientists spend little time memorizing. They spend more time conducting experiments and interpreting the results. They know the details relevant to their own work because they use the information every day to reason about dilemmas."

the knowledge integration pattern (Crouch, Fagen, Callan, & Mazur, 2004; Linn & Eylon, 2011; Lorenzo, Crouch, & Mazur, 2006).

Classes using clicker questions can be improved by implementing the knowledge integration pattern. This means substituting questions that ask for understanding for those that ask for recall. Questions that ask for explanations or critiques and that feature multiple right answers could encourage respondents to distinguish among ideas. For example, the selection question from the chemical reactions visualization would be good.

When instructors use clicker questions as part of a larger goal of knowledge integration they could elicit ideas by asking students to make predictions either individually or in small groups. For example, a prediction question might offer a set of moon representations and ask respondents to create a valid sequence of images. To add ideas about moon phases, studies show the advantages of visualizations (e.g., Bell & Trundle, 2008). A clicker question might initiate a distinguishing ideas activity by asking students to select among alternative drawings of the waxing moon. Students might then discuss their choices in their small groups using evidence from the visualization. Instructors could ask students to write a short essay comparing their predictions to the group solution to encourage students to build a coherent argument.

Teaching a topic like the phases of the moon for understanding takes more time than focusing on details and involves dealing with complex phenomena such as the relative position and motion of the earth, moon, and sun. New visualization technologies can make these topics accessible and intriguing. Combining visualization with judicious use of clickers or other class response systems by using the knowledge integration pattern could strengthen lectures. Incorporating these technologies into precollege and college courses could increase interest in science and satisfaction with science courses. C-rater can provide an overall score for each response, and distinct scores on how well the response addresses each key concept.

Conclusion

Transforming science education and developing lifelong learners is within our reach. Emerging technologies and instructional frameworks support the design of learning tests that enable students to develop deep understanding and teachers to become effective guides. Instead of focusing on the ideas that students add during instruction, these technologies can administer learning tests that measure how students distinguish among ideas and evaluate new and existing ideas while they learn. Learning tests can assess the coherence of students' understanding of a new topic. In addition to serving as learning opportunities for students to engage in knowledge integration processes, learning tests give teachers insight into students' progress.

The knowledge integration framework characterizes learners as developing a repertoire of ideas, adding new ideas from instruction, experience, or cultural interactions, distinguishing these ideas in varied contexts, making connections among ideas at multiple levels of analysis, and developing more and more nuanced criteria for evaluating ideas. This process culminates in an increasingly linked set of views about any phenomenon. This kind of scientific thinking is essential for lifelong learning. By focusing learners on using evidence to evaluate new and existing ideas, these activities encourage students to build a coherent understanding and to become aware of their own learning process.

Incorporating learning tests into science has important implications for educational policy. When No Child Left Behind legislation mandated annual testing in reading and mathematics schools often abandoned or neglected science instruction (Au, 2007). Many elementary schools dropped science in favor of increased emphasis on reading. Early reading programs increased emphasis on learning basic decoding skills. Students focused on learning to read but not on reading to learn science.

Now that science tests are included in evaluation of schools, the emphasis on detail-oriented questions deters students and instructors from emphasizing understanding and lifelong learning. This emphasis on details gives students a distorted picture of science and scientific careers. Scientists spend little time memorizing. They spend more

time conducting experiments and interpreting the results. They know the details relevant to their own work because they use the information every day to reason about dilemmas. When they need a detail from another field, they are likely to look it up rather than depend on their memory.

Similarly, science instruction can encourage students to use reliable Internet sites to look up information rather than relying on a possibly faulty memory or being influenced by persuasive messages. For example, to answer the question from the California assessment, students could use a site such as wiki.answers.com and enter "describe an atom." This site returns the answer: "An atom consists of a nucleus and electrons. The nucleus consists of protons and neutrons crammed together. The electrons revolve around the nucleus in shells or orbits." Of course, learners need to know what information they are missing before they can look it up. Identifying gaps in knowledge is part of science reasoning and is emphasized in the knowledge integration pattern. The research from the Technology-Enhanced Learning in Science (TELS) center and the Center for Curriculum Materials in Science (CCMS) both funded by the National Science Foundation showed that students learn more when they explore science ideas than when they rely on typical textbooks (Kali et al., 2008).

For example, rather than memorizing the parts of an atom, students could learn and apply ideas about atoms in units that spur lifelong learning. While studying a unit on Hydrogen Fuel Cell Cars they could learn about atoms to investigate the tradeoffs between gasoline-powered and hydrogen-fuel-cell-powered cars and buses. They could study the chemical structures of materials and relate those to recycling policies.

In summary, we are abandoning lifelong science learning and hands-on experimentation so students can practice and take tests emphasizing details. We can reclaim some of this valuable classroom time by using online learning environments that incorporate learning tests to measure lifelong learning skills. Think about what would happen if scientists spent time memorizing new facts rather than investigating compelling problems. To retain our competitive advantage in science we need to restore a focus on lifelong learning to the classroom.

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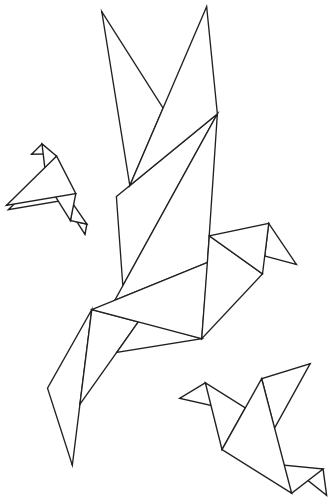

AUTHORS

Hillary R. Michaels, Ph.D.
Hillary R. Michaels Consulting, LLC

Katrice Hawthorne, MA
Norfolk State University

Nuria M. Cuevas, Ph.D.
Southern Association of Colleges and Schools Commission on Colleges

Alexei G. Mateev, Ph.D.
Norfolk State University

CORRESPONDENCE

Email
hillarymichaels@gmail.com

CREATING SEAMLESS K-16 PATHWAYS: ROLE OF ASSESSMENT

The large number of underprepared students entering the nation's two-and four-year colleges and universities has created what Levin and Calcagno (2008) consider a "remediation crisis" (p.181). Despite the recent attainment of high school diplomas, many incoming students are academically unprepared for college-level coursework in reading, writing, and mathematics (Levin & Calcagno, 2008). The disconnect between high school competencies and college readiness poses a serious threat not only to President Obama's ambitious goal of having the highest proportion of college graduates in the world by 2020 (President Obama, Address to Joint Session of Congress, Feb. 24, 2009), but most importantly to the academic and career goals of today's youth. As Calcagno, Crosta, Bailey and Jenkins (2007) have noted, students who enter college through remedial pathways are less likely to graduate. The misalignment between K-12 and postsecondary expectations is a cause for serious concern, and educators must work together to bridge this ever-widening gap.

Attempts to create a seamless K-16 system have been stymied by the severe lack of information that K-12 and postsecondary educators as well as prospective college students have regarding each other's expectations and goals. This information asymmetry is clearly manifested in the misalignment of K-12 exit assessments and post-secondary education entry and general education assessments (Kirst & Bracco, 2004).

Effects of Misalignment on Assessment

Assessment serves several important roles; it provides opportunities for continuous improvement of student learning. It provides the academic community with opportunities to evaluate student outcomes, examine curriculum, and engage in reflection to determine if student performance corresponds to the expectations of the academic community. Assessment is an integral component of education at every level, yet secondary and postsec-

"The lack of shared knowledge about assessment at each level makes it difficult for secondary and postsecondary institutions to develop cohesive academic communities that are able to use assessment to align student achievement standards."

ondary institutions do little to determine if the battery of tests students are required to complete are aligned or adhere to common standards. The lack of shared knowledge about assessment at each level makes it difficult for secondary and postsecondary institutions to develop cohesive academic communities that are able to use assessment to align student achievement standards.

Kirst and Bracco (2004) found that "between high school and college, college-bound students face a confusing set of exams… (K-12 exit, college entrance, and college placement) [that] often use different formats and emphasize different content" (p.10; also Le & Robyn, 2001). Moreover, many exams designed to determine students' competency for high school graduation are of little use to postsecondary institutions as they bear little resemblance to the knowledge and skills expected of incoming college students (Atkinson & Geiser, 2009; IHEP, n.d.). This lack of alignment is inevitable as the end-of-course tests required by public high schools, which reflect state standards, are benchmarked based on the amount of content knowledge displayed in a particular course. These end-of-course tests are developed with high school content in mind. Proficiency is usually determined through a standard-setting method with high school instructors defining the skills and knowledge that students need to demonstrate to be categorized into specific performance levels such as *Basic* or *Proficient* in the subject. While these standards and benchmarks may meet high school proficiency standards, they are not designed in concert with post-secondary faculty nor are they intended to meet postsecondary needs or college readiness expectations. Brown and Conley (2007) concluded that "state high school assessments and the knowledge and skills necessary for university readiness align in areas that might be characterized as more basic and do not align as well in areas requiring more sophisticated cognitive functioning" (p.152). Embedding college readiness indicators in curriculum and assessment at the secondary level would allow for a better alignment of high school exit and college entry standards.

Many students, especially recent high school graduates, are baffled when they are directed to remedial courses. These students have likely passed high school exit exams and have been deemed competent in the high school curricula. However, approximately 60 percent of incoming students are placed in at least one remedial course and less than half of those students will ever enroll in the first college-level course (Bailey & Cho, 2010). In Virginia, for example, nearly one of every five freshmen requires remediation (SCHEV, 2007).

Accordingly, enrollment in remedial courses significantly increases the time to degree and decreases the odds of degree completion for traditional-age students (Calcagno et al., 2007). Some students must surely feel duped when directed to remedial college courses after having successfully met high school expectations. Students may feel stymied in academic pursuits when they learn that credit toward the degree will not be received for such coursework. A stigma often is attached with student placement into remedial college courses (Lesley, 2004). Boulton (2005) suggests that the embarrassment and shame students with deficiencies often face leads to "intellectual danger" and diminished educational outcomes.

Further, the costs of remediation are staggering. Over a decade ago remediation was estimated to cost over $1 billion annually (Breneman & Haarlow, 1998). The Bill and Melinda Gates Foundation reported that current expenditures for remedial education exceed $2.3 billion per year (Jaschik, 2008). McCabe (2000) notes the specious complaints of legislators and opponents of remediation (Burd, 1996), who claim that college remedial programs are a duplication of high school curriculum and that the public is being charged twice for academic content that should have been mastered before college enrollment. Furthermore, McCabe contends that a gap exists between the competencies required for high school graduation and those required for college admittance. Consequently, students, especially those from traditionally underrepresented groups, are adversely affected by the costs of remediation, and many may be deterred from continuing or starting their education when faced with the costs associated with a year or more of remedial education that does not count towards a degree.

Current State Initiatives: Systems Approach

In terms of integrating frameworks and developing coherent systems, assessment is well-positioned to breach the chasm between K-12 and postsecondary education. However, the lack of coherence within assessment systems has contributed to the separation between K-12 and postsecondary standards. In both systems, coherence between curriculum and competency standards is needed if true reform is to occur. Moreover, cooperatively developed standards allow assessment "to move beyond mere coherence…and to achieve a resonance in complex systems in which the parts [K-12 and postsecondary] are mutually supportive and beneficial" (LeMahieu & Reilly, 2004, p. 202).

Brown and Conley (2007) suggested applying the emerging theories of systems coherence (e.g., Fuhrman, 2001) as a conceptual approach for exploring the impact of information asymmetry or (mis)alignment between K-12 and postsecondary education assessments. The theories of systems coherence posit, "By creating more explicit connection between local educational systems and state standards, superior learning will result" (Brown & Conley, 2007, p. 138).

There is growing energy behind the issue of alignment of assessment between K-12 and postsecondary education. A number of organizations are rallying for the creation of standards, assessments, and tracking systems that link secondary and postsecondary curriculum and evaluate students' educational trajectories. The Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA) introduced the K-12 Common Core State Standards (CCSS) in 2010 to outline the knowledge and skills high school graduates need to succeed in college. As of Novermber 2011, the CCSS have been adopted by 45 states and the District of Columbia. The American Diploma Project (ADP; 2011) has developed rigorous college readiness benchmarks to promote college and career readiness. The ADP Network consists of 35 states that have committed to aligning K-12 and postsecondary curriculum and assessments.

"Embedding college readiness indicators in curriculum and assessment at the secondary level would allow for better alignment of high school exit and college entry standards."

Virginia is a member of the ADP network and the State Council of Higher Education for Virginia's (SCHEV, 2007) strategic plan advocated alignment of P-12 with higher education and alignment of higher education with state workforce needs. Curriculum alignment between primary, secondary, and postsecondary education is endorsed, as are integrated P-16 data collection systems. The plan notes that P-12 and postsecondary alignment increase college access for underprepared, minority and low-income students.

To increase the college readiness of high school students, several states, most notably California (Cohn, 2010; Tierney & Garcia, 2011), have crafted system-wide college readiness initiatives to increase access, alignment, and success. Many other states have moved toward instituting more assessments at the K-12 level; yet, there is little evidence that those assessments align with postsecondary standards (Atkinson & Geiser, 2009; Brown & Conley, 2007). Intentionally aligned and collaboratively designed curriculum and assessments throughout the K-16 pipeline provide a viable tool to ameliorate the information asymmetry that plagues our current educational system.

Collaboration and Communication for Better Alignment: Consistent Signals

The second conceptual anchor for studying misalignment in the K-16 pipeline as suggested by Brown and Conley (2007) is signaling theory advanced by Kirst and Venezia (2004). This theory holds that when the signals from state standards, assessments, and postsecondary admission requirements are inconsistent it is impossible for secondary teachers and administrators to craft programs and practices that are consistently aligned with the standards of postsecondary institutions. To achieve coherence and alignment, collaboration and communication are imperative as they set the groundwork for providing consistent signals. Signaling promotes and sustains alignment as K-12 and postsecondary educators become cognizant of the other's respective standards and expectations.

"Current research suggests that 44 percent of college faculty believe students are unprepared for the rigors of college-level writing whereas only 10 percent of high school teachers hold that position."

Alignment between college faculty and high school faculty is essential as current research suggests that 44 percent of college faculty believe students are unprepared for the rigors of college-level writing whereas only 10 percent of high school teachers hold that position (Sanoff, 2006). Collaboration and ongoing cross-level professional development among K-12 and postsecondary educators is essential if a seamless K-16 pipeline is the aim.

For example, California State University (CSU) campuses implemented the Early Assessment Program (EAP) with local high schools in an effort to reduce the number of first-year students requiring remediation (Goen-Salter, 2008; Howell, Kurlaender, & Grodsky, 2010; Tierney & Garcia, 2011). The EAP targets high school juniors, enables them to take the CSU placement tests, and recommends high school courses that can enhance their college-readiness (Goen-Salter, 2008; Howell et al., 2010; Tierney & Garcia, 2011). Additionally, CSU campuses in Long Beach and San Diego have developed unique partnerships with local K-12 systems to align curriculum and assessments to college expectations, to increase the number of students who are college-ready, and to provide cooperative professional development opportunities for high school teachers and college faculty (Cohn, 2010).

The collaborations listed above are in their infancy, but the results from Long Beach and San Diego are promising (Cohn, 2010). However, Tierney and Garcia (2011) found that in order to effect substantive change, the EAP would require the formation of viable and continuous relationships between a particular postsecondary institution and local school districts.

To better align high school and college curricula the following suggested actions are recommended:

- Ongoing communication is paramount. K-12 teachers need information about college readiness standards, expectations, and assessments. Conversely, college faculty need information about K-12 standards, expectations, and assessments. The conversations should seek not to establish blame but rather should initiate progress.

- Relationships between administrators and faculty at each level must be forged and fostered, as collaboration is crucial to the success of any alignment effort. According to Conley (2011), "States have, for the most part, developed their high school exams with minimal input from postsecondary education, which in turn has not used the results from these exams for substantive purposes or decisions" (p. 6). K-12 and post-secondary participants in Kirst, Venezia, and Antonio's (2004) study "consistently stated that no one asked them to participate in devising the others' standards or assessments" (p. 287).

- Curriculum alignment should be a key goal for high schools and colleges (Conley, 2011). This alignment can be fostered through curriculum mapping of high school courses and entry-level college courses. Course sequencing that ensures that students meet college readiness expectations and senior seminars taken during students' final year of high school might ensure that students have the requisite knowledge and skills.

- Aligning assessments are recommended as "a much-needed strategy to improve college-readiness and enhance postsecondary success for all students" (IHEP, n.d., p. 2). Conley (2011) explores initiatives that align high school and college level content through the careful examination of the content and skills addressed in entry-level courses. Porter, Polikoff, Zeidner, and Smithson (2008) offer manageable approaches to conducting alignment studies of test content and curriculum standards.

- Placement tests are a key juncture between K-12 and college assessments. Rosenbaum and Becker (2011; also Long & Riley, 2007) hold that successful high schools "use the placement test to make college standards visible from the start, thereby posing clear, consistent goals throughout high school" (p. 16). Early alert assessment

programs also provide high schools with actionable data that can be used to address academic deficiencies.

- To determine where local secondary and postsecondary institutions diverge, research is needed. Replicating the studies of Le and Robyn (2001) and Brown and Conley (2007) could serve as a starting point. Institutions at both levels need to participate in data-driven analyses of student outcomes, assessment instruments, and curricula benchmarks; integrated data collection systems would prove especially beneficial to these efforts. High school and college faculty are also encouraged to form "communities of practice" where they engage in action research to address issues and determine solutions.

