DOCUMENT RESUME

ED 414 988 JC 980 063

AUTHOR Beachler, Judith; Glyer-Culver, Betty
TITLE Trends in Teaching and Learning Innovation.
INSTITUTION Los Rios Community Coll. District, Sacramento, CA.
PUB DATE 1998-01-00
NOTE 11p.
PUB TYPE Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classroom Techniques; Community Colleges; *Cooperative Learning; Educational Improvement; Educational Strategies; Evaluation Methods; Instructional Effectiveness; *Instructional Innovation; Learning Activities; Student Evaluation; Teacher Improvement; Teacher Role; Teaching Methods; Two Year College Students; Two Year Colleges
IDENTIFIERS *Cross Angelo Classroom Assessment Model

ABSTRACT

The first in a series of annual reports designed to provide new ideas for faculty at California's Los Rios Community College District, this document reviews innovative instructional techniques and presents an overview of classroom-based assessment and cooperative-collaborative learning. Following a brief introduction, the report describes (K. Patricia) Cross and Angelo's (Thomas A.) Classroom-based Assessment Model, which asserts that classroom assessment should be learner-centered, teacher-directed, mutually beneficial for students and teachers, formative rather than summative, context-specific, and ongoing. This section also reviews Cross and Angelo's Classroom Assessment Techniques, including background knowledge probes, minute papers, asking students to identify a lecture's main principle, and punctuated lectures, in which teachers pause to allow students to reflect on class material. Next, the paper outlines principles of cooperative and collaborative learning and suggests that goals include increasing student achievement, creating positive relationships among students, and promoting healthy psychological adjustment. This section also describes differences between cooperative and collaborative learning and provides sample cooperative-learning approaches, such as partnered learning, peer tutoring, and having groups of students become "experts" on selected course material. Finally, the paper provides a summary of recent developments in cooperative and collaborative learning and classroom-based assessment. (BCY)

Trends in Teaching and Learning Innovation

Judith A. Beachler
Betty Glyer-Culver

Los Rios Community College District
Office of Institutional Research

Los Rios Community College District
Office of Institutional Research
Sacramento, California

TRENDS IN TEACHING AND LEARNING INNOVATION

January 1998

Introduction

In the 1997 Strategic Plan developed by roughly 400 members of the Los Rios community, who utilized feedback from the business and educational community which the District serves, five overarching goals were developed to guide faculty, staff, managers and board members in developing programs and services to enhance student success. One of the five overarching goals was *innovation in teaching and learning*. This goal was designed to guide Los Rios faculty, classified staff and managers in providing the highest quality instructional programs and services in transfer, vocational and general education *by using the best current or emerging instructional methods and technologies*.

This is the first in a series of annual reports that will introduce and review research and literature related to innovations designed to enhance student learning. The purpose of these reports is to provide information and new ideas that might be reviewed and considered by faculty and staff as they design their own innovations for enhancing student learning.

This first report will serve as an overview of classroom-based assessment of learning that is conducted by instructors, themselves, and of innovations through cooperative and collaborative learning. Longtime educational researcher K. Patricia Cross and her colleague Thomas A. Angelo, have devised classroom assessment techniques that can be readily utilized by faculty themselves for improving learning in the classroom on an ongoing basis, instead of waiting for research staff to assist by conducting more traditional research. The promising potential for enhancing student learning through cooperative learning has been documented by numerous academicians, including David Johnson, Roger Johnson, Spencer Kagan, Joseph Cuseo, Robert Slavin and others. Available literature and research that has been conducted in these two areas are discussed, and good ideas attempted in other college, universities and schools are put forth.

The Office of Institutional Research (IR) has also developed a special area on its WEB Site dedicated to Teaching and Learning Innovations Resources. It is a series of links to over 50 resources with information related to teaching and learning innovations. It includes: web-based journals, articles and abstracts available for review; bibliographies and academic/library resources; web sites for teaching and learning resources and to teaching and learning centers; cooperative and collaborative learning resources; and distance learning and computer/information technology resources for teaching. Also included are a variety of other links to associations and listservs for teachers to share ideas, as well as to teaching-related technology grants. To view the resources that are currently available, go to the IR Web Site – (http://irweb.do.losrios.cc.ca.us), and click on "Links to...." Refer to the frame on the left side and click on "Teaching and Learning Innovations Resources". Be sure to view Web-based resources of the Los Rios colleges' learning centers in the process; they are available to you among the Teaching and Learning Resources at our Web Site.

