

A Proposal to Assess and Correct Student Learning Process Deficits

Statement of Purpose

The Whitacre College of Engineering at Texas Tech University in partnership with the Learning Realization Institute (LRI) proposes to screen and assess freshmen students at the university for learning process weaknesses that adversely affect reading, reading comprehension and the understanding of math concepts. Following the screening and assessments, the cohorts of students who are determined to have learning process deficits will be enrolled in a summer 2011 intervention program to correct these deficits. The initial focus will be on low income at-risk entering freshmen students.

Background

Recent National Assessment of Educational Progress scores indicate that student test scores have “not improved in 30 years.” Furthermore, ACT in its 2006 report on reading achievement of 12th graders showed that reading achievement had decreased in recent years to a degree that 52% of high school graduates were unable to read at a college level (ACT, 2006).

High school students, especially those from low income, minority, and underserved backgrounds are graduating with significant reading and mathematics deficits. Over 50% of students who are admitted to colleges and universities must take remedial classes before starting college-level work in science, technology, engineering, and mathematics (STEM) fields from which a large proportion struggle and/or become dropouts. Many other students go undiagnosed and matriculate directly into the initial STEM curricula courses and ultimately become dropouts. The performance of these students provides evidence of a gap in their college readiness when compared with their successful peers. This gap in the learning proficiency needed to graduate from high school and to successfully accomplish college-level work is called “The Learning Divide.”

For the Whitacre College of Engineering at Texas Tech University, entering freshmen, which have a combined mean verbal and math score of almost 1200 on the SAT test, seem to perform reasonably well on standard language proficiency placement examinations, but less than half qualify for college calculus. In addition, less than 40% of the engineering students graduate within six years, which the faculty and administration view as unacceptable. It is likely that a significant contributing factor to this issue is that many students, even though quite bright, have learning process weaknesses for which they compensate.

At California State University Los Angeles (CSULA), where LRI has conducted assessments for learning process deficits, most of their freshmen are under-prepared to succeed in college level courses (79% and 72% were not proficient in English and math, respectively, in fall 2008 in spite of average high school GPAs of 3.14). According to extensive data published online at www.asd.csu.edu, these numbers at CSULA are largely the same as 1997 when the CSU system began publishing online performance data for the 23 CSU campuses, community colleges and high schools throughout California.

In March 2008, Dr. Steve Truch, founder and director of The Reading Foundation, screened an initial cohort of 116 students representative of the freshman engineering class at CSULA. Of these students, 39 were individually assessed in their basic reading (decoding) and reading

comprehension skills. All 39 were found to have significant deficiencies (for example, more than 80% scored at the sixth-grade level or less for reading and listening comprehension). In addition, 23 of these students also completed a 100 question math test consistent with the objectives of the California Math Curriculum from grades 3 to 7 inclusive. Here again, all 23 were found to require further development (an average of 55% of Grade 6 items and 53% of Grade 7 items were answered correctly). In November 2009, Dr. Truch conducted assessments with freshmen students at East Los Angeles College (ELAC) with similar results. ELAC is the primary feeder community college for CSULA.

The Learning Divide

Students who fall into The Learning Divide typically exhibit learning process weaknesses in reading (decoding), reading comprehension, and mathematics concept understanding and use. Depending upon the severity of these weaknesses, individuals of all ages, from all economic backgrounds and at all intelligence levels tend to display some or many of the following learning-process-deficit markers:

- Rereading in order to understand what has been read;
- Poor understanding of math word problems;
- Difficulty in taking notes while listening;
- Difficulty in understanding new mathematics concepts;
- Reading from prepared text while speaking;
- Expressing thoughts when writing.

Even at one of the most prestigious undergraduate science and engineering institutions, Harvey Mudd College, a significant fraction of the entering freshman are challenged by learning process deficits. In 2004, 93% of entering freshmen participated in a screening to identify reading comprehension deficits. Screening indicated that at least 27% had learning process weaknesses that would affect their academic performance. Of the students selected from this group for testing, 95% scored **below** the 8th grade reading competency level. Yet the student mean SAT score was 1480 (out of 1600) at one of the most selective colleges in the nation with a four-year graduation rate approaching 85% annually.

Closing The Learning Divide

For students to transition successfully from high school to college we must close The Learning Divide by

- Identifying students' individual reading and math deficits through specially designed screening and assessments.
- Provide intensive individually tailored reading and math intervention programs that utilize a dual coding method at universities and community colleges across the United States.
- Establish Training Centers at higher education institutions to train instructors in the methodology of dual coding intervention.
- Track the graduation rate of students completing the intervention program.

The Learning Realization Institute

LRI is a 501(c)(3) non-profit corporation, established to provide dual coding based learning intervention programs to students that have been assessed as having learning process deficits and that are on the verge of university admission, to develop on-site instructor training centers for broadening the base of and sustaining these intervention programs, and research facilities for assessing, validating, and enhancing the programs. The goal of the intervention program is that each student overcomes his/her deficiencies so that he/she can successfully complete at least a BS

degree, particularly in the STEM fields of study. Collaborating universities are being identified to develop intervention programs and establish training centers beginning in the summer of 2011, with Texas Tech having expressed its desire to be at the forefront. The targeted institutions are those that **value and focus on developing students of quality and impact and that contribute to student access, development and diversity**. The focused goals are to

1. Help increase the number of low-income students who earn a college degree in STEM disciplines by addressing and mitigating their learning weakness at, or prior to, college matriculation.
2. Identify and correct learning weaknesses that deter student reading and mathematics competence and thereby increase their college academic functioning.
3. Increase each student's ability to successfully earn a bachelor degree in a STEM field that requires high functioning levels in reading and mathematics comprehension.
4. Have LRI's outcomes be conceptualized as "Closing the Learning Divide".