Educators are grappling with devising a comprehensive solution to the difficulties students are facing in their transition to higher education. Partnering K-12 and postsecondary institutions that communicate, collaborate and use assessment appropriately can create coherent networks to assist students in making seamless transitions to college.

Conclusion

The diversity of American secondary and postsecondary institutions is generally considered one of the strengths of our educational system. However, the lack of common standards or a national curriculum and the varying levels of selectivity make it difficult to align secondary and postsecondary agendas. While assessment serves an important role in alignment initiatives, localized assessments linked to particular institutions will be severely limited in their ability to "capture information on the full range of content knowledge and cognitive skills" (Brown & Conley, 2007, p. 154) that are expected of students at U.S. postsecondary institutions with varying admissions standards and college readiness expectations.

The variety of colleges and universities available to students yield various implications for alignment. Secondary schools may find it difficult to develop rigorous standards that impact students' college readiness considering the diverse postsecondary institutions available to students. As such, there might always be minor gaps in expectations and slight information asymmetry. Nevertheless, current conditions demand action. Any partnerships that derive from K-16 alignment must be organic. The goals of both parties must intersect. Most importantly, both parties must be dedicated to increasing the academic opportunities afforded to local students. Assessment can play an important role in these partnerships as it necessitates systems coherence and consistent signaling.

The potential benefits of a K-16 partnership are plentiful and include an increase in the number of college-ready students, the opportunity to enhance the education and training of future teachers, provide targeted professional development to current teachers, reduced cost of remediation, and improved rates of access and graduation for students from underrepresented groups. However, the solution is unlikely to be one size fits all.

Colleges and universities may have varied perceptions of students' college-readiness based on the selectivity of the institution. Creating a seamless K-16 pathway is undoubtedly challenging; however, it seeks to improve student outcomes by increasing access and enhancing academic support. President Obama has set an ambitious goal that will require cooperation and collaboration from educational institutions at all levels as it depends greatly on the ability of P-16 institutions to retain and strengthen students.

"Creating a seamless K-16 pathway is undoubtedly challenging; however, it seeks to improve student outcomes by increasing access and enhancing academic support."

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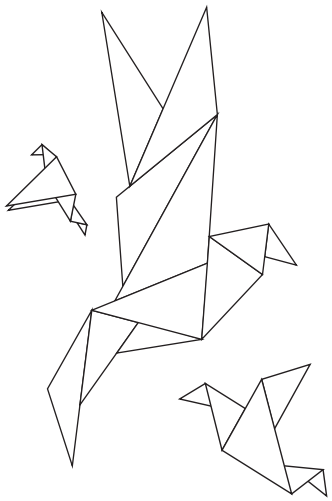

Abstract

Response to Intervention (RTI) is an educational approach that integrates ongoing assessment of individual student progress with targeted instruction. Administrators and teachers in P-12 schools expressed a need for colleagues in higher education to provide training to general education pre-service and in-service teachers in selecting appropriate instruments and conducting accurate assessments, tasks traditionally performed by special education teachers. Researchers developed a scale to measure self-efficacy of educators using these approaches to better identify areas in which educators need additional support. Researchers wanted to know if the scale functioned as expected and if it was appropriate to use the scale for their intended purposes. This paper describes the results of the study of the characteristics of the scale following the administration of the pilot, including indices of score reliability and utility. The researchers used measures of internal consistency and factor analysis to assess scale quality. The results indicate that the scale is useful for measuring teacher perceptions of their self-efficacy using multi-tiered instructional approaches.

AUTHORS

Susan K. Barnes, Ph.D.
James Madison University

Melinda S. Burchard, Ph.D.
Messiah College

CORRESPONDENCE

Email
barnessk@jmu.edu

QUALITY AND UTILITY OF THE MULTI-TIERED INSTRUCTION SELF-EFFICACY SCALE

When asked to describe the education system in the United States, one of the first issues that respondents address is that there is not one, unified system. A typical description would start with clarifying that there are separate systems for P-12 schools and postsecondary education.

Some states are working toward integrating these systems, with the goals to reduce resulting disjuncture and improve instruction (Minnesota, 2002). At the heart of improved instruction, at any level, is teacher quality. A key link between the systems of higher education and P-12 is found in teacher education programs, particularly in the area of assessment. Assessment issues in P-12 and post-secondary systems are similar. Practitioners in both systems collect and use performance data to inform accountability systems and to improve instruction. Efficiently planning to meet the instructional needs of in-service teachers, known as professional development, of pre-service teachers in teacher preparation programs, and of P-12 students requires the same thoughtful processes – assessing the learners' needs, planning and implementing the appropriate intervention, evaluating the effectiveness of that intervention, and making revisions in subsequent instruction based on the outcomes. In public schools, that process is known as Response to Intervention (RTI).

RTI is a 2004 federal public education regulation requiring educational practices designed to narrow achievement gaps and meet the needs of all students (Individuals with Disabilities Education Act of 2004). Data concerning a child's response to instruction and interventions can be used to guide instructional and behavioral decisions and even eligibility for special education services. Implementation of RTI practices requires more than "tweaking existing assessment practices" but instead necessitates systems change (Burns & Ysseldyke, 2005).

While the 2004 regulations do not mandate a multi-tiered instructional model, RTI practices do not work without implementation within a multi-tiered instructional model (MTI). In an MTI model, educators design instruction with well-integrated content, goals, evidence-based instructional practices and assessment practices for best benefit to most learners in the general education setting. When students struggle with core instruction, educators reteach content to appeal to varied learning styles or to fill learning gaps. When students do not respond to reteaching, educators intervene with tiered interventions at varied levels of intensity, first providing strategic interventions in small groups and when necessary providing intense interventions in very small groups or individualized to meet the unique needs of learners. MTI is a system involving collaborative partnerships between classroom teachers, specialists and administrators.

Among other practices, MTI stresses evidence-based practices and data-driven decision-making (Barnes & Harlacher, 2008). Some practices are not so new, such as collaboration, though MTI pushes collaboration to new levels. With an emphasis in early interventions to address struggles before gaps reach serious levels, specialists may play proactive roles in core instruction, interventions, or assessment structures. Other MTI principles may feel new to some teachers such as data-driven decision-making, and implementing tiered interventions to meet individual needs.

Public schools requested support in providing professional development for RTI and MTI practices. Those requests were non-specific. In order to design appropriate professional development, the researchers started with a needs assessment. They reviewed literature to determine core content knowledge and skills used in RTI and MTI approaches and to find assessment instruments to measure needs for training in those areas. Various checklists exist to evaluate school or district-level implementation of a multi-tiered intervention methods or RTI practices such as Florida's Self-assessment of Problem-solving Implementation (SAPSI) or Kansas' Innovation Configuration Matrix (Florida Problem-Solving/Response to Intervention Project, 2008; Kansas State Department of Education, 2009). Each of these checklists works as a tool for schools or districts to evaluate systematic levels of progress toward or implementation of various practices such as assessment practices. At the beginning of this project, a review of available scales determined that no one scale or combination of scales effectively assessed self-efficacy in the unique components of MTI practices.

During the time of this study, Florida published the Perception of RTI Skills Survey, a self-rating scale used by teachers to evaluate skills specific to RTI practices such as hypothesizing reasons for gaps and determining appropriate interventions (Florida Problem-Solving/Response to Intervention Project, 2008). Nunn and Jantz (2009) recently demonstrated that the Teacher Efficacy Beliefs and Behavior Scale (TEBBS; 1998) scores have validity for measuring general teacher self-efficacy. Nunn, Jantz and Butikofer (2009) further demonstrated that the TEBBS positively correlated with one measure of student outcomes, the Indicators of RTI Effectiveness Scale (Nunn, 1999).

While the impetus of this study was to assess professional development needs for in-service educators, this study provided valuable applications for teacher education programs. Pre-service educators must be prepared to enter their profession fully equipped to meet the varied demands of MTI practices. Therefore, the research focus on professional development needs of in-service teachers provided important insight for teacher education program development.

The instrument developed and piloted through this study, the Multi-tiered Instruction Self-Efficacy Scale (MTISES), specifically assesses teacher self-efficacy for MTI practices using a survey taking approximately ten minutes to complete. Because the first version, the Response to Intervention Self-efficacy Scale (RTISES), was a new instrument, the researchers wanted to know if the scale functioned as expected and if it was appropriate to use the scale for their intended purposes.

"At the heart of improved instruction, at any level, is teacher quality."

Research Questions

1) Does the scale measure one broad construct or several more specific constructs that can be used to characterize self-efficacy using MTI approaches?
2) What are the meanings of the factors that account for the variation among the set of items?
3) How can the scale be used for planning professional development in using MTI approaches?

This report addresses these questions using several methods, including descriptive and factor analyses.

Participants

Participants in the scale development process included educators from two school districts, teacher education faculty, and university psychometric experts. Psychometric experts included doctoral students in an assessment and measurement program and one university professor in educational psychology assessment. The teacher educators came from departments of special education and of general early and elementary education. Both school districts are rural with farming communities and small towns. One of those districts served as an MTI pilot district, fully engaged in implementation of MTI practices. The second school district was in early stages of RTI planning. Participants in the pilot of the instrument included educators from three school districts, two fully engaged in MTI implementation. The 184 survey respondents included teachers, specialists, and administrators.

Instrument Development

In order to develop a scale with practical and accurate value for educators and professional development trainers, researchers followed the DeVillis scale development process (2003). That process follows eight steps: (1) decide what to measure, (2) generate item pool, (3) format the measurement, (4) have item pool reviewed by experts, (5) consider validation items, (6) administer items to a developmental sample, (7) evaluate items and scale quality, and (8) determine optimal scale length.

Determining Constructs and Items

The growing body of literature on RTI and MTI-related issues guided the content for the first two steps, focusing on five core constructs. These constructs represent emerging MTI practices, the areas in which teachers would most likely need to revise familiar methods used for assessment and instruction within their classrooms. The researchers identified those five constructs as universal design for learning, proficiency in judging evidence-based practices, collaboration, data-driven decision-making, and implementation of interventions. Universal design for learning (UDL) emphasizes proactive instructional design to address needs of all learners in varied presentation of material, multiple ways to engage with learning, and multiple expressions of learning. UDL respects varied learning styles, ability levels and/or language competencies (Strangeman, Hitchcock, Hall, & Meo, 2006). Proficiency in judging evidence-based practices includes the need to find what practices are research-based, to judge appropriateness for populations and purposes, and to evaluate effectiveness based upon the research (Barnes & Harlacher, 2008). MTI may change the degree of collaboration (Burnes & Coolong-Chaffin, 2006; Leaving No Child Behind, 2007). Data-driven decision-making requires educators to find or create appropriate assessment tools, gather meaningful assessment data, and interpret and make decisions based upon data (Barnes & Harlacher, 2008; Frey & Fisher, 2004; Fuchs & Fuchs, 2007). Finally, educators must implement small group or individualized interventions in tiers of increasing intensity to meet the specific needs of individual learners (Fuchs & Deschler, 2007; Mellard, 2008). Though MTI incorporates many practices of good teaching, these five components emerge as areas requiring refinement of practice.

"RTI is a 2004 federal public education regulation requiring educational practices designed to narrow achievement gaps and meet the needs of all students."

Scale refinement. To help maximize item appropriateness, scale developers had all items reviewed by experts for relevance to the area of interest, MTI practices. Three focus groups participated in this part of the scale development process. The first focus group consisted of two university faculty who had researched MTI practices, and one experienced teacher. A second focus group consisted of general and special educators, specialists, and administrators active in MTI leadership. Focus group participants were asked if all relevant issues related to self-efficacy using MTI practices were represented and if there were items that needed to be added or omitted. This item review process was one way the researchers addressed the concern of sampling the content of this new area and confirming their theoretical framework of self-efficacy using MTI practices that they had constructed based upon their review of literature and professional experiences. Participants shared feedback about specific items, the scale as a whole, and the time required to complete the questionnaire.

The third focus group consisted of psychometric experts, two doctoral students in psychology assessment and their professor. In multiple sessions, that focus group mapped items to constructs, evaluated wording of items and response options, critiqued validation items, and required defense of items, allowing for elimination or refinement of items. During this scale refinement phase, one debated issue was the labeling of the anchors on the response scale. Several configurations were discussed including a sliding scale upon which respondents could place a marker indicating their level of agreement to statements regarding perceived competency in a particular area. Other options included language such as, "I do not know how to do this" and "I am an expert at this" to indicate levels of self-efficacy. Each proposed scale generated concerns from either the psychometricians or the teachers. The goal was to use language that would be understood and used consistently among the educators so that the results could be interpreted meaningfully. Interestingly, the focus group participants in this process helped to create a response option very similar to Florida's Perception of RTI Skills Survey (Florida Problem-Solving/Response to Intervention Project, 2008) though that study was published after this stage of this study. Focus group participants in this study justified answers ranging from "I'll take anything" to "I'm ready to help others," motivated by a desire to offer options which would limit defensiveness yet focus on self-efficacy for the specific behaviors. The initial version, the RTISES, is found in Appendix A.

Scale piloting. Finally, the RTISES was piloted using web-based survey software. Participants included three university faculty and 184 educators in three school districts. Most respondents served students in kindergarten through second grades (n=79, 42.2%) and/or third through fifth grades (n=71, 38%) with 31 respondents serving all grades (16.6%) and only three serving middle school or secondary grades (.5%). Survey participants included 87 general educators (46.5%), 38 special educators (20.3%), with 43 (23%) serving all students, and the rest serving specialized target populations.

Scale Quality

Reliability of Scale Scores

Procedure. The reliability of the scores from this new instrument was examined. First, to check the homogeneity of the items, a test of internal consistency was performed. The goal was to achieve a Cronbach's alpha of at least .90. Next, the item-total correlations were calculated. The goal was to have Pearsonian item-total correlations over .3.

Results. Cronbach's alpha based on the 58 standardized items was .976. Appendix C provides the results of the Pearsonian item-total correlation. Of these 58 items, 57 of them had correlation coefficients of over .3, most between .6 and .8. All correlations were statistically significant at the .001 level.

Constructs Characterizing the Item Set

Procedure. The researchers conducted a preliminary check to see if the set of items measured one broad construct, self-efficacy using MTI approaches, or several more specific constructs, such as the five areas explored in the item generation process. First, an 8-item subscale measuring the construct of general self-efficacy was included in the pilot to provide additional understanding of how the new items related to this general measure (Schwarzer & Jerusalem, 1993). The researchers expected that the responses to this subscale would be related positively to the responses on the new RTISES. Next, researchers examined the results of the factor analysis that used principal component analysis to generate initial values.

Results. The correlation between general self-efficacy subscale score and the RTISES total score was positive, but not strong: $r(155) = .14$, $p = .08$. While the correlation was not significant relative to the standard alpha level of .05, the p-value was less than .10. These eight items were not included in further scale analysis.

"Implementation of RTI practices requires more than 'tweaking existing assessment practices' but instead necessitates systems change."

The factor analysis extracted 10 factors with initial Eigenvalues greater than one, however, there is one predominate component, initially labeled by the authors as self-efficacy in using MTI approaches, explaining nearly half of the variance. This result provides encouragement for future work continuing to gather evidence to support a claim of unidimensionality of the construct (see Table 1, Figure 1 and Appendix B). Recall that the scale was designed to address the a priori framework of five components comprising self-efficacy using MTI approaches and that each item essentially appears twice – as an item addressing the need for information and as an item addressing the need for training in the instructional method. Therefore, the criteria number for factor extraction was set to five, instead of ten. The Rotated Component Matrix (Appendix D) shows how items loaded on five factors. SPSS output generated the labels Components 1 – 5 on the matrix. Bold type has been used in the matrix to flag strong values and to facilitate defining the substantive meaning of the factors that account for the set of items. Titles were assigned to the groups of items and used in Figures 2 and 3.

Table 1
First 10 Eigenvalues

Component	Total	% of Variance	Cumulative %
1	24.947	43.013	43.013
2	4.808	8.289	51.302
3	4.187	7.220	58.521
4	3.581	6.174	64.696
5	2.420	4.173	68.869
6	2.226	3.838	72.707
7	1.531	2.640	75.347
8	1.295	2.233	77.580
9	1.192	2.055	79.635
10	1.070	1.845	81.480

Examination of the Component Matrix revealed that the items did not load as expected based on the theoretical design of the issues related to self-efficacy in using the MTI approaches. Recall that the instrument was designed with five components in mind – universal design for learning, proficiency in judging evidence-based practices, collaboration, data-driven decision-making, and implementation of interventions. All items loaded positively on the first factor. Items addressing how to adapt learning activities to engage English Language Learners (ELLs) and how to allow ELL students to demonstrate learning loaded on a factor that had not been anticipated in the theoretical framework. Collaboration with grade level team members, items15 and 16, loaded on two different factors.

