

A Baker's Dozen Ideas to Foster Engagement

Keynote

9th Annual CSU Symposium on University Teaching

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Objective of Presentation: To present a set of ideas that support faculty and administrators in fostering student engagement, and to have participants reflect on these (and other) ideas that participants may wish to consider in engaging their students in and out of the classroom.

Some of the ideas I will present today are research findings, some are course/program interventions and other are resources that I have found powerful in fostering engagement over the years. **When I have finished my presentation, I will be asking you to identify ideas that resonate with you and some things that I haven't mentioned that have proven useful to you.**

1. ***What Matters in College: Four Critical Years Revisited*** (Astin, 1993). Classic in the field. Examines over 20, 000 students and over 190 environmental variables that affected student cognitive and affective variables. **Implications/applications:** Curriculum played little role in student success. It was student involvement, fostered by *student/student interaction* and *student faculty interaction* that predicted student success. These findings should guide course and program planning. Astin's findings influenced many in higher education, including NESSE group. (See also **Pascarella and Terenzini, 2005, *How College Affects Students: Volume 2 A Third Decade of Research*** for a review of thousands of studies published since their 1991 volume of the same name).
2. **National Study of Student Engagement (pronounced NESSIE)**. Assessed variables associated with student engagement. George Kuh and his colleagues identified five research based principles that predicted higher levels of student engagement (including student-faculty interaction and active/collaborative learning). NESSE data collection at CSUDH resulted in a five year engagement plan focusing on these two variables. **Implications/applications:** Some elements of the CSUDH Engagement plan are: 1. Focusing of faculty forum brown bags on engagement, 2. Implementation of first year faculty seminars including interactive teaching strategies, 3. Revitalization of freshmen success seminar including research based exercises/pedagogy, 4. Outside speaker series (Tinto, Angelo, S. Kagan, C. Nelson, B. Millis) and other faculty development events, focusing on *Becoming an Engaged Community of Learners* theme. For streaming videos of Tinto et al, visit Center for Teaching and Learning website at <http://ctl.csudh.edu/SpeakerSeries.htm>. NSSE findings include the mismatch

between student time spent preparing for class versus faculty expectations for course success. Suggests that, when students are in class, that time must be spent wisely, since interaction with the content may be minimal outside of class.

3. **Science, Mathematics, Engineering and Technology (SMET) Research.** Work by Mazur (Harvard, Physics), Hake (Physics, Indiana), Triesman (Mathematics, Berkeley), Springer et al (Wisconsin-Madison, SMET) and others documented powerful effects of group/interactive instruction on such outcomes as: general academic achievement in SMET, higher order thinking in SMET, percent of minority students succeeding in “gatekeeper” math/science classes, retention in math-based majors and in college, and other cognitive and affective measures. Implications/applications: To have long-term effects on student success, courses must move away from excess reliance on lecture method and move toward more interactive instructional procedures (see Interactive Lecture article in conference packet).
4. **Perry/Vygotsky/Women’s Ways of Knowing Research/Theory/Constructivist Pedagogies.** Perry suggests that most students entering college are dualistic thinkers who prefer lecture method to settle complicated conceptual tasks. Mismatch between professors and students in levels of cognitive maturity yields low level of student success. Women’s Ways authors suggest preferred methods of knowing/learning for many students may be cooperative, rather than competitive (e.g. grading on curve), and group learning rather than lecture. Vygotsky indicates students learn best from other students in more proximal stages of development. **Implications/applications:** less grading on curve, criterion referenced grading, less lecture, more cooperative, group learning.
5. **Mastery Learning/Keller Plan/Individualized Instruction.** Personalized Instruction is a structured approach to teaching in which the instructor task analyses the important skills in a class and creates a learning environment characterized by mastery learning and requiring students to demonstrate that they have learned earlier skills before moving on the more complicated ones. Pascarella and Terenzini (2005) report that this system of teaching results in a 19 percentile point advantage in learning outcomes when compared to more conventional approaches. Thus, a group of students taught conventionally who scored in the 50th percentile might be expected to score in the 69% when taught using a mastery learning approach. Pascarella and Terenzini report effect size of .41 and .68 on two meta analyses conducted on this approach (considered moderate effect sizes). **Implications/applications:** Focus on a limited number of “big ideas” then ensure that students have learned these limited number of skills by frequent informal assessment (CATS) and criterion referenced testing (versus teaching the entire textbook content and grading on the curve).
6. **Learning Communities.** Often includes block scheduling of classes and registration, such that students often take the same two or three classes, often thematically linked. Tinto reports that Learning Communities have a statistically

significant impact on student persistence to graduation. Johnson, Johnson and Smith (1998) and others report that Learning Communities result in a sense of “educational citizenship” (a sense of responsibility for others’ learning), greater involvement in classroom learning and perception of greater academic achievement. Pascarella and Terenzini (2005) caution that the learning communities’ research is “nascent” and “mixed” when applied to learning outcomes. It seems to me that the power of Learning Communities, particularly when combined with cooperative/collaborative learning can foster the kind of student/student and student/faculty interaction Astin finds the most powerful predictors of student success in the college experience. A good area for additional research on the Scholarship of Teaching and Learning.