Proposal

LRI proposes to work with the Texas Tech University's Whitacre College of Engineering to screen and assess a cross section of the 2011-2012 entering freshmen class to identify those students that have learning weaknesses that can be mitigated through intensive intervention. From the cohort of students that are screened, 50 will be given individual comprehensive assessments to identify their specific learning process weaknesses. This is the first step in a program implementation that is formulated to "close the learning divide" for the participating students. These students will then be enrolled in a full six-week program of learning intervention that is the second phase of the proposed program.

Screening Activity

The screening process will be completed for approximately 200 Texas Tech entering freshmen. LRI will provide the proprietary screening questionnaire to the university, which will be responsible for identifying the students and administering the questionnaire to them. The university will return the completed screening documents to LRI, which will score the individual questionnaires.

Based on the results from the questionnaires, the university in concert with LRI will identify those students that would most benefit from an in-depth assessment. Optimally, 50 students would be identified and selected for the assessment.

Assessment Activity

Each selected student will undergo a one-hour assessment administered by Dr. Steve Truch from The Reading Foundation in Alberta, Canada. Dr. Truch has developed and refined his assessment process over a period of about 30 years and it has been demonstrated to accurately identify the areas in which student learning process deficits are exhibited. The assessment phase will require eight working days at the university. On the day following the completion of the assessments, Dr. Truch will prepare a draft assessment report and present it to the appropriate engineering faculty and staff, and other relevant stakeholders at Texas Tech.

Finally, Dr. Truch would deliver a presentation on the intervention methodology and the preliminary design of a summer 2011 intervention program.

Instructor Training in The Reading Foundation Methodology

During the screening and assessment phase, over a three-week period (eight hours per day, five days per week), five instructor trainees will receive 40 hours of training in each of The Reading Foundation proprietary programs: Discover Reading, Discover Meaning, and Discover Math. These instructor trainees will be selected by Texas Tech University with guidance and advice from The Reading Foundation and LRI. Upon completing this training, instructors will be prepared to begin working with students on a one-to-one basis, the traditional delivery model used at The Reading Foundation and by instructors being trained for other private learning centers or individuals starting their own practice. However, these instructors will immediately participate in a practicum to become the first certified instructors in the United States to deliver The Reading Foundation Programs in a small group format to college students.

Instructor Trainee/Student Practicum

Each instructor trainee will participate in the delivery of the reading, reading comprehension and math intensive intervention with ten students under the daily direction of a senior trainer from The Reading Foundation. Students will receive six hours of instruction daily, five days per week for six weeks (two hours per day for a total of 60 hours in each program). Instructor trainees will receive 100 hours of training in each program (40 hours of training in the methodology plus the 60 hour practicum) for a total of 300 hours training in nine weeks. All instructor trainees should achieve certified instructor status from The Reading Foundation in the three programs. Each of the 50 students should achieve multiple grade level gains in basic reading and math skills and be prepared to successfully complete college-level courses beginning with fall 2011 classes.

Expected Outcomes and Sustainability from this Breakthrough Program

A major aim of the proposed Texas Tech Learning Enrichment Program is to demonstrate its scalability and sustainability—scalability in the sense that regional centers can be established to develop instructors who then administer the intervention programs at other universities and sustainability in that the program will become imbedded at the institutions involved in this proposed first effort and through its success will be adopted by other colleges and universities. LRI has every confidence that once the proof of concept is demonstrated through the proposed Texas Tech program, other institutions will find the approach compelling. There has already been considerable interest exhibited by senior management at a number of organizations with which LRI has had discussions including the Gates and Lumina Foundations, several corporate foundations including the Intel and Northrop Grumman, the United Negro College Fund that is considering a summer 2011 pilot program that would be extended to all member private HBCUs, and many universities including MIT (focus on low income entering freshmen). Although these organizations acknowledge the potential benefits of the LEP approach, they would be more sanguine once results are successfully demonstrated on a large scale. This is precisely the outcome expected from the Texas Tech program. To this end the proposed program will

- Train the first five certified instructors in the U.S. to deliver The Reading Foundation intervention programs in a small group format to under-prepared pre-college and college students. This will establish the foundation for making the Texas Tech collaboration with the Learning Realization Institute a powerful partnership for the improvement of student learning, especially for under-prepared and low-income students. This program will establish a model for regional/national training centers for this kind of learning intervention for other colleges and universities as early as the summer of 2012, demonstrating the efficacy and sustainability of the proposed approach.
- Demonstrate that the LRI Learning Enrichment Program intensive interventions enable under-prepared entering freshmen to achieve at least two-grade level gains in basic reading and math skills and that at least 80% of them will be prepared to succeed with their first level college freshmen courses.

- One instructor at Texas Tech University will be developed to be the program director for all LEP related programs and activities including outreach efforts at feeder community colleges and high schools.

With such an outcome funding organizations have indicated to LRI that they would be receptive to supporting expanded efforts, while the Texas Tech would then be prepared to implement the LRI Learning Enrichment Program and host LRI training and research centers.

Summary

Based on the proven success of The Reading Foundation methodologies in correcting learning process weaknesses, we are confident that such an approach can be expanded to larger cohorts of students. This approach will lay the foundation for engaging other universities and a range of sponsors that will expand the Learning Enrichment Program to many other students who would otherwise begin college-level work with unresolved learning process weaknesses.