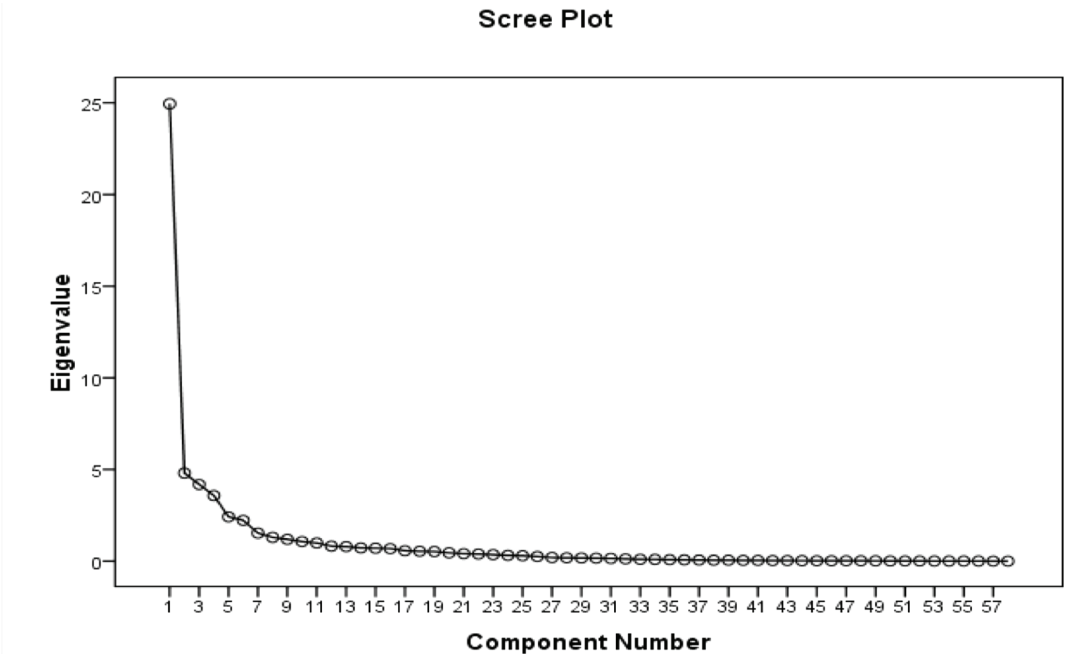

Figure 1. Components extracted by SPSS factor analysis from initial scale.

These items loaded with items addressing collaboration with professionals outside of the grade level teams and with using universal design. This analysis provided some evidence that self-efficacy in using the MTI approaches is not one broad construct, but rather several more specific ones. Using the information from loading patterns, the authors labeled the factors with titles descriptive of the items found there – universal design to teach and engage learners, meeting the needs of English language learners, seeking evidence-based support, collaboration, and using data for progress monitoring and implementing solutions for students. Figures 2 and 3 illustrate the a priori and new frameworks.

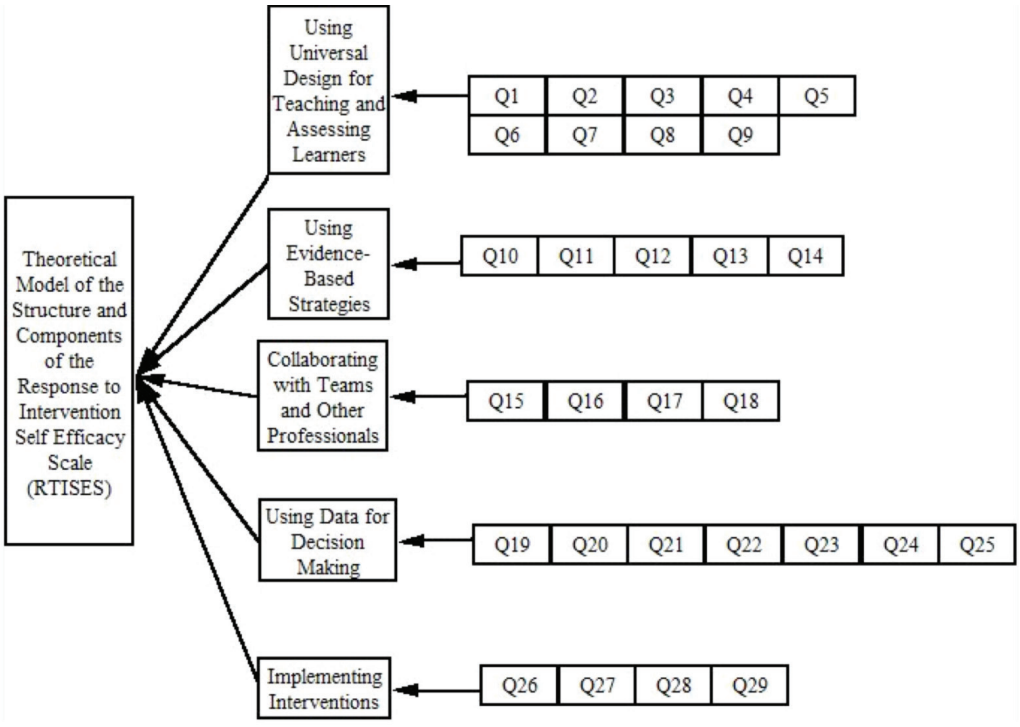

Figure 2. Theoretical model of structure of the RTISES.

"Proficiency in judging evidence-based practices includes the need to find what practices are research-based, to judge appropriateness for populations and purposes, and to evaluate effectiveness based upon the research."

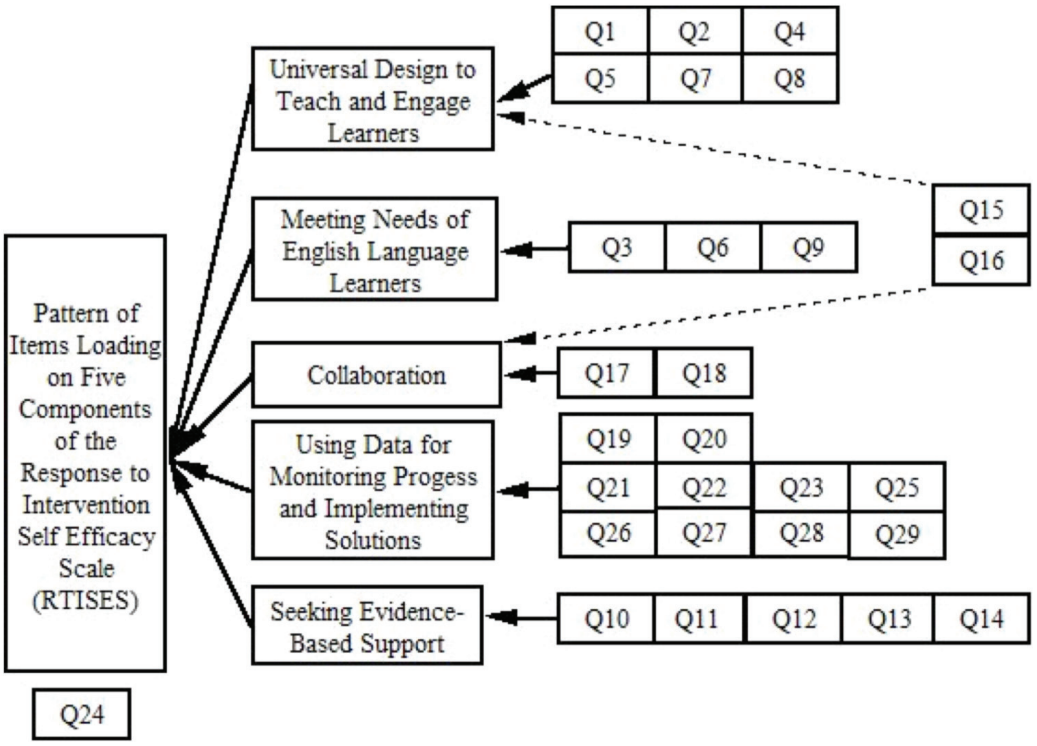

Figure 3. Pattern of items loading on five components of the RTISES.

The authors examined the correlation matrix for additional information to address scale quality. The extremely high correlations between the items looking at educators' perceived needs for more information and their perceived needs for related training (see Appendix E) prompted a closer exploration into scale length and the possibility of removing items without losing important information. The instrument design presented questions as sets of paired items wherein respondents were first asked to address their need for information in a particular area and then asked to address their need for training in that same area. Careful review of the correlations between the two items revealed that the bifurcated questions addressing information and training could be collapsed into a single item, thus reducing the scale by half. Because the purpose of the scale was to inform professional development needs, the items addressing information were eliminated and further analysis used the data from the items measuring the need for training.

One item addressing behavior did not fit with other items. While the other items did not specifically address teaching and learning in a strictly academic or cognitive processes domain, the implication was there. The stand-alone item (Q24) that addressed behavior in the social-emotional domain was dropped from the scale.

The authors analyzed how well the training items function without their companion information items. Reducing the number of items would benefit the survey respondents by reducing time needed to respond to the questions, but longer scales typically have higher reliability estimates. To estimate reliability, researchers calculated Cronbach's alpha for subscales to measure internal consistency and to evaluate how well these new subscales functioned. Cronbach's alpha reliability coefficients range between 0 and 1, with higher values indicating greater internal consistency. The results for this study are found in Table 2. Using the guidelines provided by a SPSS handbook (George & Mallery, 2005) the alpha values for these five new subscales (minimum alpha = 0.789 and maximum alpha = 0.925) are considered to be very good to excellent. The measure of reliability for the total scale, the Cronbach's alpha for 28 items, is .952, a very strong indication of overall internal consistency, but not an absolute indication of unidimensionality.

Factor analysis using just the training items extracted six factors with initial Eigenvalues greater than 1, and one predominate component explaining 45 percent of the variance (See Figure 4). The Rotated Component Matrix (Appendix F) shows how items loaded on six factors. Bold type has been used in the matrix to flag strong values and to

Table 2
Item-Total Correlations for Subscales

Subscale	Number of Items	Items	Cronbach's Alpha
Differentiation to Assess and Engage Learners	6	1, 2, 4, 5, 7, 8	.914
Meeting Needs of English Language Learners	3	3, 6, 9	.789
Seeking Evidence-based Support	5	10, 11,12, 13, 14	.925
Collaboration	4	15, 16, 17, 18	.861
Data-driven Decision Making	10	19, 20, 21, 22, 23, 25, 26, 27, 28, 29	.911
Total Scale	28		.952

User-defined missing values are treated as missing.
Statistics are based on all cases with valid data for all variables in the procedure.

facilitate defining the substantive meaning of the factors that account for this smaller set of items. Examination of the Component Matrix revealed that using this reduced scale, the items loaded nearly as expected based on the theoretical design of the issues related to self-efficacy in using the MTI approaches. The five initial components (universal design for learning, proficiency in judging evidence-based practices, collaboration, data-driven decision-making, and implementation of interventions) and the additional component addressing how to engage and assess English Language Learners are represented here. Collaboration with professionals outside of the grade level teams emerged as a separate component. Titles were assigned to the groups of items and used in Figure 5.

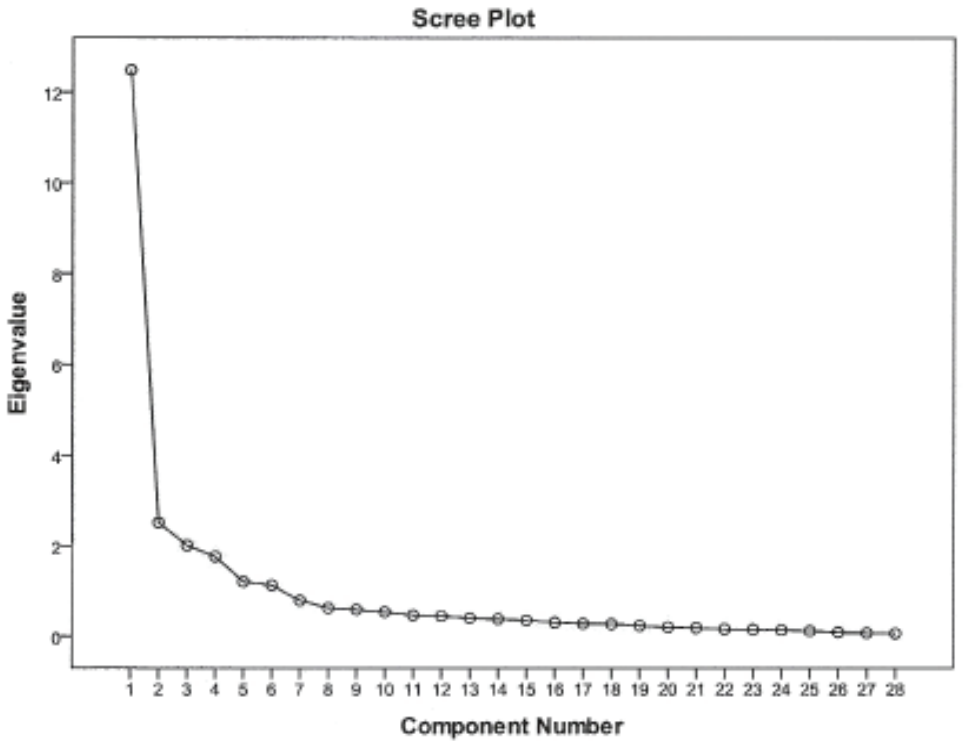

Figure 4. Components extracted by SPSS factor analysis from revised scale.

"Respondents seemed to feel that meeting the needs of English language learners is different from meeting the needs of other learners and that behavior is a different concern than academic purposes."

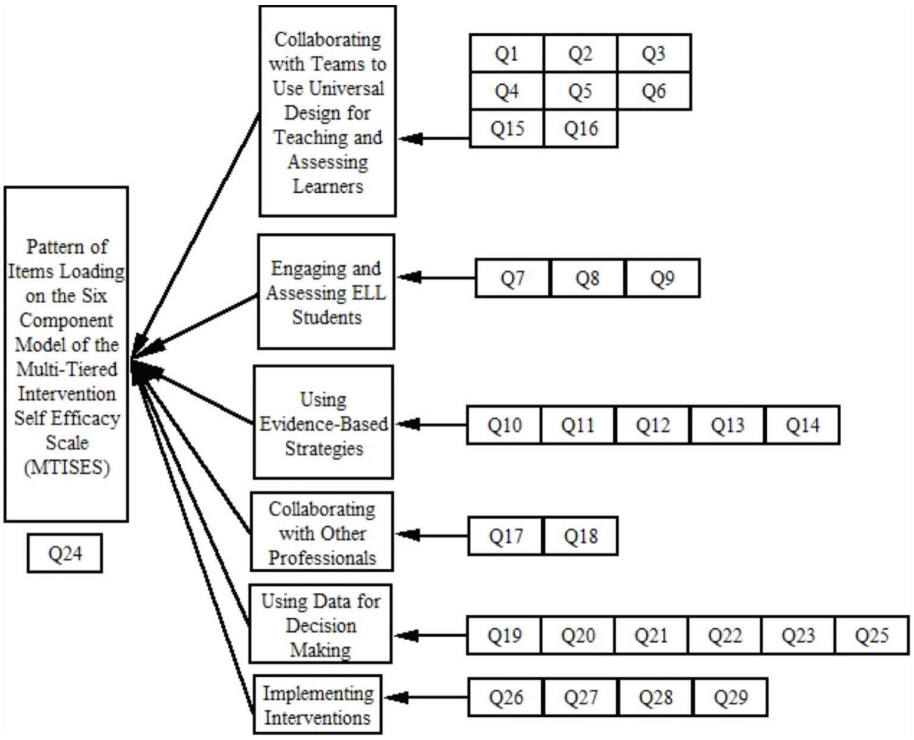

Figure 5. Pattern of items loading on six components of revised MTISES.

Utility. In this small scale study, the researchers demonstrated the value of the RTISES as a measure of teacher self-efficacy specific to MTI practices, especially for the purpose of professional development needs analysis. The resulting MTISES worked to measure teacher self-efficacy for MTI practices in five specific areas of MTI practices. One next step is to determine the utility of this scale for similar purposes in a larger scale study. A second future step is to determine the utility of subscales of the MTISES for pre-post measures of gains made in response to professional development in those areas. Professional development modules and courses are currently under development for components measured by the MTISES. Therefore, the researchers intend to study the utility of pre-post assessments connected to professional development modules and courses on each separate subscale of the MTISES.

Discussion and Practical Applications

The initial results of the instrument quality review provided some evidence that the resulting MTISES (Appendix G) measures teacher self-efficacy in using MTI approaches. Careful scale construction processes were used to maximize item appropriateness. The direction of the relationship between this scale and another scale of general self-efficacy were the same, but not highly correlated, indicating self-efficacy in these practices is different from general self-efficacy. Internal consistency was strong for the subscales and for the overall scale. It appeared that the areas in which the teachers saw the need for professional development did not align precisely with the conceptual map envisioned by the investigators. Specifically, respondents seemed to feel that meeting the needs of English Language Learners is different from meeting the needs of other learners and that behavior is a different concern than academic purposes. Using data from this developmental sample to investigate optimal scale length, the researchers found evidence that the scale works well with half of the RTISES items removed. The subscale responses indicated areas in which teachers felt they needed additional professional development.

"Improving teacher quality through better teacher preparation and development is one of many ways that the P-12 and postsecondary education systems can collaborate."

The MTISES has practical applications for teacher education programs gathering data for accreditation purposes. Such accreditation is earned through meeting requirements of such organizations as the National Council for Accreditation of Teacher Education (NCATE) or the Teacher Education Accreditation Council (TEAC). Each accrediting agency requires data demonstrating that pre-service teachers have obtained quality

levels of knowledge and skills relevant to teaching practices and evidence of value added through program participation (National Council for Accreditation of Teacher Education, 2011; Teacher Education Accreditation Council, 2011). One northeastern college's teacher education program is currently using the MTISES to assess student gains in components of multi-tiered instructional practices through participation in a course and paired field-based experience.

Professional development on specific components of RTI and MTI is essential to successful implementation of RTI and MTI practices. Various experts have proposed models for such professional development (Brown-Chidsey & Steege, 2005; Kratochwill, Clements & Kalymon, 2007; Kratochwill, Volpiansky, Clements, & Ball, 2007). To respond to the practical needs, the researchers are collaborating with experts in higher education institutions to post on-line professional development modules offering continuing education credits for educators and meeting introductory-level needs of both pre-service and in-service educators. These settings will provide opportunities for researchers to gather objective measures of the teachers' competencies implementing MTI approaches. For example, teachers could demonstrate their ability to interpret student assessment data before and after receiving data analysis training and then their scores on these assessments could be compared to the self-reported, self-perceived ability to do the same task. Objective measures will give researchers insight into the relationship between actual and perceived skill levels.