Implications/applications: Careful planning of both curriculum and pedagogy around a limited number of central, thematic constructs and pedagogy stressing interactive learning has great potential in fostering student achievement, persistence to graduation, educational citizenship and other cognitive and affective outcomes.

7. **Research on Teacher Variables.** There has been some good research on characteristics of effective teachers. Characteristics highly correlated with student learning are: 1) Clarity and 2) Organization/Structure. Pascarella and Terenzini (2005) report “The two most salient dimensions of teacher behavior in predicting student learning were instructor skill (particularly clarity of presentation) and course structure/organization (such as class time structured and efficiently organized) both of which are learnable skills.” **Implications/applications:** Cooper and Cuseo (1988) asked CSU student, faculty and administrators the teaching behaviors that characterized their most effective teachers. The #1 characteristic on all three lists was “a clear and detailed syllabus” (one way in which teachers can demonstrate clarity and organization). Note: Expressiveness/Enthusiasm is also strongly correlated with student success.
8. **Deep Learning/Critical Thinking/Significant Learning.** Research and theory by such researchers as Kurfiss, Paul, Fink, Kagan, Astin, Hake, Mazur and Halpern suggest that interactive instruction and constructivist/feminist pedagogy is correlated with increases in critical/higher order thinking. Research is hampered by lack of a clear definition of constructs (critical thinking/higher order thinking etc.). **Implications/Applications:** Regardless of the theorist/researcher, recommendations for practice include interactive teaching, intentionally focused on practice regarding higher-order thinking, particularly involving writing. NSSE data suggests that many students do little writing in their undergraduate classes.
9. **Cognitive Scaffolding.** Cognitive scaffolds are forms of support provided by the teacher (or another student) to help bridge the gap between their current abilities and the intended instructional goal. Examples of scaffolds are: Anticipate Student Errors, Partial Solutions and Think Alouds (Cooper, Robinson and Ball, 2003). **Implications/Applications.** Scaffolds can be inserted in lectures and other instructional formats to more actively engage learners. For example, after

lecturing on independent and dependent variables, give the class a word problem containing one of each, then say, “In educational research, the independent variable is usually a student characteristic or school-based experience, so it seems that the type of reading program (Whole Language versus Open Court) is the independent variable in this problem. The dependent variable is often some student outcome, so in this problem, it seems to be the CAT 6 Reading score measured at the end of the school year.” Think Alouds provide students examples of how “experts” solve problems, thus modeling higher-order thinking skills before asking students to demonstrate these skills on tests and papers. Research suggests that students need *many* more practice opportunities (20 or more) to reach “automaticity” (fluency) than are usually given in a class.

10. **Cooperative/Collaborative/Group Learning.** According to Ellis (2001) “Cooperative learning is one of the most durable, if not the most durable, educational innovations of our time.” In 2001, Johnson, Johnson and Stanne reported over 900 studies had been conducted comparing cooperative approaches with other procedures. Wilbert McKeachie, in his landmark text *Teaching Tips* (2002) notes that “There is a wealth of evidence that peer learning and teaching is extremely effective for a wide range of goals, content and students of different levels and personalities.” He writes “The best answer to the question: What is the most effective method of teaching? Is that it depends on the goal the student, the content and the teacher. But the next best answer may be: Students teaching other students.” **Implications/Applications:** Spencer Kagan (2006) noted that there were hundreds of specific cooperative strategies, ranging from informal Think-Pair-Share procedures to more formal techniques such as Group Investigation (see Cooper, Robinson and Ball, 2003 for specific techniques and implementation advice and for references to workbooks and web sites). Many practitioners are moving to informal, turn-to-a-neighbor procedures, to alleviate problems associated with more formal procedures such issues as group grading and dominator/sand bagger effect.
11. **Classroom Assessments (CATS)/Concept Tests/Quick-thinks.** These are brief, active-learning exercises that can be inserted in lectures or other instructional formats and require students to process information individually/and or collaboratively. Examples of these procedures include Paraphrase the Idea, Correct the Error and Reorder the Steps. **Implication/Application:** Perhaps the best known procedure is the Minute Paper, popularized by Cross and Angelo. In this procedure, students are asked to briefly note the most important thing the student learned in the class and what question(s) remain unanswered, usually completed at the end of class. The instructor reads these responses, then spends a few minutes at the start of the next class addressing these issues. Susan Johnston suggests that faculty review their lecture and other notes and insert one of these procedures at appropriate intervals (e.g. every 15-20 minutes or so). See Cognitive Science Research.