As our first attempt to provide information on research and literature related to teaching and learning innovations, we need your help! Please contact us with your reactions to this report, as well as to the resources available on our Web Site. Suggestions of what you would like to see appear in future reports in the series *Trends in Teaching and Learning Innovations* are most welcome.

Educators Shift Focus from Teaching to Learning in Classroom Assessment

K. Patricia Cross and Thomas A. Angelo (*Classroom Assessment Techniques: A Handbook for College Teachers*, 1993) assert the need to shift the focus of educators away from observation and improvement of teaching towards the observation and improvement of student learning. Cross and Angelo conceptualized the need for improved learning as Learner-Centered and recommend the use of "Classroom Research" and "Classroom Assessment" as vehicles to improve the quality of student learning.

Cross and Angelo's approach responds directly to concerns about better learning and teaching effectiveness. This model addresses their concerns that educators need to become "more systematic and sensitive observers of learning...." They discuss the opportunities that faculty have to use their "classrooms as laboratories for the study of learning." The result of such study would be a heightened understanding of how students learn and what impact their teaching has upon it.

Classroom Assessment techniques are a major component of Cross and Angelo's Classroom-based model. The Classroom Assessment process encourages the involvement of both the student and the teacher to continually monitor student learning. Classroom Assessment provides virtually instant feedback to instructors on their teaching effectiveness as well as providing students feedback on their progress as learners. And, because the creation, administration and analysis of the assessment is driven by what teachers define as important teaching and learning questions, there is a higher probability that the instructors will apply the results within their own teaching environment. Educators can then use their students' input to help them redirect and refocus their teaching to help them become more efficient and effective learners.

The Cross and Angelo Tenets of Classroom Assessment

The objective of Classroom Assessment is to empower both teachers and their students to improve the quality of learning in the classroom. The approach is designed to not only help teachers find out *what* students are learning in the classroom but *how well* they are learning it. Cross and Angelo present the following characteristics of Classroom Assessment:

Learner-Centered	Primary focus of teachers and students is on observation and improvement of learning rather than teaching.
Teacher-Directed	Respects the autonomy, academic freedom and professional judgment of college faculty. Individual instructors make decision on what to assess, how to assess, and how to respond to information obtained through the assessment process.
Mutually Beneficial	A result of both teacher and student participation in the assessment process is it is a mutual benefit. Students reinforce their grasp of course content and student motivation is increased when they realize their instructor is making an investment in their success as learners. Teaching focus is sharpened as instructors learn by student responses on ways to improve their teaching skills.
Formative	Purpose is solely to improve learning, not a mechanism for evaluating or grading student progress.
Context-Specific	Classroom Assessment techniques are geared toward individual teachers and courses; what works well in one classroom environment may not necessarily work well in another.
Ongoing	Creation of a feedback loop in which teachers gain feedback from students on course material; completion of the loop as instructors provide students with follow-up feedback on their comments.

Through classroom assessment, teachers get continuous feedback on how well students are learning what they hope they learn. Likewise, students are monitoring their own learning by reflecting upon it and taking corrective action to assure that learning is taking place. Cross further points out that one of the major conclusions of research on cognition over the past 30 years is that *students who monitor their learning are more effective learners than those who do not.*

Cross and Angelo have worked with numerous college teachers from all kinds of colleges and from across academic disciplines to develop Classroom Assessment Techniques (CATs). Cross and Angelo present readers with fifty CATs in their 1993 publication. The following practical CATs can be used as starting points for instructors and their students to adapt and improve learning throughout an entire learning "loop":

Background Knowledge Probe
Short, simple questionnaires are administered to students at the beginning of a course, or at the start of a new unit or topic. It is important to inform students of the results of the probe as *soon as possible* and how information provided will affect what is done in the classroom.

The Minute Paper
Instructors use this quick and simple way to collect feedback on student learning. Questions asked may be, "What was the most important thing that you learned during this class today?" and "What is the main, unanswered question you leave class with today?" It is helpful to tell students at the beginning of a given class that the Minute Paper is going to be requested at the end of the session, so they may think about what they are learning throughout the class. Director of the Harvard Assessment Seminars indicated that the Minute Paper is now used in more than 400 classes at Harvard.