Ongoing follow-up studies using the instrument to measure a change in the level of self-efficacy before and after professional development will add to the fuller understanding of the utility of the scale to measure change and the effectiveness of training. One large mid-Atlantic urban school district proposed use of the MTISES as one pre/post-assessment of effectiveness of new professional development initiatives. One research study in a southern state is currently using the MTISES as a pre/post- assessment instrument connected with district-wide professional development.

As both in-service training programs and pre-service teacher education programs implement professional development for MTI practices, instruments such as the MTISES are essential for identifying training needs and measuring gains in response to professional development. Results from all of these studies should demonstrate the utility of the MTISES for use in measuring change over time in response to professional development through post-secondary education.

Improving teacher quality through better teacher preparation and development is one of many ways that the P-12 and post-secondary education systems can collaborate. Summaries by the Education Commission of the States (ECS) describe other collaborative efforts, referred to as K-16 initiatives, including programs that focus on aligning standards and policies that develop cross-system structures (ECS Education Policy, 2011). Higher education assessment professionals are key stakeholders in the area of improving student learning by leading efforts to educate teachers, and also by making sure that their teacher preparation programs align with the P-12 curriculum and with licensure processes.

Conclusion

This study addressed key characteristics of the MTISES, specifically score reliability, the question of whether multi-tiered intervention self-efficacy has more than one specific construct, and the potential utility of the instrument. This initial administration and preliminary analysis of the MTISES provides researchers with guidance for further study, especially in the area of measuring change in self-efficacy after training. This work, along with repeated administrations of the test to increase the sample size, will add to the increasing evidence of construct and content validity of the scores.

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Appendix A
Response to Intervention Self-Efficacy Scale
The original version, RTISES

All scale items use the following response option:

	I'll take anything	I'm starting to get it, but I want lots more	I do this, but I could benefit from more	I don't feel the need for more	I feel ready to help others
information	○	○	○	○	○
training	○	○	○	○	○

DIRECTIONS:
For most of the following questions, you will be asked to indicate your needs for information and/or training in various educational practices. For each question, please indicate first how much more information you desire on that topic, and then how much more training you desire on that topic.

For purposes of this survey, information means resources you can process on your own through print or web-based resources.

For purposes of this survey, training includes such supports as mentorship, coaching, workshops, conferences and courses.

1. How much information and/or training do you need about differentiating presentation of information for various learning styles (listening, seeing, manipulating, etc.)?

2. How much information and/or training do you need about differentiating presentation of information for various ability levels (gifted, students with disabilities, etc.)?

3. How much information and/or training do you need about differentiating presentation of information for varied lev els of English language proficiency?

4. How much information and/or training do you need about adapting learning activities to engage students of varied learning styles (listening, seeing, manipulating, etc.)?

5. How much information and/or training do you need about adapting learning activities to engage students of various ability levels (gifted, students with disabilities, etc.)?

6. How much information and/or training do you need about adapting learning activities to engage students of varied levels of English language proficiency?

7. How much information and/or training do you need about allowing students to demonstrate learning in ways that accommodate varied learning styles (seeing, listening, manipulating, etc.)?

8. How much information and/or training do you need about allowing students to demonstrate learning in ways that accommodate varied ability levels (gifted, students with disabilities, etc.)?

9. How much information and/or training do you need about allowing students to demonstrate learning in ways that accommodate varied levels of English language proficiency?

10. How much information and/or training do you need to find research-based articles and/or books on practices relevant to specific educational needs of students?

11. How much information and/or training do you need to judge the trustworthiness of research-based articles or books about effectiveness of educational practices?

12. How much information and/or training do you need to evaluate whether the research-based practices are worthwhile for my specific students and purposes?

13. How much information and/or training do you need to compare effectiveness of research-based educational practices for the best fit for my particular student population?

14. How much information and/or training do you need about changing educational practice to incorporate new instructional practices found in a research-based article or book?

15. How much information and/or training do you need to work with a team(s) of grade-level or content-specific educators to assess specific learning needs?

16. How much information and/or training do you need to work with a team(s) of grade-level or content-specific educators to solve specific learning needs?

17. How much information and/or training do you need to collaborate with professionals outside my own field of specialty to assess specific learning needs (for example, teachers working with school psychologists or guidance counselors)?

18. How much information and/or training do you need to collaborate with professionals outside my own field of specialty to solve specific learning needs (for example, teachers working with school psychologists or guidance counselors)?

19. How much information and/or training do you need to use data from appropriate assessment tools to clarify the specific problem for a struggling student?

20. How much information and/or training do you need to use specific assessments to measure student progress on specific learning objectives?

21. How much information and/or training do you need to use results of universal screening instruments (like PALS, DIAL-R, or DIBELS) to determine which students may be at risk of specific learning needs?

22. How much information and/or training do you need to use results of published curriculum-based assessments for instructional planning (like textbook assessments, PALS quick checks, etc.)?

23. How much information and/or training do you need to make decisions about academic instruction for individual students based upon data?

24. How much information and/or training do you need to make decisions about behavioral instruction for individual students based upon data?

25. How much information and/or training do you need to use data on student progress to improve instructional practice?

26. How much information and/or training do you need to use teaching techniques described in a research-based article or book?

27. How much information and/or training do you need to use interventions to address specific learning objectives of specific students?

28. How much information and/or training do you need to implement plans as designed to solve problems for individual students or small groups of students?

29. How much information and/or training do you need to respond to a learning need when first evident?

Appendix B
Scale Quality Indicators

Table A1
Total Variance Explained

Initial Eigenvalues from Principal Component Analysis							
Component	Total	% of Variance	Cumulative %	Component	Total	% of Variance	Cumulative %
1	24.947	43.013	43.013	30	.164	.283	97.978
2	4.808	8.289	51.302	31	.150	.259	98.238
3	4.187	7.220	58.521	32	.123	.212	98.450
4	3.581	6.174	64.696	33	.103	.178	98.628
5	2.420	4.173	68.869	34	.100	.173	98.801
6	2.226	3.838	72.707	35	.081	.139	98.940
7	1.531	2.640	75.347	36	.076	.130	99.071
8	1.295	2.233	77.580	37	.065	.112	99.183
9	1.192	2.055	79.635	38	.054	.094	99.276
10	1.070	1.845	81.480	39	.051	.088	99.365
11	.991	1.709	83.189	40	.045	.077	99.441
12	.821	1.416	84.605	41	.040	.069	99.511
13	.793	1.368	85.973	42	.036	.062	99.573
14	.725	1.251	87.223	43	.033	.058	99.631
15	.709	1.223	88.446	44	.027	.047	99.678
16	.686	1.183	89.629	45	.026	.044	99.722
17	.570	.982	90.611	46	.024	.042	99.764
18	.537	.926	91.537	47	.022	.038	99.802
19	.525	.904	92.442	48	.021	.036	99.838
20	.455	.785	93.226	49	.016	.028	99.866
21	.409	.704	93.931	50	.016	.027	99.893
22	.387	.667	94.598	51	.013	.023	99.916
23	.356	.614	95.211	52	.011	.019	99.935
24	.319	.549	95.761	53	.009	.015	99.950
25	.297	.513	96.273	54	.008	.014	99.964
26	.257	.443	96.717	55	.007	.013	99.977
27	.201	.347	97.064	56	.006	.011	99.988
28	.188	.324	97.388	57	.005	.008	99.996
29	.178	.307	97.695	58	.002	.004	100.000

Appendix C

Pearsonian Item-Total Correlations for RTISES

Item Number	Correlation with Total Score	
	Information Question	Training Question
1	.318**	.359**
2	.322**	.311**
3	.272**	.252**
4	.401**	.407**
5	.519**	.538**
6	.365**	.356**
7	.438**	.464**
8	.505**	.516**
9	.377**	.386**
10	.515**	.519**
11	.538**	.580**
12	.616**	.598**
13	.679**	.649**
15	.686**	.669**
16	.642**	.666**
17	.654**	.654**
18	.655**	.676**
19	.633**	.663**
20	.702**	.705**
21	.671**	.675**
22	.577**	.593**
23	.607**	.600**
24	.667**	.655**
25	.570**	.603**
26	.707**	.720**
27	.665**	.672**
28	.712**	.699**
29	.692**	.696**
30	.682**	.707**

** Correlation is significant at the 0.001 level (2-tailed).

Note: Missing data deleted pairwise. Number of respondents range is 155 to 174.

Appendix D
Rotated Component Matrix for Initial Scale

	Component				
Item	1	2	3	4	5
1 information	.158	**.761**	.105	.003	.244
1 training	.208	**.691**	.183	.111	.222
2 information	.150	**.762**	.144	.193	.007
2 training	.206	**.708**	.157	.211	-.008
3 information	.051	.267	.122	**.794**	.045
3 training	.049	.162	.139	**.824**	.014
4 information	.200	**.758**	.196	.017	.161
4 training	.212	**.738**	.238	.098	.071
5 information	.287	**.671**	.245	.240	.098
5 training	.293	**.646**	.283	.270	.110
6 information	.105	.177	.172	**.861**	.149
6 training	.108	.146	.182	**.886**	.116
7 information	.137	**.782**	.129	.171	.121
7 training	.128	**.739**	.201	.194	.124
8 information	.207	**.791**	.109	.267	.066
8 training	.200	**.772**	.209	.255	.126
9 information	.095	.181	.110	**.878**	.128
9 training	.099	.167	.145	**.887**	.122
10 information	.201	.236	**.761**	.019	.139
10 training	.190	.230	**.765**	.019	.162
11 information	.111	.195	**.864**	.112	.111
11 training	.155	.207	**.848**	.149	.138
12 information	.224	.134	**.851**	.137	.122
12 training	.226	.131	**.856**	.135	.142
13 information	.233	.169	**.788**	.239	.084
13 training	.246	.147	**.776**	.250	.097
14 information	.213	.345	**.727**	.158	.151
14 training	.221	.343	**.696**	.157	.132
15 information	.460	.453	.213	-.087	.355
15 training	.497	.426	.273	-.107	.353
16 information	.474	.378	.192	.006	.445
17 training	.494	.314	.237	.001	.460
17 information	.228	.227	.238	.142	**.835**
18 training	.233	.217	.275	.180	**.820**
18 information	.201	.192	.201	.215	**.838**
19 training	.244	.144	.236	.299	**.795**
19 information	.560	.484	.107	.062	.226
20 training	**.582**	.458	.101	.062	.252
20 information	**.633**	.308	.177	-.006	.244
20 training	**.657**	.273	.202	-.008	.243
21 information	**.714**	.183	.085	-.064	.114
21 training	**.726**	.178	.089	-.058	.144
22 information	**.824**	-.037	.202	.087	.086
22 training	**.825**	-.041	.187	.093	.082
23 information	**.826**	.181	.192	.139	-.040
23 training	**.828**	.152	.208	.123	-.043
24 information	.480	.125	.186	.375	.117
24 training	.485	.098	.270	.369	.147
25 information	**.719**	.394	.143	.043	.057
25 training	**.736**	.389	.129	.096	.041
26 information	**.509**	.065	.458	.204	.220
26 training	**.490**	.075	.486	.201	.223
27 information	**.527**	.409	.179	.301	.096
27 training	**.524**	.364	.183	.324	.104
28 information	**.451**	.349	.199	.347	.204
28 training	**.482**	.310	.190	.385	.194
29 information	**.566**	.243	.187	.257	.238
29 training	**.609**	.218	.216	.284	.205

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations.

Note: Each item appears twice – addressing the need for information and for training

Appendix E

Correlations between Items Addressing the Need for Information and the Need for Training in the Same Professional Development Content Area

	Item Number and Professional Development Content Area	Corr.
1.	differentiating presentation of information for various *learning styles*	.851
2.	differentiating presentation of information for various *ability levels*	.872
3.	differentiating presentation for varied levels of English language proficiency	.905
4.	adapting learning activities to engage students of varied *learning styles*	.899
5.	adapting learning activities to engage students of various *ability levels*	.933
6.	adapting activities to engage ELL students	.961
7.	allowing students to demonstrate learning in ways that accommodate learning styles	.869
8.	allowing students to demonstrate learning in ways that accommodate *ability levels*	.906
9.	allowing students to demonstrate learning in ways that accommodate ELL	.948
10.	finding research-based articles and/or books on practices	.951
11.	judging the trustworthiness of research-based articles or books	.950
12.	evaluating whether the research-based practices are worthwhile	.959
13.	comparing effectiveness of research-based educational practices for the best fit	.918
14.	changing practice to incorporate new practices found in a research-based article	.945
15.	working with a team(s) of grade-level or content-specific educators to assess needs	.908
16.	working with a team(s) of grade-level or content-specific educators to solve needs	.911
17.	collaborating with professionals outside my field to assess learning needs	.951
18.	collaborating with professionals outside my field to solve specific learning needs	.948
19.	using data from appropriate assessment tools to clarify the specific problem	.916
20.	using specific assessments to measure student progress	.906
21.	using results of universal screening instruments	.988
22.	using results of published curriculum-based assessments for instructional planning	.994
23.	making decisions about academic instruction for individual students based upon data	.963
24.	making decisions about behavioral instruction for students based upon data	.888
25.	using data on student progress to improve instructional practice	.960
26.	using teaching techniques described in a research-based article or book	.950
27.	using interventions to address specific learning objectives of specific students	.927
28.	implementing plans as designed to solve problems for students	.942
29.	responding to a learning need when first evident	.930

Note: All correlations are significant at the 0.01 level (2-tailed).

Appendix F

Rotated Component Matrix for Revised Scale

	Component					
	1	2	3	4	5	6
UDrepLStrain	.133	**.722**	.161	.030	.294	.220
UDrepAbtrain	.133	**.742**	.120	.136	.300	-.021
UDengLStrain	.193	**.753**	.242	.049	.156	.053
UDengAbtrain	.295	**.643**	.282	.263	.149	.088
UDexpLStrain	.152	**.774**	.182	.198	.014	.166
UDexpAbtrain	.217	**.771**	.193	.256	.057	.171
UDrepELLtrain	.019	.195	.135	**.850**	.124	.010
UDengELLtrain	.078	.158	.171	**.882**	.159	.146
UDexpELLtrain	.089	.181	.146	**.911**	.085	.148
EBlitFINDtrain	.185	.251	**.771**	.013	.057	.164
EBlitTRUSTtrain	.162	.219	**.848**	.170	.064	.127
EBlitPurpPOPtrain	.209	.127	**.855**	.134	.145	.140
EBlitCOMPAREtrain	.200	.145	**.782**	.232	.190	.101
EBlitCHANGEtrain	.151	.340	**.690**	.119	.268	.137
CollabGradeAssesstrain	.622	.383	.275	-.067	-.028	.337
CollabGradeSolvetrain	.536	.260	.229	.010	.120	.480
CollabOutAssesstrain	.224	.202	.270	.148	.177	**.816**
CollabOutSolvetrain	.168	.154	.232	.236	.285	**.783**
DataDiagnostictrain	**.659**	.420	.100	.109	.047	.269
DataProgMontrain	**.707**	.250	.201	.023	.099	.256
DataUnivScreentrain	**.779**	.120	.112	.012	.108	.106
DataPlantrain	**.772**	-.077	.208	.112	.307	.023
DataAcademictrain	**.721**	.133	.206	.115	.417	-.087
DataProgMonImproveInstructtrain	**.698**	.367	.123	.100	.282	.009
InterventionsFidelitytrain	.247	.091	.443	.055	**.646**	.221
InterventionsObjtrain	.294	.389	.131	.174	**.665**	.113
InterventionsIndivtrain	.232	.329	.133	.218	**.702**	.215
InterventionsEarlytrain	.408	.215	.182	.172	**.615**	.198

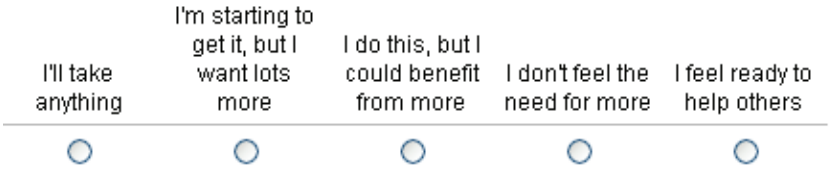
Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Appendix G

MTISES, Multi-Tiered Instruction Self-Efficacy Scale
(Also known as the RTISES-II, Response to Intervention Self-Efficacy Scale-II)

All scale items use the following response options:



DIRECTIONS:
For most of the following questions, you will be asked to indicate your needs for professional development in various educational practices. Please indicate the level of professional development you feel you need for each item.

1. How much professional development do you need about differentiating presentation of information for various learn ing styles (listening, seeing, manipulating, etc.)?

2. How much professional development do you need about differentiating presentation of information for various abil ity levels (gifted, students with disabilities, etc.)?

3. How much professional development do you need about differentiating presentation of information for varied levels of English language proficiency?

4. How much professional development do you need about adapting learning activities to engage students of varied learning styles (listening, seeing, manipulating, etc.)?

5. How much professional development do you need about adapting learning activities to engage students of various ability levels (gifted, students with disabilities, etc.)?

6. How much professional development do you need about adapting learning activities to engage students of varied levels of English language proficiency?

7. How much professional development do you need about allowing students to demonstrate learning in ways that ac commodate varied learning styles (seeing, listening, manipulating, etc.)?