12. **Cognitive Science Research.** Along with brain science research, this is perhaps the most exciting recent development in teaching and learning. Diane Halpern, formerly at CSU San Bernardino (currently at Claremont McKenna College) is a leader in this field. **Implications/Applications:** Most people can only hold about seven “bits” of memory in short term memory (the kind we use when an operator tells us a phone number and we need to use this information immediately to make a call). If we add more information to this memory, as is often the case in very dense lectures, virtually all information is lost. We also know that even highly motivated students can pay attention to technical material for 10-20 minutes. This suggests that we break lectures and other presentations into manageable amounts of information, frequently inserting Scaffolds, CATS and other active and cooperative strategies into an otherwise passive mode of processing/storing information.

13. **Form Study Groups/Networks/Scholarship of Teaching and Learning.** Teachers, like students, need peer group support. Many find teaching a stressful, isolating experience. They sometimes feel that seeking help is a sign of weakness and may reflect poorly on them in the rank and tenure process. One way teachers can receive support is to form brown bag networks of colleagues who might meet once or twice a month to discuss issues and challenges in teaching. A more formal procedure is to form a group focusing on the Scholarship of Teaching and Learning (SoTL). SoTL is an attempt to bring the rigor that faculty apply to their basic research to an examination of their teaching. Most of the national organizations within each disciplinary area have Teaching of...(Psychology, Physics etc.) interest groups that may include a web site. Network with these folks online or at meetings. Presentation and publication on the Scholarship of Teaching and Learning are increasingly being accepted for promotion and tenure in the CSU. **Implications/Applications:** Form a group on your campus similar to the ones described above. Share publication/conference presentation responsibilities, including SoTL work, with colleagues to diminish the workload.

Among the issues not treated in the above items include service learning, technology, general education issues, student success courses, student diversity and others (although, for example, cooperative learning has been shown to foster appreciation of diversity in many studies). On the next page, please note your experience with these and other issues and how successful you have been in engaging students.

Selected References

Astin, A. (1993) What matters in college? Four critical years revisited. San Francisco: Jossey Bass.

Pascarella, E. & Terenzini, P.(2005) How college affects students: Volume 2 A third decade of research. San Francisco: Jossey Bass.

Cooper, J., Robinson, P. & Ball, D. (2003) Small group learning in higher education: Lessons from the past, visions of the future. Oklahoma City: New Forums Press. This book is a compilation of thirty articles first published in the Cooperative Learning and College Teaching newsletter plus eight new chapters written for this volume. Authors include Alexander Astin, David and Roger Johnson, Barbara Millis, Karl Smith, Vincent Tinto, Spencer Kagan, Susan Prescott Johnston and other leaders in the higher education community. Contains both applied and research/theory work.

Marzano, R. and Associates (2001). Handbook for classroom instruction that works. Upper Saddle River, New Jersey: Pearson. Book provides a meta analysis of thousands of studies of instructional strategies, identifying the most effective ones, then gives very practical examples of how the strategies can be used in the classroom. Focus is on K-12 work but implications for college teaching are obvious.

Web sites. There are many web sites relating to the topics identified in this presentation. For example, the Carnegie Foundation has one on the Scholarship of Teaching and Learning (www://carnegiefoundation.org/programs/index). Good websites on group learning are Rich Felder's at N.C. State (www.ncsu.edu/felder-public/Cooperative_Learning.html) and Spencer Kagan's (www.Kaganonline.com click on Free Articles). The Learning Communities group at Evergreen State has a useful web site (www.evergreen.edu/washcenter/home.asp). Some of these have links to other sites addressing issues covered in today's presentation. The CSU has its own electronic journal of teaching and learning (www.exchangesjournal.org/) It has a number of useful articles, book reviews and other resources.

Reflective Exercise: Take a couple minutes to review the thirteen issues described above. Then identify two (or so) that you have tried or thought about and what your experience has been with each. Then identify two ideas/issues *not* described above that you have used and your experience with each. Once each person has done this silently, go around that table and briefly (one minute or so) describe one from each of the two categories to the rest of the table. Report out one or two from each category from each table.

Which of the items/ideas just described do you find most useful?
Which have you implemented and what successes (or challenges) have you had?

A.

B.

C

What *other* strategies, interventions, research, and ideas have you considered that have proven to be effective in fostering student engagement?

A.

B.

C.