The Muddiest Point
An effective technique that simply asks the students, "What was the muddiest (most unclear) point?" Responses are either sent by e-mail or given at the end of the class. Instructors then respond to the students' feedback during the next class meeting. This technique was developed as a version of the Minute Paper by Harvard statistics professor, Fred Mosteller.

One-Sentence Summary
An instructor asks students to answer: "Who does what to whom, when, where, how, and why?" about a given topic.

What's the Principle?
Students are asked to create "What's the principle?" from a list that includes relevant principles and specific examples for students to match to those principles.

Punctuated Lectures
Through punctuated lectures instructors stop the class occasionally to ask students to reflect on what they were doing during the lecture and how their behavior, while listening, helped or hindered their understanding. Students are also asked to write down any insights about their own learning through this process and to give feedback to the instructor through brief anonymous notes.

The focus of the Cross/Angelo Classroom Assessment concept is an evaluation of learning, *not* of teaching. Imperative to its success is the integration of the process within the classroom environment and closing the communication loop. As this approach to learning becomes integrated into the daily learning activity, the communication loop that connects faculty and students with teaching and learning becomes much more efficient and effective.

Classroom Assessment vs. Classroom Research

In their work through the early 1990s, Cross and Angelo used the terms Classroom Assessment and Classroom Research almost interchangeably. By the mid-1990s they began making distinctions between the two. Cross suggests that Classroom Assessment techniques are utilized to address the "what" questions – What is going on in this particular class today? What did students learn from the day's lesson? What did they fail to understand? What further questions do they need clarified?

Classroom Research, on the other hand, attempts to answer questions dealing with understanding the why questions about learning. According to Cross, it is an attempt to provide insight into *how* students learn. Cross further defines Classroom Research as "careful, systematic and patient study of students in the process of learning and how students are responding to an instructor's efforts to teach them." This is not the study of learning in general, but rather the study of learning in a particular situation, as it takes place (or fails to take place). It is the study of learning for a specific group of students, in a specific class with a specific subject matter and with a particular set of teaching skills.

Cross further argues that Classroom Research at its best is conducted by classroom instructors studying the effect of *their* teaching on the students in their own classrooms, differing in many ways from traditional research in or on classrooms. As such, it is not an add-on activity; it is *embedded* in the regular ongoing work of the class. Most importantly, it differs from traditional educational research because it completes the cycle from research question formulation to actually making changes to the practice of teaching. Traditional research has often been conducted by an investigator who writes a report of the findings, giving a set of recommendations for someone else to carry out. As such, Cross believes that it has been ineffective for the improvement of teaching and learning. Too often reports sit on shelves. Through Classroom Research, an instructor finds a question that s/he defines as interesting and important so that it is, by definition, relevant for the particular situation at hand. In this vein, Cross and Steadman have published a very useful classroom research text called *Classroom Research: Implementing the Scholarship of Teaching* (1996).

Traditional Research Methodologies Available to Instructors

Many traditional researchers do not consider Cross and Angelo's Classroom Research and Classroom Assessment approaches to be "mainstream" methodologies, though the use of such methodologies has gained considerable momentum in recent years. The Cross/Angelo approach might appropriately be classified as one of the several techniques known as "action research."

Action research strategies have been developed since World War II as a qualitative methodology designed for complex problem solving. Action research is *applied* social research in which the researcher is involved in the process that he or she studies. Its central purpose is the production of knowledge that can be implemented. Understandings and explanations are gained through the process of analysis for the purpose of implementing change, i.e. improving actions. In this case, the actions being improved are teaching and learning. Such methodologies have been widely used for organizational analyses across businesses and governmental organizations with proven success. Action research methods have been used widely in hospitals and public school settings, as well. But there are many research methodologies available to faculty and staff as they choose to study issues related to what they do in the classroom or to special programs they have designed.