8. How much professional development do you need about allowing students to demonstrate learning in ways that ac commodate varied ability levels (gifted, students with disabilities, etc.)?

9. How much professional development do you need about allowing students to demonstrate learning in ways that ac commodate varied levels of English language proficiency?

10. How much professional development do you need to find research-based articles and/or books on practices relevant to specific educational needs of students?

11. How much professional development do you need to judge the trustworthiness of research-based articles or books about effectiveness of educational practices?

12. How much professional development do you need to evaluate whether the research-based practices are worth while for my specific students and purposes?

13. How much professional development do you need to compare effectiveness of research-based educational practices for the best fit for my particular student population?

14. How much professional development do you need about changing educational practice to incorporate new instruc tional practices found in a research-based article or book?

15. How much professional development do you need to work with a team(s) of grade-level or content-specific educators to assess specific learning needs?

16. How much professional development do you need to work with a team(s) of grade-level or content-specific educators to solve specific learning needs?

17. How much professional development do you need to collaborate with professionals outside my own field of specialty to assess specific learning needs (for example, teachers working with school psychologists or guidance counselors)?

18. How much professional development do you need to collaborate with professionals outside my own field of specialty to solve specific learning needs (for example, teachers working with school psychologists or guidance counselors)?

19. How much professional development do you need to use data from appropriate assessment tools to clarify the spe cific problem for a struggling student?

20. How much professional development do you need to use specific assessments to measure student progress on spe cific learning objectives?

21. How much professional development do you need to use results of universal screening instruments (like PALS, DIAL-R, or DIBELS) to determine which students may be at risk of specific learning needs?

22. How much professional development do you need to use results of published curriculum-based assessments for in structional planning (like textbook assessments, PALS quick checks, etc.)?

23. How much professional development do you need to make decisions about academic instruction for individual stu dents based upon data?

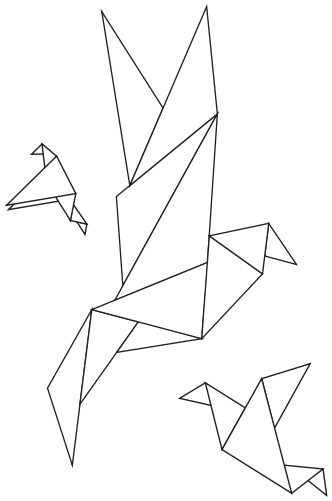
24. How much professional development do you need to use data on student progress to improve instructional practice?

25. How much professional development do you need to use teaching techniques described in a research-based article or book?

26. How much professional development do you need to use interventions to address specific learning objectives of specific students?

27. How much professional development do you need to implement plans as designed to solve problems for individual students or small groups of students?

28. How much professional development do you need to respond to a learning need when first evident?



Abstract

The state's educational systems must collaborate together to enable transfer students to gain the necessary skills that support degree completion strategies. Given the current economic state, an investment in California community college transfer students in order to provide the best possible university transition would seem wise and fiscally responsible. This outcomes-based assessment evaluation focused on assessing outcomes of a new transitional summer program, called Transfer Bridge; designed to aid under-represented community college students transfer to a public comprehensive regional university. The results showed that successful transfer programs must be customized for the transferring students they are intended to serve in order to effectively address their transition needs to the university.

AUTHORS

Reginald S. Blaylock, Ed.D.
San Diego State University

Marilee J. Bresciani, Ph.D.
San Diego State University

CORRESPONDENCE

Email
blaylock@mail.sdsu.edu

EXPLORING THE SUCCESS OF TRANSFER PROGRAMS FOR COMMUNITY COLLEGE STUDENTS

Community college transfer students continue to need high quality support programs upon arrival at four-year institutions. According to Eggleston and Laanan (2001), those responsible for shaping transfer support programs must consider the characteristics of this student population in order to effectively address their needs. Transfer students report, among other things, a need for more transfer-centered orientation programs, knowledge of campus resources, and support services (Eggleston & Laanan, 2001).

> There is a strong need for senior institutions to continue to develop support programs for transfer students to enhance their retention and persistence. There is (also) a need for further research in the area of program development and evaluation for support programs that assist the transition of transfer students at four-year universities and colleges.
>
> (Eggleston & Laanan, 2001, p. 95)

Unfortunately, there has been little rigorous research, and little discussion locally about the academic success and failures of the growing community college transfer population (Jenkins et al., 2006). At the institutional study site, similar to most four-year institutions throughout the nation, support programs specifically for transfer students do not formally exist (Eggleston & Laanan, 2001). It is critically important to gain additional insight into the strategies and resources necessary to increase the success of transfer students.

In many cases, postsecondary educational policies that promote the presence of community college transfer students at institutions are not sufficiently supported budgetarily. As articulated by the California State University (CSU) Chancellor's office, transfer students are the highest priority for new student enrollment. Resources, however, in terms of transition support for transfer students to CSU campuses do not align with this priority. There are small amounts of data collected and/or shared regarding this population, and far fewer discussions and support programs at campuses such as the institution, which was studied, that focus on the strategies necessary to improve transfer student success. Consequently, we examined what is known in the literature about the challenges, trends, and patterns for developing transitional support programs and the importance of program evaluation, with particular emphasis on students of diverse backgrounds from California community colleges. As a result of this program evaluation, themes were identified that increase the opportunities to improve and develop successful strategies, programming, and evaluation to support transfer students in meeting their personal and academic goals; all in an effort to reduce transfer shock and increase persistency to graduation while maintaining a self-sustaining, cost-effective programming model.

Identified from the literature are important attributes needed for successful transition programs. An important consideration is that a successful transfer program requires strong institutional commitment to the transfer mission, as well as maintaining external collaborations as a means to strengthen the transfer process for students (Berger & Malaney, 2003; Chenoweth, 1998; Evelyn, Greenlee, Brown, & Weiger, 2000; Suarez, 2003). Some of these areas discussed in the literature and in this section have no bearing on institutional funding or a lack of resources. In many cases, they reflect a lack of communication, cooperation, and institutional will between 2-year and 4-year colleges and universities. The literature suggests that a shared recognition of the responsibilities to put in place the programs necessary to strengthen the transfer student pipeline can lead to effective outcomes and retention of this population. Transfer Bridge at the university under study is an opportunity to address these expectations.

In establishing and implementing transitional support programs and services for transfer students, administrators must take into account the needs of transfer students such as customizing new programs which include addressing negative perceptions of the transfer process, cultural diversity, personalized academic advising, and financial literacy (Eggleston & Laanan, 2001). In addition, such a program needs to be designed to be self-supporting. In other words, the price that students pay must be affordable (or free) in order for low income/first generation college students to participate. External funding and revenue generated from registration fees (Full Time Equivalent) must cover all aspects of the summer program.

Just as important as implementing transitional support, however, is the need to assess its effectiveness. "The state currently lacks sufficient information with which to guide funding designed to increase the number of college graduates produced in the state" (Johnson & Sengupta, 2009, p. 16). By identifying our desired outcomes for successful transfer programs and aligning our resources with the desired outcomes and their evaluation, we can provide the evidence to inform decisions that improve our transfer efforts and the way we evaluate them. In doing so, we can examine both our direct costs and opportunity costs of student retention and success.

Kezar (2006) points out that there has been a significant body of research on first generation college students, examining the factors that inhibit and enhance their success. Oberlander's (1989) research describes several hundred universities now sponsoring summer programs that give high school students a glimpse of the rigors to come. Other researchers (Chenoweth, 1998; Haras & McEvoy, 2005; Kezar 2006) describe some initial studies that illustrate how students provide strong ratings for the social aspects of the programs such as mentoring, community development, and building self-confidence. "Studies examining retention and grade point average indicate that students in support programs tend to perform better (GPA) than students who did not receive the same type of support" (Kezar, 2006, p. 4). It is reasonable to assume, therefore, that a support program such as Transfer Bridge at this university could also serve as an important resource for transfer students and have a significant impact as they begin their university experi-

"An important consideration is that a successful transfer program requires strong institutional commitment to the transfer mission, as well as maintaining external collaborations as a means to strengthen the transfer process for students."

ence. As new students to the university community, transfer students must also learn to navigate the campus culture, processes, and connect with important campus resources. A summer transition program designed to meet the needs of transfer students could provide all of these important experiences.

Significance of This Study

With the largest population of post-secondary attendees, American community colleges have never been more central to the enterprise of higher education (Sullivan, 2006). The transfer process for many of these students remains a critical function to the baccalaureate degree and the upward ladder of mobility. There are numerous obstacles facing post-secondary education. California community colleges, with a population of over 2.8 million students, have a particular challenge to successfully embrace and support students from culturally diverse backgrounds for retention and matriculation to four-year institutions (Community College League of California, 2008; Suarez, 2003).

As the primary entry point for students from culturally diverse backgrounds, community colleges must collaborate to develop support programs that carefully address student needs, while paying close attention to campus culture and the impact on students (Berger & Malaney, 2003; Byrd & MacDonald, 2005; Suarez, 2003). Ultimately, the transfer responsibility is mutually shared amongst the four-year institution (receiver), the community college (sender), and the student stakeholder as the person charged to take advantage of the institutional support mechanisms (Berger & Malaney, 2003).

Student service programs should serve as campus-wide models in designing effective strategies to assess student learning and development. In doing so, we must also provide practitioners with the tools, language and framework to contribute to the central educational mission of the institution (National Association of Student Personnel Administrators, 2009). These tools of measurement will allow for the opportunity to address program deficiencies and improve support for transfers where it is needed most. Developing the Transfer Bridge, with a particular focus on local community college transfers is an important piece in building transitional support for this critical population.

This campus model also stands as a self-sustaining program. With the support of grant funds, private foundation funds, and class registration fees returned to the department (Full Time Equivalent), all 101 transfer students were able to enroll in the three unit Transfer Bridge course for free. Additionally, course materials, parking, and lunch each day were provided complimentary. Given this significant investment in the local community, practitioners have the opportunity (and responsibility) to assess the student learning outcomes and to make program improvements where necessary.

Outcomes-based program evaluation provides an important blueprint for assessment that allows managers to document the outcomes of their program. By capturing the critical impact of co-curricular programming efforts, faculty and staff are better prepared to "present both the compelling argument and the strategic direction that should underscore the thinking and practice of co-curricular professionals" (Bresciani, Zelna, & Anderson, 2004, p. 2). What has often passed as finger-pointing, satisfaction surveys or global outcomes, must now be interpreted as student learning and outcomes-based assessment. By continuing to develop evidence of student learning, departments are better prepared to manage the expectations for accountability, and to improve the efficiency and effectiveness of their program (Bresciani et al., 2004). Particularly with the development of non-traditional programs, managers must often justify the innovation and continuation of services and programs outside of direct classroom instruction.

"As articulated by the California State University Chancellor's Office, transfer students are the highest priority for new student enrollment. Resources, however, in terms of transitional support for transfer students to CSU campuses do not align with this priority."

Given what the literature described as important components of effective transition programs, the director of the program customized components of the Transfer Bridge program explicit to Student Educational Services at this university. Developing the appropriate assessment tools, which allowed for direct (e.g., evidence that demonstrated specifically what students learned and how they developed through projects and assignments administered as part of Transfer Bridge) and indirect student feedback (e.g., survey that was constructed to gather student self-report data) was a key component of this

evaluation. Thus, each of the assessment tools used in this outcomes-based evaluation process support a systematic, reflection of each program outcome in a manner that provides data for stakeholders to make program improvements. Program managers, as a result, are better prepared to determine whether the program accomplished what was intended, and to justify the program costs when warranted.

Methodology

Outcomes-based assessment provides an important blueprint for assessment that allows managers to document the outcomes of their program. In the case of Transfer Bridge, we examined four learning outcomes identified as key areas of support for transfer students during their transition to the university:

1) Academic Advising – Students will effectively utilize academic advising/counseling services during Transfer Bridge and be able to identify their institutional graduation requirements for their major.

2) Library Literacy – Students will effectively identify and utilize the institution's Library and Information Access facility and support services available during Transfer Bridge.

3) Financial Literacy – Students will demonstrate financial literacy in the areas of federal financial aid, student loans, credit ratings, and scholarship searches through workshop interaction, group activities, and/or individual exploration.

4) Peer Mentor Relations – Students will demonstrate the value of peer relations to support their university transition by virtue of cohort interaction and peer mentoring.

"The transfer process for many of these students remains a critical function to the baccalaureate degree and the upward ladder of mobility."

Greene (2000) argues that program evaluation should not be used for abstract theoretical questions, but rather for priority and practice questions that decision makers will use to inform and improve services and programs. As such, this methodology was used to develop tools that are currently in practice, relevant to the department, and practical in use pertaining to the learning outcomes discussed in this study. By systematically implementing these methods, the program can identify whether the end results (i.e., outcomes) have been achieved (Bresciani, 2006).

The table below describes direct evidence of student learning. For each of the four learning outcomes, student essays describe the learning outcomes that took place and when they were put into practice during Transfer Bridge. Observation of students successfully using the campus registration system, which also meant that students selected the appropriate classes, provided additional evidence of direct student learning for the academic advising learning outcome. Focus groups A and B also provided direct evidence of student learning for each of the four learning outcomes. The out of class library assignment which was successfully completed by all 101 students provided direct evidence of student learning pertaining to the library literacy learning outcome. Mentor journals and observations of students and mentor interactions as well as personal discussions with students provided further evidence of direct student learning regarding the peer mentoring learning outcome.

The table below also describes indirect evidence of student learning. Outcomes tools used to evaluate each of the learning outcomes include Transfer Bridge (class) completion, end of first semester grade point average, and persistence from first semester to second semester. The student essays and focus groups A and B also provided indirect evidence of student learning for all four learning outcomes. The student survey was an additional indirect measure of student learning for all four learning outcomes. Mentor journals provided further evidence of indirect student learning regarding the peer men-

toring learning outcome. Table 1 summarizes all of the specific tools in their respective categorization of direct or indirect methods used in this study to evaluate each outcome.

Table 1
Outcome Tools Evaluation Table

Outcome	Direct Measures	Indirect Measures
#1 Academic Advising	Essay Observation of Registration process	Focus Group A, B Survey Essay Class Completion End of 1st Semester GPA 1st to 2nd Semester Persistence
#2 Library Literacy	Essay Focus Group A, B Library Assignment	Focus Group A, B Survey Essay Class Completion End of 1st Semester GPA 1st to 2nd Semester Persistence
#3 Financial Literacy	Essay Focus Group A, B	Focus Group A, B Survey Essay Class Completion End of 1st Semester GPA 1st to 2nd Semester Persistence
#4 Peer Mentoring	Essay Focus Group A, B Mentor Journals Observations of peers/mentors interactions and discussions	Focus Group A, B Survey Essay Class Completion End of 1st Semester GPA 1st to 2nd Semester Persistence Mentor Journals

As previously mentioned, data collection included both quantitative and qualitative tools. The data collection process included direct measures such as two focus groups, essays, mentor journaling, an out of class library assignment, and observations. The learning outcomes informed the design of each of the evaluation tools in this study. Additionally, this study included data points such as class completion, end of first term GPA, and persistence from first to second semester. Although these particular data points are not directly tied to evaluating the achievement of individual learning outcomes, analysis of this data as it relates to the ultimate purpose of this program helps inform why these expected indicators increase or decrease (Bresciani, 2006). The reporting of such performance indicators as GPA and persistence are often expected when securing grant funding, thus it is important to include these as they may relate to the individual program to ultimately determine its effectiveness.

Additional self-reported student feedback was collected through a student survey. Each of the survey questions were aligned with the four learning outcomes. More specifically, survey questions 1-2 were aligned with the first learning outcome (academic advising), questions 3-4 were aligned with the second learning outcome (library literacy), questions 5-6 were aligned with the third learning outcome (financial literacy), and questions 7-9 were aligned with the fourth learning outcome (peer/mentor relationships). Using SPSS, a frequency table was developed to analyze participant responses for survey questions 1 through 9. Since the surveys were completed by all of the participants (n=101) and all survey questions were answered, there were no substitutions for missing values. As a result of 100% participation, the entire survey inventory was used in the

analysis. The final survey question (10) asked participants to select one of the learning outcomes students found most beneficial during Transfer Bridge. By using SPSS to run the range of response rates of agreement and disagreement, student feedback was captured and used to reinforce the qualitative data discussed in this section. These data were also used to run a cross tabulation of participant responses (using SPSS) for each of the learning outcomes. The Cross Tabulation Table compared the learning outcome identified by each participant as most beneficial to their response rates for each of the other three outcomes.

The last section on the survey instrument asked students to explain why they selected the particular learning outcome that they did select as most beneficial (final survey question 10). This essay format provided students the opportunity to share their personal experience regarding the impact of the people, places, and things. All of the participants (101) completed the essay portion of the survey. Analysis of this data was done using an open-axial coding process which also included line-by-line coding. Using a separate color code, we were was able to separate the data into categories (with labels) then bring the data together in new ways. Connections emerged by developing main categories and their subcategories.

Reporting through essays, observations, two focus groups, an out of class library project, and mentor journals, the majority of the participants reported that the outcomes were achieved. By using open-axial coding, we were able to relate categories to subcategories which then allowed us to identify properties (or descriptors) of a category, and when necessary include dimensions described by participants. This data coding process resulted in 560 codes and 429 descriptors, primarily related to the four learning outcomes from this study. Next, we sorted, synthesized, and organized this large amount of rich data into coherent whole categories. This meant breaking down (or fracturing) the data into concepts and categories, then putting the data back together (using color codes) in new ways by making connections developing categories and subcategories to explain the data. This pivotal link allowed us to develop emergent theories to explain the data. The survey data were analyzed using descriptive statistics.

"With the largest population of postsecondary attendees, American community colleges have never been more central to the enterprise of higher education."

Other findings that were not tied to the learning outcomes but related to this study emerged from the data described in this section. As previously mentioned, the participant feedback that was collected from student essays or direct observation was analyzed using the open-axial coding process, which also included line-by-line coding of the un-numbered essay portion of the survey. Using a separate color code, we were able to separate the data into categories (with labels) then bring the data together in order to identify whether the outcomes were met and at what level they were met. Connections emerged by developing main categories and their subcategories. Thus, additional findings were discovered that did not pertain to the outcomes directly being measured.

Table 2 summarizes the data collection process for this study. The table includes the data collection tools, the population collected from, when collected, where collected, and when analyzed. The table shows that this study used nine data collection tools for 101 participants. It also shows there were two focus groups consisting of eight students per group. This table includes a student survey that was collected from all participants using a Likert scale and student essays which described their Transfer Bridge experience. An out-of-class library assignment which served as the final independent student project is included in the table. Also included are mentor journals reflecting observations of student learning from each day's program activities and interactions. The table further explains when data was collected for each tool, where it was collected, and when it was analyzed.

Findings and Discussion

Following the previously described data analysis, data emerged revealing that each learning outcome had been met. Additional evidence came from a student survey where 88.9% of the participants reported that they agreed or strongly agreed that all four of the learning outcomes were met. All of the major categories, which emerged from this study are described in the information that follows.

Table 2

Data Collection Timetable

What Tool	Population Collected	When Collected	Where Collected	When Analyzed
Essay	All participants (101)	Last Day of Program 8-20-09	Library, 4th Floor – Williams Hall	November 2009
Survey	All participants (101)	Last Day of Program 8-20-09	Library, 4th Floor – Williams Hall	November/ December 2009
Focus Group A	8 participants	Last Day of Program 8-20-09	Library, 2nd Floor – Room 201	November 2009
Focus Group B	8 participants	Last Day of Program 8-20-09	Library, 2nd Floor – Room 201	November 2009
Library Assignment	All participants (101)	Due: 8-21-09	SES Office or submitted electronically	October 2009
Mentor Journals	5 mentors	Due: 8-21-09	SES Office	September 2009
Observations	All participants (101)	Throughout program	All program locations	November/ December 2009
Class Completion	All participants (101)	8-21-09	SIMS Database	September 2009
End of Term GPA	All participants (101)	1-15-10	SIMS Database	January 2010
Persistence: 1st to 2nd Semester	All participants (101)	1-15-10	SIMS Database	January 2010

Academic Advising

A core message determined from the participants during Transfer Bridge is that students effectively utilized academic advising during the program and were able to identify their graduation requirements for their major. As reflected throughout the focus groups, essays, and mentor journals, academic advising consistently ranked highest amongst feedback from Transfer Bridge participants. The survey, administered to all 101 participants at the end of the Transfer Bridge program, provided additional valuable data which confirmed the student's responses regarding this outcome. All 101 participant responses were included in the analysis of the academic advising learning outcome and are detailed throughout this section. Survey questions number 1 (found academic advising helpful) and number 2 (can explain my graduation requirements), which had a combined 95% response rate of *agree* or *strongly agree*, aligned with the academic advising learning outcome. The two themes that emerged under the academic advising outcome are *Understanding Class Selection, Registration, and Graduation Requirements,* and *Reducing Transfer Fear/Building Confidence.* Each of these themes emerged from an open axial coding process which included line-by-line coding of two focus groups, five mentor journals (each day), and all 101 student essays. This process allowed us the opportunity to fracture the data into categories (with labels), then bring the data back together in new ways using color codes. Connections emerged by developing main categories and their sub-categories.

Understanding Class Selection, Registration, and Graduation Requirements

Discussed in the students' essays, mentor journals and two focus groups were 61 separate occasions where participants expressed the importance of academic advising. The 61 occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. This data provides insight into how important it was for transfer students to understand their first semester class selection, the campus registration system, and graduation requirements. According to the survey responses for question 1: "I received academic advising/counseling and found the experience to be helpful," 97% of the students responded *agree* or *strongly agree*. Still, advising students on how to use the campus technology (e.g., web-portal) was timely and useful as each student prepared for fall class registration.

Class registration for transfer students began three days into the Transfer Bridge program. Whereas some students had an idea of which classes they should register for, many students did not know where to begin. A mentor shared in his journal, "Most of my day was spent showing students how to use the Web Portal and adding/dropping classes." Another mentor wrote, "This afternoon I helped with class selection and GE and giving web portal help." Also, students in the focus groups provided similar feedback regarding connecting the advising process to actually learning how to register for classes. Much of what these students explained in their essays and focus groups, and what the mentors described in their journals demonstrated direct student learning and provided evidence of how this outcome was achieved for most students.

The tone of the conversations during both focus groups remained very positive with "high-fives," encouraging comments from peers, head nodding (in agreement), and a few polite hugs gestured as support. One student wrote in his essay, "Advising (was) very useful in determining graduation. It was very emotional (to) finally see the end/empowerment." Providing the transfer students timely and accurate advising and important campus connections, is an important part of developing and maintaining these new relationships for Student Educational Services (SES).

Reducing Transfer Fear/Building Confidence

During the course of the Transfer Bridge program, a point of emphasis for the staff and managers was accessibility for students, and creating a welcoming atmosphere. In some cases, the more comfortable and connected new students felt, the more likely they were to ask questions and express their concerns. The full schedule of activities kept staff, faculty, managers and mentors routinely available for questions and guidance for all 101 participants.

Academic advising and counseling took place on a formal and informal basis all throughout the program and throughout different campus locations. For example, many students arrived as early as 7:00 am (8:00 am start) to ask questions and to make important connections, while others stayed as late as 5:30 pm (4:00 pm end) for the same purpose. Lunch time each day was another important time for many students to connect and have their questions answered. As such, it is important to note that many of the dimensions regarding academic advising reflect on-going discussions that took place with students over several days, at multiple venues, and in many cases, for multiple purposes. Several students expressed in their essays that academic advising was of the "utmost importance," and "really important," and "was really needed." The focus groups reflected similar sentiment.

"Ultimately, the transfer responsibility is mutually shared amongst the four-year institution (receiver), the community college (sender), and the student stakeholder as the person charged to take advantage of the institutional support mechanisms."

In focus group A, for example, a student shared her initial concerns about her graduation requirements when she explained, "It was really confusing and really difficult to understand but Transfer Bridge clarified everything." Another student discussed in his essay, "Prior to this (meeting with my counselor) I had lots of fears. But my counselor eased my fears towards (my) transition to university." A mentor shared in her journal, "I spent a lot of my time (in the morning) helping students choosing classes, really reassur-

ing them. Many students were overwhelmed with class registration." Altogether, 50 separate codes expressed academic advising as helpful and beneficial for answering important questions and connecting students to important campus resources. The 50 separate codes are referenced in an open coding table that shows how this theme of *Reducing Transfer Fear/Building Confidence* was derived. The table, which lists the detailed codes derived from essays, two focus groups, and mentor journals, provides insight into the participants' fear and anxiety of transitioning to the university and how academic advising helped participants' to build their confidence going forward.

Together, understanding class selection, registration, and graduation requirements were an important part of the academic advising outcome for students transitioning to the university. Based on the participants' actions (e.g., participation and attendance) and feedback (data collected), students demonstrated utilization of these connected campus processes that every student must learn to use. Other areas discussed by students during Transfer Bridge included important connections made with staff and faculty and the impact of how this connection reduced most of their fear and uncertainty. Specifically, on 21 occasions, students expressed how the impact of academic advising and the connections made with staff and/or faculty helped "ease my anxiety" or "calmed my fears." One student wrote in his essay, "I am no longer terrified about coming to [name of study site]," while another student expressed in a focus group interview, my counselor "sat me down, listened to me, and stayed with me until I understood my requirements – I'm feelin' the love."

Byrd and MacDonald's (2005) study further indicated that "first term academic performance had the strongest relationship to retention" (p. 24). As a result of their work, they emphasize the need for interventions much like Transfer Bridge that focus on the academic advising needs of transfer students. Ackermann (1991) evaluated a similar summer support program for incoming transfers to the University of California, Los Angeles (UCLA). The results of Ackermann's study also suggest that Transfer Bridge programs that contain the appropriate structure and academic support can help facilitate students' transition and adjustment to university life and improve persistence rates.

Financial Literacy

Survey questions number 5 (financial aid) and number 6 (financial credit), which had a combined 80.4% response rate of agreement, align with the financial literacy learning outcome specifically. The two themes that emerged from the financial literacy outcome are *Financial Aid* and *Financial Credit*. Each of these themes emerged from an open axial coding process which included line-by-line coding of two focus groups, five mentor journals (each day), and all 101 student essays. This process allowed me the opportunity to separate the data into categories (with labels), then bring the data back together in new ways using color codes. Connections emerged by developing main categories and their sub-categories.

Financial Aid. On 27 occasions, students provided explicit details through their essays, two focus groups, observations and mentor journals about the value of the financial aid workshop. The 27 occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. The open coding table provides insight into how relevant and informative the financial aid workshop was perceived and how extensive the interactions were between students and presenters. The data also demonstrates how important it was for participants to go into further depth about this timely topic on financial aid with fall classes beginning three weeks later. During both focus groups, all students confirmed that they had completed the Free Application for Federal Student Aid and had experience with the financial aid process. It is reasonable to assume, therefore, that the vast majority of Bridge participants also have experience with the financial aid process (SES requires students to apply for financial aid).

Dimensions used by many students in their essays to express their feedback included "definitely a good presentation" and "definitely worthwhile." One student went

on to explain in a focus group, "This was the most important presentation for the entire Bridge program." Another student in the focus group explained, "I got what I needed from them" while someone else expressed "this really reinforced everything I (already) knew." Others commented that the student loan information was found to be beneficial with a mentor explaining in his journal, "The financial aid workshop when they talked about loans was really beneficial. This was a big issue for many students." The information discussed on financial aid availability during the summer session also drew attention. This was deemed important by some students because the Federal Pell Grant was expanded in summer 2009 to include university funding during a summer session, provided students were enrolled in six or more units.

Several students commented on how professional the presentation was and one student expressed in a focus group, "I never felt blown-off from all of the questions I asked and I asked a lot!" Eight students specifically felt the time invested (in the workshop) was worthwhile or should be expanded. Other students provided feedback regarding how much they learned from hearing questions asked by other students and how informative it was to hear feedback from students and staff. At the conclusion of the formal workshop time, we observed that 19 students had surrounded the two workshop presenters. Initially, it was thought that many of the students wanted to thank the presenters, but moving in closer to hear the dialogue, it was realized that all of the students had additional financial aid questions (they also expressed appreciation to the presenters). By all accounts, this workshop was well received by students and provided an engaging format and extensive interaction. According to the survey responses for question number 5: "My knowledge about the student financial aid process was improved," 86.1% of the students indicated *agree* or *strongly agree*. From the responses, students deemed the topic relevant and expressed sufficient learning.

These findings are consistent with Johnson and Sengupta's (2009) study which argues that, "Research on (transfer) persistence and completion suggests that college costs are an impediment to both college attendance and college graduation but that burden may be alleviated to some degree by financial (aid) assistance" (p. 12). Byrd and MacDonald's (2005) study also reported that many transfer students were unaware of financial aid resources when they began college, including some students that delayed starting college for financial reasons.

Credit. As new members of the university community, it is important to grasp the intricacies of credit ratings/scores, credit agencies, credit cards, and long-term investment in one's education. To this end, on 35 separate occasions, students provided feedback through essays, two focus groups, and mentor journals on the financial credit workshop. The 35 occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. This data provides insight into how important it was for transfer students to gain additional knowledge about credit cards, credit scores, savings, investing, and retirement. The workshop presenter, deemed an expert in this field, had over 20 years of banking experience and is currently employed as the manager of a local Credit Union. The presenter, however, did not seem to stay on topic as reflected by some of the student feedback.

Several students in focus group A did not feel the presentation was appropriate given their age, income, and new status at the university. One student commented, "She (the presenter) did not know her audience. I didn't relate to anything (she said) – it was either offensive or useless." Another student in the focus group explained, "Total waste of time – she didn't know her target audience and I found much of it (the workshop discussion) condescending." Two students expressed in their essays that "the workshop was a total waste of time" and that "the purpose of the workshop was not clear." A recurring theme from student essays and both focus groups was that "the presenter went off topic" by discussing in depth the discipline involved with saving for family vacations and investment properties. Because the presenter also talked about saving for retirement, many students felt "the investment discussion was not helpful" or "does not apply to me right now."

"They reflect a lack of communication, cooperation, and institutional will between 2-year and 4-year colleges and universities."

Just the opposite perspective was expressed, on 13 occasions, where students commented that the presentation on credit, investing and retirement was worthwhile and beneficial. These opposite opinions were not reflected during any other point in this study, but may be explained from some of the feedback provided. For example, during each focus group, students discussed the difference in their perspectives related to the value of this particular presentation. A student in focus group A explained, "I liked the (credit) workshop – as older students we have different needs (than younger students)." Another student in focus group A shared that she was "from the streets, and if someone had taught me earlier in life about what it means to save, invest, and plan for retirement, I would be much further ahead in life." Several students in each focus group requested that we "expand the workshop" or "keep the same." Three students shared in their essays their appreciation for how to manage money/savings and found the workshop helpful, worthwhile, or useful for planning their future finances.

Participant responses to survey question number 6: "I know how to protect and/or improve my financial credit;" only 74.3% of the students answered agree or strongly agree. It is significant to note that of the nine survey questions, number 6 received the lowest level of student agreement. These mixed results from both the qualitative and quantitative data suggest that different students perhaps have different financial planning needs at different points in their life. Knowing the make-up of the student audience prior to the presentation could likely help the presenter customize this presentation based on age and/or financial experience.

These findings are consistent with Eggleston and Laanan's (2001) study which argues that establishing and implementing transitional support programs must take into account the financial literacy needs of transfer students. Kezar (2006) also suggests that customizing new programs for transfer students (such as age or experience) could provide effective ways to support their transition and retention at the university.

Library Literacy

Programs like Transfer Bridge provide an important infrastructure and access for transfer students who may not often use the library by providing key information and instructional services. As such, the Transfer Bridge program offered an important component focused on library literacy for all participants.

A core message determined from the participants during the program is that students effectively utilized the Library and Information Access facility and support services available during Transfer Bridge. The library component included a classroom workshop, a computer lab interactive workshop, a library tour, and an out-of-class library research assignment which served as the final class project. All 101 Bridge participants completed the independent library assignment and demonstrated the appropriate research formatting and other guidelines required for this assignment. Additionally, all participant responses were included in the analysis of this learning outcome and are detailed below. Survey question number 3 (learned library resources) and number 4 (intend to use library), which had a combined 90.6% response rate of *agree* or *strongly agree,* aligned with the library literacy learning outcome. The two themes that emerged from the library literacy outcome are *Supporting Student Success* and *Insured Confidence and Library Use.* Each of these themes emerged from an open axial coding process which included line-by-line coding of two focus groups, five mentor journals (each day), and all 101 student essays. This process allowed me the opportunity to fracture the data into categories (with labels), then bring the data back together in new ways using color codes. Connections emerged by developing main categories and their sub-categories.

Supporting student success. A core message that emerged on 29 separate occasions from data collected was that students learned about the library resources, services and college librarians which support student success. The 29 occasions discussed in students' essays, mentor journals and two focus groups are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. This data provides insight into student learning and library discoveries experienced throughout the Bridge program. In fact, on eight occasions

students specifically expressed their surprise to learn that library faculty are assigned to each college and how important the connection was to each of them. A student in focus group B, for example, explained "I didn't know there was a librarian for my college. This is very helpful! All this stuff is new – definitely good to know." Also, during focus groups, three students spoke about the significance of the Wi-fi area in the library and how important this discovery would be for their fall studies. Several students with children wrote about the significance of the kid's area in the library, and their ability to bring their children to campus when they study or do research.

According to the survey responses for question number 3: "I learned about the [deleted name of institution] library and its services and know where to go to seek research assistance," 85.2% of the students responded *agree* or *strongly agree*. Other areas of the library that students stressed as important discoveries: Media Center, Reference Section, Student Lounge, the Writing Lab, and Stacks.

Increased confidence and library use. Participant feedback from essays, mentor journals and two focus groups regarding library literacy consistently showed that students had an informative experience which increased their confidence to seek additional library assistance. This theme of increased confidence and library use closely related to the previous one, given the emphasis on learning and library literacy. The responses in this case are highlighted by an experience in which a student expressed, "at least now when I come (here), this (library) building is not intimidating." Students also described their motivation to seek librarian assistance when needed. During focus group A, several students spoke about the lack of experience for most transfers conducting research in a library with one student insisting: "Transfers don't know the library, that's why this (library experience) makes it easy (to come back)."

Nine students went on to explain in their essay that as a result of Transfer Bridge, they "definitely planned to use the library during the fall semester." This is consistent with participant responses to survey question number four: "I used the [school's] library during the Bridge program, and intend to use the library during the fall semester," 96.1% of the students responded *agree* or *strongly agree*. Together, on 40 occasions students referenced an informative experience which increased their confidence to seek assistance if needed and positively impacted their fall library use. These occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties and dimensions. This data which lists the detailed codes derived from essays, two focus groups, and mentor journals, provides insight into how important it was for transfer students to build their confidence within their library experience and how this impacted their plans for future use of the facility.