Dr. Richard A. Rasor, Professor of Psychology and Research Coordinator at American River College has prepared a very useful research resource for use by faculty and staff. If you are interested in conducting research aimed at understanding the characteristics, interests or needs of the students you teach, as well as analyzing or improving their performance by using more traditional research methodologies, Dr. Rasor's publication will be *extremely* useful to you. Published in 1992, *Faculty Initiated Instructional Research* can provide you with easy-to-follow guidance in deciding on a research question and selecting a research methodology, including survey research, correlation analysis, and experimental research, including true experiments, the quasi-experiment and the ex-post-facto experiment. For a copy of this publication, please contact Dr. Rasor directly by telephone (916-484-8166) or by e-mail (rasorr@mail.arc.losrios.cc.ca.us).

Cooperative and Collaborative Learning

Johnson and Johnson of the University of Minnesota suggest that teachers have the option of structuring student learning in three ways – competitively, individualistically or cooperatively. In competitive classrooms students perceive that they can obtain their goals only if other students fail to obtain theirs, as they are evaluated comparatively to their peers. Students in independently structured classrooms work alone and are rewarded based on their own accomplishments; goals may or may not be the same as those of other students. In a cooperative learning classroom, students work together to attain group goals that cannot be accomplished by working either alone or by working competitively. In cooperative learning environments, instructors carefully

structure small learning groups of students who must work together to maximize their own and each other's learning. Because group members are individually accountable for part of an outcome that cannot be completed her/his own performance within the group. Instructors serve as the facilitators for or consultants to the learning groups.

Cooperative learning has been defined as an *active learning process* – a process that requires students to think about what they have learned, to synthesize and articulate important pieces of learning, to think actively about what they do not understand and to express themselves about these issues through oral expression and/or in writing. Students who are actively learning are learning by doing, by experimenting or by thinking analytically about what they are learning.

The goals of cooperative learning environments are:

- To increase students' achievement
- To create positive relationships among the students as they work through the group learning process
- To promote a healthy psychological adjustment on the part of students to school or college

Moreover, proponents suggest that there are many side benefits, as well:

- There is individual accountability and personal responsibility taken by students in the learning process;
- Students develop group process and team work skills, important skills for them to obtain to function effectively in the world of work;
- Students develop interpersonal social skills in order to function effectively in small groups;
- Students promote each other's learning by helping, sharing and encouraging efforts to learn, thus *better* conceptual understanding of complex information is gained and what is learned is remembered;
- Students reinforce their *own* learning through the process of explaining and sharing their work with others in the group;
- The sense of interconnectedness that occurs when cooperative learning takes place helps students transcend gender, racial, cultural, linguistic and other differences they sense among themselves;
- For students learning English as a second language who are faced with the challenge of language acquisition *and* academic learning at the same time, cooperative learning environments provide a more appropriate setting for them to do so. Research by McGroarty and by Swain show that the language input *and* output that occurs through cooperative learning provides English learners with appropriate settings where they can derive and express meaning from academic content, while practicing the English language at the same time.

Formal cooperative learning groups may last for one class session to several weeks in order to complete a specific task or group assignment. They can be used as the primary means of learning or in combination with lecture and other modes. Cooperative learning is sometimes used to break up lectures; short cooperative group processing assignments are introduced to enhance or reinforce what is learned through lectures. Groups vary in size from one to about five participants, depending upon the complexity of the information or process to be learned. Groups are generally not much larger than five, in order to assure active involvement of all participants; the smaller group provides each team member with sufficient opportunities to contribute.

Many cooperative learning proponents believe that a high degree of structure is necessary when utilizing this method, with each student clearly understanding his or her specific role and responsibility within the group. Cooperative learning does not happen by merely putting students side by side or into groups to learn. The instructor must assure that structured cooperation among students takes place. In addition, students must perceive the task as relevant to the course objectives for successful learning to occur. Generally, there are provisions for individual rewards in addition to or instead of group rewards.

Cooperative vs. Collaborative Learning

Although many practitioners use the terms cooperative learning and collaborative learning interchangeably, Panitz, Matthews, Cooper, Davidson and Hawkes suggest that they are markedly different processes. Although both utilize active small group learning processes, handing over some of the teacher's traditional authority and responsibility to the students, they do differ in the following ways:

Cooperative Learning	Collaborative Learning
• Students work on a set of problems through group activities structured by the instructor; the instructor often assigns the specific roles for students within their teams	• Group members are asked to organize their joint efforts and negotiate among themselves who will perform the various group roles
• Instructors move from team to team, observing the interactions, listening to the conversations and intervening when s/he feels it is appropriate	• No active monitoring of the groups by instructor; instructor refers substantive questions back to the group to resolve
• Instructor often ends the class session with a brief summary, where groups may be asked to give a brief oral report of their findings; group activity information is often submitted for instructor comments	• Students keep their work and continue with out-of-class work, independent of the instructor; they report back to their respective group the following class session
• Students receive formal training in group process skills, such as active listening and giving constructive feedback to teammates; students sometimes are asked to assess how groups are functioning & how levels of participation and performance can be improved	• No formal group process training occurs; students are expected to resolve group conflicts or participation issues on their own; instructor assumes that students are responsible participants who already have necessary social skills to undertake and complete tasks

Collaborative and cooperative learning have developed separately. Followers of each publish in different journals, sponsor different conferences and generally create bibliographies with few names in common. Most well known researchers and practitioners of cooperative learning are educational or social psychologists, or sociologists. Their early work was directed toward the K-12 level of education, until expansion more recently toward the higher education level. Collaborative learning researchers and practitioners evolved from the humanities and social sciences, with projects exploring theoretical, political and philosophical issues. Until recently, there has been little contact between the two groups of educators.

A broader awareness of both approaches enables educators to choose one or the other, depending which may be more appropriate at the time, both in terms of the information to be learned and the social structure of the class of students being taught.

Sounds Promising, but Do Cooperative and Collaborative Learning Strategies Enhance Learning?

There is a fairly substantial body of research on both cooperative and collaborative learning. Well over 600 studies have been completed over the past 100 years, the bulk of which were completed from the early 1980s through the present. Researcher David W. Johnson and others suggest that there is more known about the results of cooperative learning than about lecturing, departmentalization or the use of instructional technology. Cooperative learning studies have been conducted by a wide variety of researchers over the decades with students of different ages, in different discipline areas and in different academic settings.

Johnson and Johnson suggest that over one-third of all studies comparing cooperative, competitive and individualistic approaches have been conducted on college students, while the remaining two-thirds were conducted at the K-12 Level. Though much of the implementation of cooperative learning has occurred over the last 15 years or so, K-12 has a longer tradition than higher education, with programs across multiple disciplines and often across interdisciplinary subject areas.

Cuseo reports that meta-analyses of hundreds of studies at the pre-college level have found overwhelming empirical documentation for the cognitive, social and affective benefits of cooperative learning. Although research on cooperative learning at the college level is less extensive, results are consistent with those reported in pre-collegiate settings. Studies across science, math, geography, industrial arts and nutrition have found that students' knowledge and comprehension levels were higher than those learning in more traditional classroom settings. A Meta-analysis conducted by Slavin found that cooperative learning resulted in significant positive effects in 63% of the studies, with only two studies reporting higher achievement for the comparison group (either competitive or individualistic learning modes). In addition, a Johnson and Ahlgren study on student's attitudes toward cooperation and competition showed that cooperativeness, not competitiveness was positively related to being motivated to learn.

Johnson and Johnson's 1993 meta-analysis of studies using college students as subjects to examine individual learning found that cooperative learning promoted higher individual achievement than did competitive or individualistic learning. Moreover, they also found that cooperation prompted greater intrinsic motivation to learn, more frequent use of cognitive processes (re-conceptualization, higher-level reasoning, meta-cognition and greater long-term memory of the skills learned). In addition to individual achievement, other important outcomes at the college level included retention of students to graduation, creation of what the researchers called a "learning community," and correlation of cooperativeness with a wide variety of indices of psychological health, including higher self-esteem and greater social skill levels. They also found that positive relationships were built among diverse student populations; positive and supportive relationships tended to develop among all students, including those from different ethnic, cultural, language, social class, ability and gender groups.

Examples of Cooperative Learning Approaches

Numerous texts have been written and web sites developed to share proven cooperative learning techniques and methods. Some of the more popular general techniques include the following:

Jigsaw
Developed by Aronson, Jigsaw is used by dividing text material into discrete "chunks" of information, with the number of chunks equal to the size of the groups that are to be used. There are generally four to six individuals per home group. Each group member becomes part of a second "expert" group on a chunk of information, by studying that information with members from each of the other home groups responsible for that same chunk of information. The experts go back to their home groups and are responsible for making sure the other members of the home group know their expert information. At the end of the unit of study, students are tested over the information that should have been learned. Several variations of Jigsaw have been developed.