These findings, reinforced by what was found in the literature suggests that Bridge programs are a positive factor in university retention (Ackermann, 1991; Santa Rita & Bacote, 1996), and so too is the campus library (Haras & McEvoy, 2005; Kelly, 1995). The literature explains that working together, they play an important role in effectively reaching at-risk transfer students by providing instruction on information literacy.

Peer Mentor Relations

Postsecondary institutions are urged to create an educational and social climate that fosters students' success. This includes creating a campus environment that eliminates barriers to persistence for new transfer students. The literature discussed previously suggests that transfer students most often rely on peers for campus information. Providing opportunities for students to develop meaningful peer interactions and friendships support student success. Peer educators/mentors can have a very positive influence on new students by serving as guides and sources of information, particularly for those whose experiences may be similar. The Transfer Bridge program included an important peer network that connected students to each other to increase their potential for persistence.

"The literature discussed previously suggests that transfer students most often rely on peers for campus information. Providing opportunities for students to develop meaningful peer interactions and friendships support student success."

A core message determined from the participants during Transfer Bridge is that students demonstrated the value of peer and mentor relations in support of their university transition by virtue of cohort interaction and peer mentoring. As reflected throughout the focus groups, essays, mentor journals, and observations, peer mentor relations consistently ranked high amongst feedback from students. The survey administered to all 101 participants at the end of the Transfer Bridge program provided additional valuable data and confirmed the students' responses regarding this outcome. All 101 participant responses were included in the analysis of the peer mentor relations outcome and are detailed throughout this section. Survey questions number 7 (interacted with my peers), 8 (explain the value of a mentor) and 9 (how mentors support my transition) which had a combined 89.5% response rate of *agree* or *strongly agree*, aligned with the peer mentor relations outcome. The three themes that emerged from the peer mentor relations outcome are *Friendships, Positive Feedback, and Group Interactions; Reducing Transition Fear*; and *A Resource of Information*. Each of these themes emerged from an open axial coding process which included line-by-line coding of two focus groups, five mentor journals (each day), and all 101 student essays. This process allowed us the opportunity to fracture the data into categories (with labels), then bring the data back together in new ways using color codes. Connections emerged by developing main categories and their sub-categories.

Friendships, positive feedback, and group interaction. Establishing friendships and meeting more students was an important component of Transfer Bridge, from the students' perspective. Feedback from both focus groups suggested that each participant met at least one new friend during the program. According to the survey responses for question 7: "I interacted with one or more of my peers during the Bridge program," 93.1% of the students responded *agree* or *strongly agree.* One student expressed in her essay that, "Meeting new friends was the best part of the Transfer Bridge program." Building peer relationships for many students was important for establishing on-going networks. On seven occasions students suggested in their essays that more time be provided during the Bridge program for students to get to know each other. One student wrote, for example, "Our (small) group time is extremely important. I got really good (peer) networks and now (I'm) not alone at [deleted name of institution]." Another student in focus group A suggested, "Please give us more small group time. This gives us a chance to build more (peer) relationships."

It is important to note that all Transfer Bridge students were assigned alphabetically (by last name) to a cluster group ranging from 19-21 students per group. Each cluster was led throughout the course of the program by a peer mentor. Although the mentors were closely supervised each day by an experienced SES counselor, mentors had daily responsibilities to lead group activities, attend workshops with participants, and serve in general as a resource for students, staff, and faculty.

With this being the case, participants provided strong responses regarding the value of mentors and peer positive feedback. On 11 occasions students discussed in their essays and focus groups how both (students and peers) opened up to share goals and experiences, and how meaningful those experiences were. One student shared in her essay, "The mentors are good role models. They speak from experience and this makes me (feel) comfortable at this big campus." During the focus group A discussion, a student explained, "My mentor did an awesome job of sharing and getting everyone to open up." The results of these "student networks," as described by several students in their essays was feeling more confident to attend the university and "no longer feeling alone." This is also reflective of the participant responses to survey question number 8 : "I can explain the value of having a peer mentor," 87.1% of the participants responded *agree* or *strongly agree.* One mentor's thoughts perhaps summarized this section when he explained "We established a network of trust, students helping other students (by) pulling them up."

Students went on to describe these peer and mentor relationships as "beneficial" and "crucial" to their attendance at this institution. These comments are further supported by survey question 9: "I can explain how peer mentors support my transition to the university," with 88.2% of the students indicating *agree* or *strongly agree*. To summarize this important theme, on 59 occasions participants indicated through their essays, two

focus groups, and mentor journals that meeting students and making peer connections led to important friendships and support networks. The 59 occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. This data provides further insight into the value of peer mentor relationships and how their support network increased the self-confidence of students attending the university. From sharing (and caring) experiences, students gained trust and comfort through positive feedback.

Reducing transition fear. Another recurring theme expressed by many Transfer Bridge participants in their essays, focus groups, mentor journals, and observed during workshops was fear and anxiety that participants were experiencing as they transition to the university. In fact, on 31 occasions students commented how valuable the mentor and peer relationships were with alleviating these fears. The 31 occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. The data, which lists the detailed codes derived from essays, two focus groups, and mentor journals, provides insight into peer interactions which reduced the fear and anxiety of their new university experience for most participants.

The comfort level established amongst the students and mentors appeared to be based on a level of trust. As one mentor explained, "We always had important dialogue (with our students), and our talks was built on trust." Another student shared in his essay, "Students' fears went away as we got good advice from the mentors and this is why we trust them." On 11 occasions, in particular, students referenced in essays and focus groups "feeling very comfortable" and their ability to relate to each other. Because all mentors are former transfer students from the same local community colleges, these shared experiences likely complimented the mentor's ability "to help students find their way."

A resource of information. A final theme that emerged from the peer/mentor learning outcome is that mentors served effectively as a resource for campus information. In fact, on ten occasions students specifically wrote that their mentor gave "good suggestions," or "really good directions," or "good advice." As for a student that had the same academic major as her mentor, she explained, "We discussed class options and the benefits and resources available for psych majors." Those personal interactions seemed to boost the confidence of participants and further demonstrated to mentors the value of their participation. A mentor shared in his journal, for example: "Today, I was a source of information for my group (of students). I helped (them) with some of (their) academic questions and (shared) some of my personal information and how I do things. This was a great feeling!"

Other areas where students provided strong feedback regarding mentors serving as resources include Student Health Services, the web portal (campus technology), student clubs and organizations, and campus life. Several students commented on the value of the campus tour and their mentors showing them where their classes would be during the fall. Altogether, on 41 occasions participants indicated through their essays, two focus groups, and mentor journals that mentors answered questions and served effectively as a resource for campus information, suggestions or guidance. The 41 occasions are referenced in an open coding table that shows how this theme was derived including each of the codes, properties, and dimensions. The data provides insight into the personal interaction between peers and mentors and how these exchanges impacted the students' confidence.

These findings, which suggest that peer mentors can have a very positive influence on new transfer students, were reinforced by what was found in the literature (Ender & Newton, 2000; Hagedorn & Cepeda, 2004). Through numerous cohort interactions and mentoring activities, students developed peer networks that connected them to each other which ultimately increase their potential for persistence (Ender & Newton, 2000).

Additional Findings

This program evaluation included additional evaluation instruments to collect different kinds of data. Specifically, we chose to include in this study class completion and fall enrollment, end of term GPA, and persistency rates from first to second semester.

Even though all Bridge participants successfully completed the three-unit summer course, only 97 of the (101) students enrolled at the study institution for the fall 2009 term. Student Educational Services (SES) staff were not aware that four Bridge participants experienced barriers to enrollment because no system was in place to check enrollment for this cohort. Campus data for the end of the fall 2009 term confirmed that Transfer Bridge participants (n=97) had the highest GPA amongst the three similar groups compared, including SES transfer students from the same local area community colleges, and the study site transfer students that did not apply to SES (or were not admitted) from the same local area community colleges. Transfer Bridge participants also had the highest cumulative end of term GPA amongst the three groups as well. Table 3 summarizes the GPA data.

Table 3
Fall 2009 New Transfer Students – End of Term GPA

New Transfer Students End of Term GPA		Term GPA (Fall 2009/units attempted >0)	Total GPA (Total units attempted >0 from all colleges)
Summer 2009 Group Transfer Bridge Group A	N	97	97
	Mean	2.82	3.20
	Median	2.92	3.24
SES Fall 2009 Group (excludes above group) Group B	N	243	243
	Mean	2.75	3.15
	Median	2.85	3.10
Comparison Group (excludes above 2 groups) Group C	N	1575	1575
	Mean	2.81	3.13
	Median	2.92	3.11

The comprehensiveness of this program evaluation allowed the program director the opportunity to identify the effectiveness of the Transfer Bridge program in relation to the learning outcomes, and in a manner that allows for program improvement. In doing so, the Transfer Bridge staff know precisely where the program is contributing effectively in support of student success and retention and where it is not. Furthermore, by using this opportunity for assessment, it allows the program's outcomes to be documented, thus capturing many of the important aspects of the department's efforts and resources (Bresciani et al., 2004).

With the budgeting realities of public education, budget reductions in California's post-secondary institutions will play a significant role in shaping student support services today and in the near future. As such, to justify the innovation and continuation of traditional and non-traditional programs such as Transfer Bridge, exemplary documentation of student learning experiences is essential. Given the focus of this study, SES and Transfer Bridge are poised to serve as an institutional campus model that is designed to identify effective strategies to assess student learning and development. This program evaluation

provides practitioners with a framework and assessment tools that could be used for the central educational mission of the institution because it is modeled to determine the effectiveness of student learning outcomes (National Association of Student Personnel Administrators, 2009). By predetermining each learning outcome in relation to the overall program goals, assessment tools can be customized to evaluate the strengths and weaknesses of the program and how (or if) each outcome (and overall program) contributes effectively in support of student success.

Program improvements. Although participant feedback suggested that each of the learning outcomes were achieved for the vast majority of the students (88.9%), these results indicate there is still room for program improvement. Each of the recommendations discussed below are fairly consistent with feedback from participants themselves reported throughout this study. Participant feedback was gathered from a survey, two focus groups, essays, mentor journals, an out of class library assignment, and observations. One hundred percent of the stakeholders participated in the survey and essay portions of the assessment; many others wanted to participate in the two focus groups but could not due to space in the groups and time allotted. The other assessment tools also provided valuable feedback from participants.

Many of the results will be immediately implemented by the SES staff and managers of the Transfer Bridge program. More specifically, for next year's Transfer Bridge program, the program director will survey students at the beginning of the program to better determine their academic advising, library literacy, and financial literacy needs in terms of short term financial planning or long term financial planning. Afterward, participants will be separated into different workshop presentations according to their interest. Some transfer students, for example, may already be familiar with their institutional graduation requirements and their course selection pattern through completion. Therefore, spending time with an academic advisor may not be necessary. Some transfer students may also have extensive library experience, so reducing their time in library workshops and demonstrations and providing a useful alternative could address their concerns. Providing workshop choices (through survey) may be a more productive use of students' time, and parallel what is discussed in the literature in terms of customization of information presentations for transfers (Ackermann, 1991; Eggleston & Laanan, 2001). Additionally, since students expressed they want to learn more about the library resources and services, expanding the amount of library time dedicated to this outcome is a worthwhile improvement. Organizing students into small groups based on their academic college to allow students the opportunity to spend more time with their college librarian is another notable enhancement. Finally, expanding mentor recruitment by starting earlier and advertising broadly throughout the campus in order to develop a more diverse applicant pool of mentors (e.g., academic majors and age) could potentially improve our selection of mentors. Selection of a more diverse group of mentors could strengthen the peer mentor relations outcome and improve student persistence.

By taking into account the needs of transfer students such as customizing workshop presentations according to needs and/or interests, we improve our opportunity to effectively address the needs of each student in our campus community.

Recommendations for future practice in outcomes-based assessment program review. Based on the review of the literature, the findings, and conclusions of this study, several recommendations are presented for future practice in outcomes-based assessment program evaluation. An important recommendation is to develop an ongoing annual evaluation plan for summer transitional programs. This plan will assist stakeholders in determining whether the program continues to meet its goals and objectives for transfer students. Outcomes-based assessment program evaluation should be conducted on a regular basis along with implementation of the assessment results (e.g., program improvement). By including staff and faculty perspectives that are apart of the execution of the program – in the program design, strengthens their commitment and understanding of the program's objectives. Other department collaborations (internal and external to the institution) also increase program support.

"Most often, the survey focuses on the number of participants served, did the participants find the service worthwhile, and if so why? We also typically focus on if students plan to return for services and what they would recommend for improvements. Based on these standard responses, or lack thereof, we naively celebrate our delivery of services as a job well done."

Documentation of a step-by-step plan for outcomes-based assessment program evaluation which considers the department's goals and perspectives of the program's stakeholders should also be developed (Ackermann, 1991; Bresciani, Gardner, & Hickmott, 2010; Bresciani et al., 2004; Greene, 2000; Spaulding, 2008; Strauss & Corbin, 1998). For example, the following steps should be considered when developing and implementing an outcomes-based assessment program evaluation plan:

1) Develop program budget
2) Review program goals and objectives
3) Collaborate with staff/faculty to determine how program goals and objectives will be met
4) Identify student learning outcomes
5) Develop methodology and design of the evaluation
6) Develop/implement marketing and recruitment plan for participants
7) Develop recruitment (where necessary) and training plan for mentors, faculty, and staff
8) Develop instrumentation (i.e., surveys, focus groups, essays, and mentor journal questions)
9) Develop protocols for data collection and confidentiality
10) Prepare for IRB submission (if necessary)
11) Test the tools/pilot study
12) Make changes to instruments and/or protocols (where necessary)
13) Program implementation including review of student confidentiality and consent
14) Collect and analyze data
15) Identify program strengths and areas in need of improvements
16) Report findings
17) Offer recommendations and implementation of program improvements

In order to receive a complete perspective of the participants' responses, the evaluation should take a holistic approach in using both qualitative and quantitative methods of data collection. To ascertain the information needed from participants, the program can use either pre-existing instruments or instruments customized by the program. Whichever form of instrument used, the instrument must be designed to address whether each of the student learning outcomes was achieved. The use of surveys, for example, can be most effective for gathering quantitative data. Student essays, open-ended questions, and focus group interviews can be effective for gathering qualitative data. The literature used in this study regarding outcomes-based assessment program evaluation can provide further guidance for managers (and evaluators).

Summary of Conclusions

The economic and political environment in post-secondary education, which is characterized by budget reductions and increasing demands for assessment, make outcomes-based assessment program evaluation an efficient and effective method of evaluation. The results of this study emphasize the value of program evaluation and the opportunity to implement program improvement. The qualitative data from this study provided

strong evidence that the learning outcomes were achieved for most students, reinforced by quantitative data in which 89.9% of students also reported agreement. Other findings, including student essays that described their overall Bridge experience, persistence rates, end of term GPA, and academic probation rates, together indicate this first year transition support program may also contribute to first term academic performance. These evaluation results support many ideas already reported in the literature while providing some new areas for program improvement. Additional research, however, is recommended over time in order to gain further insight into the long term impact of Transfer Bridge participants and non-participants.

It is further recommended that as Student Affairs practitioners, we give meaningful consideration to some of the outdated traditional methods of evaluation. For example, in many student services programs, the method used to evaluate services to students is by survey (if measured at all). Most often, the survey focuses on the number of participants served, did the participant find the service (or program) worthwhile, and if so, why, if not, why not? We also typically focus on if students plan to return for services and what would they recommend for improvements (usually open-ended). Based on these standard responses, or lack thereof, we naively celebrate our delivery of services as a job well done. This method of evaluation has historically been used to validate our programs (and sometimes existence), rarely used or able to provide documented evidence for program refinement, elimination or expansion.

Using data to inform decision making is relevant because many in the academic affairs (or instruction) division of the academy, have often criticized student services programs for a lack of evidence-based decision making, and as a result quietly question the existence of some programs or the need (for faculty) to be fully engaged. In response to these critiques, we conclude that now is the time for Student Affairs programs to move to outcomes-based assessment which allow for data-driven decision making for program improvement. This approach is timely and relevant given our economic and political climate, and allows Student Affairs managers to take their rightful place as full partners in the academy. This methodology also provides the best opportunity to implement program refinements, and as a result, to deliver the support services that our students ultimately deserve.

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Book Review

Coming to Terms with Student Outcomes Assessment: Faculty and Administrators' Journeys to Integrating Assessment in Their Work and Institutional Culture
Edited by Peggy L. Maki. Sterling, VA: Stylus Publishing, Inc., 2010. 227 pp. ISBN-13: 976-1-57922-435-6.

REVIEWED BY
Dorothy C. Doolittle, Ph.D.
Christopher Newport University

Coming to Terms with Student Outcomes Assessment: Faculty and Administrators' Journeys to Integrating Assessment in Their Work and Institutional Culture provides evidence that others have travelled that road of implementing assessment on college campuses, and, in fact, found like-minded others and success. Maki gives a brief introduction to the 14 stories of assessment adventures. The focus of the book, however, is how 14 institutions and the drivers that led the charges each accomplished their goals of incorporating student outcomes assessment into a major, a program, general education, or campus-wide. The institutions represented are varied; they include community colleges, small liberal arts colleges, and large research universities. Each chapter, written by people who were there on that rocky road to institutionalizing assessment, reflects the style and viewpoint of the authors. Chapter authors offer humorous slants, details of their programs, forms, or a general overview of their process.

Coming to Terms with Student Outcomes Assessment is not a how-to book. A reader starting an assessment program will not find lists of best practices or step-by-step directions. What the reader will find is general descriptions of 14 methods or processes used by others who were just starting out. There are ideas and procedures that look interesting throughout the chapters and may work on the reader's campus. The reader will also find encouragement in others' descriptions of the difficulties they had and how it worked out. My favorite chapters used humor in describing how they dealt with engaging faculty in student assessment. As I read about the typical faculty players and administrators on campus in chapter 5, it was easy to substitute the names and faces I work with at my university.