Dyadic Learning
Developed by Dansereau and associates, paired partners exchange multiple oral summaries of one to two pages of text material. Partners are trained by example and practice to elaborate on each other's summaries. They are also taught to detect and correct errors and omissions and to judge the importance of the ideas presented. In the elaborations students create images, make analogies and personalize the information to make it more understandable and memorable.

Reciprocal Peer Tutoring (RPT)
Designed to promote mutual tutoring, RPT requires students to assume both tutor and student roles. They are randomly paired with a partner throughout a semester course of study and before each exam, partners create a 10-question multiple choice test based on assigned readings. They also provide a 3 x 5-index card for each question, with correct answers and page reference to it. Exams are administered to each other and then scored. Explanations are alternately provided to one another where answers are incorrect. Students turn in corrected tests and answer cards before each unit exam. This has been found to result in higher post-test exam scores when exam scores are compared to comparative control groups, while significantly reducing stress in undergraduate Abnormal Psychology classes.

Group Investigation
Designed by Sharan, students are organized into small groups (2-6 members) and are given a subtopic of a more general problem. Students cooperatively plan an investigation of the sub-topic and embark upon a wide variety of activities and skills both inside and outside the classroom. Information is gathered, organized and analyzed from

several sources. Findings are pooled and conclusions formed. Information is shared with the class through displays or presentations. As groups make presentations, connections are made back to the more general topic.

Collaborative Learning in Math and Science
Ted Panitz has compiled a collection of "e-mail" discussions regarding teaching innovations in the math and science fields. The critical area of concern in one discussion is the work-world expectations that engineers be prepared to work in teams and collaborate on projects in industry, yet while in college, students are faced with an individualized and competitive campus atmosphere. Panitz includes discussion on the introduction of collaborative learning techniques within engineering programs. Check this and other innovative sites out through your Internet browser – (http://www.yorku.ca/teachtec/whatsnew/1996/jan/jan28/innteach.html).

There are innumerable good ideas being posted on the Internet by teachers, for teachers. Greater detail on examples listed above and other cooperative learning approaches can be found at the following web sites – (http://www.muohio.edu/~lwsherman/aera91AA.html);
(http://bc-education.botany.ubc.ca/KCL/KCL-Web-Page.html).

You can also review a multitude of cooperative learning resources available as links on the Teaching and Learning Resource Links page of our IR Web Site (http://irweb/frames20_links/frames20.htm).

Next Steps in Cooperative Learning

Cooperative learning dramatically changes the role of instructors in student learning. Because of this, the development of faculty networks to learn, share and employ cooperative strategies tend to assure more rapid and comprehensive dissemination of these active learning innovations. Programs in professional development that include the theory and philosophy of cooperative methods, as well as on-going coaching and collegial support at the classroom level are advisable. The implementation of cooperative learning approaches is greatly enhanced when instructors have opportunities to work together and learn from one another. Interdisciplinary teams of cooperative learning instructors have been developed in many schools and colleges to more efficiently enhance student learning across the board.

Summary Remarks

Innovation in many classrooms is alive and well! In addition to the cooperative learning and classroom-based assessment techniques presented in this report, as well as more traditional distance education and telecourse, *many* classroom teachers and instructors are innovating with *other* active learning approaches.

Through a Mathematics in the Park project, Portland State University students have worked with inner city high school students to design and conduct "whole-body" movement math games for Middle school students, yet another example of active learning. The end-result of the project has been the successful production of a games instruction book entitled "Math in the Park." The goal of "Math in the Park" is to familiarize and popularize mathematics with the introduction of mathematics-based outdoor games. Benefits found within this innovative learning technique are: enhanced understanding of math concepts and practices; leadership skill development; and the formation of community partnering between the university and local schools. More information on "Math in the Park" and other teaching and learning resources are available at the Portland State University Center for Academic Excellence (http://www.oaa.pdx.edu/CAE/).

Joel S. Foisy's calculus students at the State University of New York, College at Potsdam, are introduced to Newton's Law of Cooling by way of solving a murder mystery. Foisy utilizes the teaching techniques of Smith and Moore's Project "CALC" cooling body scenario from which students narrow down the list of murder suspects by using Newton's Law of Cooling. For detail on this and other innovations for math courses, go to the Math Association of America's Innovative Teaching Exchange (http://www.maa.org/t_and_l/exchange/ite2/ite2.html).