The authors from Eastern Kentucky University also used Kübler-Ross' five steps in the grieving process (i.e., denial, anger, bargaining, depression, and acceptance) to describe the steps faculty go through in accepting the reality of assessment. The transtheoretical model of successful change (i.e., pre-contemplation, contemplation, preparation, action, and maintenance) was used by the authors from the Rhode Island system to illustrate the successful implementation of assessment by faculty as part of the culture on their campuses. Another explanatory model portrayed assessment as a box of chocolates (chapter 1). A few authors described how they arrived at the positions wherein they were in charge of assessment of a major or program. David Eubanks (chapter 3) even makes fun of his early views of assessment and gives examples of early department reports he wrote before he was "in charge."

What do these chapters have in common? The majority of the authors did not have formal degrees in program evaluation and assessment. They used resources such as books, conferences, accrediting agency workshops, national assessment workshops, and advice from others who had been in their shoes. Formalizing the student outcomes assessment was not a choice that many campuses had freely made. Most of the authors and their institutions found themselves on the assessment road because of external mandates such as regional accrediting bodies and state guidelines. This brought suspicion, ill-will, disbelief, and despair to faculty and administrators at their institutions. The authors not only had to deal with designing and implementing the nuts and bolts of an assessment program, they had to work with sometimes recalcitrant faculty and small budgets. Their initiatives competed with other campus needs for personnel and faculty time. The chapters give advice to get faculty involved – let them be part of the planning, let them speak their minds about assessment without taking it personally, and publically encourage and celebrate steps in the right direction. In addition, they advise that you not be discouraged by small numbers of faculty attending meetings or workshops.

> ***"A less tangible benefit of this book is that readers can retell the stories of what other campuses have attained to their own faculty and administrators to assure these stakeholders that growing pains are common and that assessment is doable in diverse environments."***

Readers may pick up ideas for committees or structures from several of the chapters. Authors report on faculty development efforts that focused on assessment, with some campuses having an assessment day for faculty discussion, training, dissemination of information, or to score assessment measures (e.g., chapters 8 and 14). There are also candid discussions about faculty time constraints and choosing to compensate them for time dedicated to assessment work. Practical highlights of the book include information about sources such as Liberal Education and America's Promise (LEAP) in chapter 1 and Carnegie Foundation's free KEEP toolkit, a set of web-based tools in chapter 4. Various chapters discuss the pros and cons of using standardized measures developed by companies such as ETS (e.g., see chapter 13). Some campuses found these measures to be a fit for their needs while others opted for locally developed measures. A few chapters include forms, rubrics, and curriculum maps that readers might find helpful (e.g., chapters 2, 4, 7, and 13).

A less tangible benefit of this book is that readers can retell the stories of what other campuses have attained to their own faculty and administrators to assure these stakeholders that growing pains are common and that assessment is doable in diverse environments. Chapters offer responses to such complaints as assessment interfering with academic freedom, that course grades should be assessment enough, or that assessment is just a fad. Finally, these authors offer benefits of assessment that were witnessed on their campuses. Although assessment was usually externally driven, the naysayers were often convinced of its utility and worth for course, major, or program planning and improvement.

This well-written, easy to read book can be a source of encouragement and amusement. A seasoned assessment veteran might find this book useful in learning about the different approaches used at other institutions or to reminisce about their own beginnings in the field. But, for the newcomer, there are many ideas in the different chapters for organizing, persuading, encouraging, and successfully moving toward student outcomes assessment. And, lest anyone new to introducing assessment to a college campus thinks his or her road ahead is well-marked, has no pot holes, and will require no detours, these 14 campuses offer a reality check!

"The focus of the book, however, is how 14 institutions and the drivers that led the charges each accomplished their goals of incorporating student outcomes assessment into a major, a program, general education, or campus-wide."

Book Review

Start with Why: How Great Leaders Inspire Everyone to Take Action.
Simon Sinek. New York, NY: Penquin Publishers, 2009. 246 pp. ISBN: 1591842808.

REVIEWED BY
Vicki L. Wise, Ph.D.
Portland State University

Start with Why: How Great Leaders Inspire Everyone to Take Action by Simon Sinek (2009) is not a book you might typically read in an assessment context, as this book is about the power of visionary leadership to create organizations that are innovative, inspirational, and successful, and to create quality programs and services that stand the test of time. However, this is not unlike the work of those responsible for assessment in higher education in building a culture of assessment where it is essential to have dedicated leadership that sets priority for assessment from the top, communicates this vision, and then fosters expertise, ownership, and collaboration.

Start with Why: How Great Leaders Inspire Everyone to Take Action provides great insight into why individuals like Martin Luther King, Jr. and the Wright Brothers and leaders of organizations like Apple and Southwest Airlines have influenced the ways in which we live and see our lives. Sinek posits, and I agree, that what these leaders have in common is that they started with "Why?". These leaders had vision, communicated this vision clearly to others, and found champions to see this vision through. This book is for anyone who wants to inspire others to action, including those in higher education assessment.

Book Summary

In *Start with Why: How Great Leaders Inspire Everyone to Take Action*, Sinek studies the leaders who have had the greatest influence in the world and discovers that they all think, act, and communicate in the exact same way. Great leaders "inspire people to act" by giving them a sense of purpose or belonging—a call to action (p. 7). In the six sections of this book, Sinek takes readers through the three stages of the framework he calls The Golden Circle, on which great organizations are built. This framework consists of three levels, and the author moves readers though the book and from the center of this Circle out, from why we exist to how we do what we do and finally to what we do. The problem, he suggests, is that most organizations do not know why they exist.

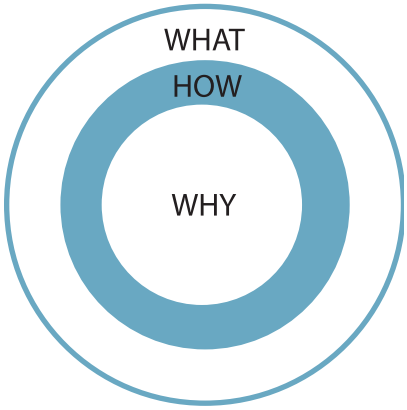
When we understand the vision of an individual or an organization, why they do what they do, we do not need to be manipulated to follow them, to use the services or products they produce. We follow them because we share a similar vision and are loyal to the cause (p. 54).

For example, this messaging from Apple clearly demonstrates this:

Why: Everything we do, we believe in challenging the status quo. We believe in thinking differently.

How: The way we challenge the status quo is by making our product beautifully designed, simple to use, and user friendly.

What: We make great computers. Wanna buy one? (p. 41)



We know why Apple exists and why it creates the products it does. We do not need to be manipulated to follow them, we either share their vision or we do not. And when we do share their vision, we feel like we join a community of like-minded individuals when we use their products.

Sinek found that all great leaders and organizations could clearly articulate why they exist—their purpose, cause and belief. The why then dictated how and what they did. "All great leaders and organizations, regardless of size or industry, act and communicate from the inside out" (p. 41). Those whose visions were unclear described themselves in terms of what they do. They could easily describe their products and services. They could describe the latest innovations they created and the latest changes to their products and services. They might even be able to describe how they do it, but they were unclear as to why.

"Sinek found that all great leaders and organizations could clearly articulate why they exist—their purpose, cause and belief…For schools to be effective in building a culture of assessment they need to share a common vision through their shared language."

Readers move through the book from the inner circle of why to the discipline of how. The how, is how inviduals will bring action to the belief. The most successful leaders and organizations are those whose behaviors are aligned

and organizations are those whose behaviors are aligned with their vision: they have action-oriented values. "A why is just a belief…hows are the actions you take to realize that belief" (p. 67). Following from how are the results of the actions that are taken, the what, and includes the consistency of everything that is done: creation of products and services, hiring and training of staff, and marketing. There is authenticity when beliefs are aligned with how and what we do. Actions are beliefs made visible. When beliefs are made visible, people perceive a leader or an organization as authentic and trust is established. "When why, how and what are in balance, trust is built and value is perceived" (p. 85). This level of transparency allows others to join in: they clearly see and support the vision. As Sinek proposes:

> The goal is to hire people or to enlist people who share the same passion for the why—purpose, cause, belief. It is in this environment that folks can generate great ideas. Great organizations become great because the people inside the organization feel protected. The strong sense of culture creates a sense of belonging and acts like a net. (p. 105)

As the book winds to a close, Sinek proposes that, in part, what makes leaders great is not only their ability to demonstrate their vision but to have the charisma to engage others to lead. Great leaders create an infrastructure where the why can be tangible. Great leaders move on, but if the infrastructure is created based on vision then others will know how to bring it to life. The what will be a result of their action and will be apparent in the quality of the programs, services and products.

"This book is for anyone who wants to inspire others to action, including those in higher education assessment."

Building an Assessment Culture

While Sinek did not use higher education as a backdrop for describing the characteristics of great leaders and organizations, it is here that we most need to create the Golden Circle. The Division of Student Affairs at Portland State University (PSU) serves as an example where the Golden Circle is applied in higher education. Building a culture of assessment in student affairs must start with dedicated leadership that sets priority for assessment from the top, that values evidence-based decision making and then communicates this value to staff, and that sets clear expectations for assessment activities and holds units accountable (Lakos & Phipps, 2004; The Student Affairs Leadership Council, 2009). Both the Portland State University Vice-President for Enrollment Management and Student Affairs and the Associate Vice President for Student Affairs have set assessment as a priority for the division. They communicated their vision for the division and reinforce the philosophy that assessment of programs and services is essential to informing practice and progress.

"Higher education assessment professionals, like those in corporations, benefit from visionary leadership that can foster environments where vision leads to effective practice and attained outcomes."

The Student Affairs Leadership Council (2009) concluded that to effectively build a culture of assessment universities must create an infrastructure to support assessment efforts and the leader's vision. Universities need to have a dedicated assessment coordinator to provide staff with assistance to plan and conduct assessment projects, to develop assessments and survey tools, to analyze and interpret data, and then to use and report findings; however, the coordinator should not be solely responsible for conducting all assessment. Effective coordinators are able to find champions for the leadership's vision and these champions are provided training and assistance in conducting research and assessment of programs and services, so that they may then assess the quality of their programs and services. The PSU Division of Student Affairs created an assessment coordinator position to provide staff with the tools and resources needed to build assessment competency, and to set timelines and requirements for assessment planning and reporting. Serving as assessment coordinator, I am charged with moving the vision into practice.

PSU has experienced marked progress in their student affairs assessment capacity. The Student Affairs Assessment Council (SAAC), consisting of 24 members representing both Student and Academic Affairs, was formed as a group of champions who support the vision to move assessment forward. Collectively the Council has developed a common assessment language through a dictionary of terms, and has created standardized assessment planning and annual reporting templates. A great deal of work has taken place to remove as many obstacles to assessment as possible by offering a variety of assessment trainings, including webinars, in-house workshops, one-on-one consultations, and all staff training at our fall and winter meetings. Because of a shared vision, the PSU Division of Students Affairs has been able to increase the visibility of their assessment work through forming both internal and external partnerships and by disseminating and sharing our resources. Dissemination activities include the development of the assessment section of the Student Affairs website, and outreach and education outside PSU through the website, Word Press Blogs and Twitter postings.

For schools to be effective in building a culture of assessment they need to share a common vision through their shared language. Staff need to be part of the process

of creating systematic and standardized processes, such as using an assessment planning template that guides their assessment efforts and sharing a common annual report format. Universities that clearly understand why and how to do assessment are then able to experience increased visibility, both internally and externally, by sharing their findings. They create a strong presence in both print and visual media as a means to highlight assessment activities and results. And they are more likely to be actively engaged in professional organizations and conferences, and to foster collaborative partnerships (both internally and externally to campus).

The PSU Division of Student Affairs starts with why in both strategic and assessment planning to address such questions as: Why do you have your program or service? What do you hope to occur in student learning and development as a result of your programs/services and your efforts? What activities occur in your programs/services that will allow for the changes you hoped? Staff are able to articulate why they have their programs and services, and are then able to formulate a mission for how they will carry out their vision, and by what services and activities. Because of this, they are clearer in writing their outcomes because they know what they expect. By starting with why, staff know where they want to end up, and can then proceed backwards toward what needs to be measured and what needs to happen (content) for the outcomes to occur. Staff know that it is imperative that they focus on their why, so that they use their time, money, and staff most efficiently.

Simon Sinek clearly did not write *Start with Why: How Great Leaders Inspire Everyone to Take Action* with higher education in mind, as there is not one example of leadership in education. Readers can, however, comfortably make the leap from the corporate setting to higher education, and from traditional assessment books to books such as this because higher education institutions are organizations striving for greatness. Higher education assessment professionals, like those in corporations, benefit from visionary leadership that can foster environments where vision leads to effective practice and attained outcomes. We want the very best for our students and for the faculty and staff who interact with these students. Why not start with why?

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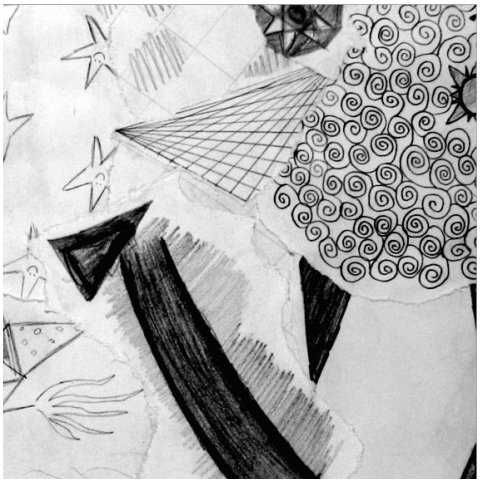
RUMINATE: INTEGRATING THE ARTS AND ASSESSMENT



"ASSESSMENT DAY"

Makayla Grays
Graduate Assistant
James Madison University

Editor's Note: The contents of this piece were collected by the artist at the conclusion of a university-wide assessment day. She noted that some of the returned testing materials had been inscribed with unsolicited student responses. These sketches were compiled and situated in the collage above. The two adjacent frames highlight the intricacies of the piece.

RPA Guidelines for Submission

Article Submissions:

Articles for *Research & Practice in Assessment* should be research-based and include concrete examples of practice and results in student learning outcomes assessment or other education assessments. The readers of *Research & Practice in Assessment* are associated with myriad institutional types and have an understanding of basic student learning and assessment practices. Articles for publication will be selected based on their degree of relevance to the journal's mission, compliance with submission criteria, quality of research methods and procedures, and logic of research findings and conclusions. Approximately fifty percent of submissions are accepted for publication.

- Style: Submissions should be formatted in the 6th edition of APA.
- Format: Manuscripts should be submitted electronically. The standard manuscript form has 1 inch margins on all sides in 12 point New Times Roman font.
- Blind Review: Identification information should be limited to the title page. Do not include self references within the manuscript, electronic file, or references (i.e. "in press").
- Length: articles should be 8-16 typed, double spaced pages (2,000-6,000 words)
- Abstract: An abstract of 150 words or less should be included.
- Copyright: Reviews shall not have been registered for copyright or published elsewhere prior to publication in *Research & Practice in Assessment.*
- Double Submission: Articles currently under review elsewhere shall not be considered for publication in *Research & Practice in Assessment.*
- Deadlines: Submission deadlines for the 2012 issues are April 1 and September 1, which are published in July and December respectively.

Book Review Submissions:

Book reviews are significant scholarly contributions to the education literature that evaluate publications in the field. Persons submitting reviews have the responsibility to summarize authors' works in a just and accurate manner. A quality review includes both description and analysis. The description should include a summary of the main argument or purpose and overview of its content, methodology, and theoretical perspective. The analysis of the book should consider how it contrasts to other works in the field and include a discussion of its strengths, weaknesses and implications. Judgments of the work are permitted, but personal attacks or distortions are not acceptable as the purpose of the review is to foster scholarly dialogue amongst members of the assessment community.

- Style: Submissions should be formatted in the 6th edition of APA.
- Format: Manuscripts should be submitted electronically. The standard manuscript form has 1 inch margins on all sides located in 12 point New Times Roman font.
- Length: reviews should be 5-8 typed, double spaced pages (1,250 - 2,000 words).
- Copyright: Reviews shall not have been registered for copyright or published elsewhere prior to publication in Research & Practice in Assessment.
- Deadlines: Submission deadlines for the 2012 issues are April 1 and September 1, which are published in July and December respectively.

Notes In Brief and Special Features:

The Board of Editors will consider notes in brief and special features such as invited articles or reports. These submissions should be no more than 3 typed pages in length and should address topics associated with student learning outcomes assessment. The topics addressed should be of interest to the readership of the journal and adhere to the formatting guidelines of submitted articles.

Submissions for Ruminate:

Ruminate concludes each issue of *Research & Practice in Assessment* and aims to present matters related to educational assessment through an artistic medium such as photography, poetry, art, and historiography, among others. Items are encouraged to display interpretive and symbolic properties. Contributions to Ruminate may be submitted electronically as either a Word document or a jpg file.

All items may be submitted in a Microsoft Word file attached via email to:

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BOOKS AVAILABLE

Balzer, W. K. (2010). *Lean higher education: Increasing the value and performance of university processes*. New York, NY: Productivity Press. pp.312. $49.95 (paper).

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Carey, K., & Schneider, M. (Eds.). (2010). *Accountability in American higher education.* New York, NY: Palgrave Macmillan. pp. 355. $95.00 (hardcover).

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