John R. Williams of Purdue University at Kokomo uses collaborative learning exercises in laboratory experiments in Materials and Processes for Mechanical Engineering Technology courses and in Computer Integrated Manufacturing Technology courses (http://fairway.ecn.purdue.edu/v1/fre/asee/fie95/2b5/2b52/2b52.htm).

Catherine T. Atwong uses a "Buddy Test" that she has developed as a tool for collaborative learning class at the California State University, Fullerton (http://www.thomson.com/swcp/mm/gitm/gitm03-7.html).

These are just a few of the many active learning innovations being used by college instructors. There are thousands of good ideas on teaching innovations to review on the Internet and through texts recently available through educational publishers. You can begin sampling some of these great ideas through the IR Web Site's Links for Teaching and Learning Innovations (http://irweb/frames20_links/frames20.htm).

The Process Evolves

The Cross/Angelo approach is based upon the premise that instructors must shift their focus from teaching to learning in Classroom Assessment and Classroom Research. The focus of evaluation is of learning, *not* of teaching, with students taking an active role as collaborators rather than merely subjects in the research, since knowledge about their own learning is of high value and interest to them and their instructor alike. Many of the Cross/Angelo assessment techniques require that students be active learners in order for effective assessment to take place.

Likewise, as many individuals begin to innovate in the classroom, they are doing so utilizing active learning processes. We have reviewed collaborative learning as one of the very promising active learning processes. And as individual teachers begin to innovate, they come together to disseminate the innovations more thoroughly as well as more rapidly. In some institutions, entire faculties come together to form what Angelo defines as *Learning Communities*, where faculty, administrators, other staff members and students work together collaboratively toward shared goals; significant use of cooperative and/or collaborative learning approaches are used, connecting learning across course and disciplinary boundaries. Angelo suggests that higher educational initiatives to develop *Learning Communities*, are being launched across the country, citing three institutions where they already exist – LaGuardia Community College, the University of Washington and Seattle Central Community College. In these environments, shifts from teaching factories to learning communities have taken place or are in the process thereof.

Similarly in 1997, Terry O'Banion and colleagues published *a Learning College for the 21st Century*. The *learning college* has been described by Cross as "an exciting model for community colleges for the future," where the nationwide assessment of student learning outcomes is proving to be a powerful lever for focusing attention on how student learning takes place. O'Banion's book also includes reviews of the efforts of six community colleges as they begin establishing learning colleges – Sinclair Community College, Jackson Community College, Lane Community College, College System at Maricopa, Palomar College and Community College of Denver.

Learning college and *learning community* processes are *not* developed as an add-on to what is currently being done. Learning *drives* how colleges organize their institutional structure and define their operation. The faculty moves away from furnishing information to students and become designers of learning environments, working cooperatively with other faculty members, staff and administrators. They guide more than teach and through the process, *they also learn*.

In the words of K. Patricia Cross "What students know when they graduate from your academies is not nearly as important as what they are capable of learning," sums up the premise of the *learning colleges and communities*. It is indeed an exciting time in higher education, as we move forward to develop teaching and learning innovations.

This report was written by: Judith Beachler, Director, and Betty Glyer-Culver, Research Analyst, Office of Institutional Research, Los Rios Community College District, 1919 Spanos Court, Sacramento, CA 95825

For a copy of the references for this report and for any further information, please call: 916-568-3131 or e-mail – puglisv@mail.do.losrios.cc.ca.us, LRCCD Office of Institutional Research.

All district research reports are available on the IR home page at: irweb.do.losrios.cc.ca.us

TeachLearnInnov-W95.doc

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

ERIC

JC 980 063

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Trends in Teaching and Learning Innovation	
Author(s): Judith Beachler and Betty Glyer-Culver	
Corporate Source: Office of Institutional Research, Los Rios CCD 1919 Spanos Court Sacramento, CA 95825-3981	**Publication Date:** January 1998

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic/optical media, and sold through the ERIC Document Reproduction Service (EDRS) or other ERIC vendors. Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following two options and sign at the bottom of the page.

	The sample sticker shown below will be affixed to all **Level 1** documents	The sample sticker shown below will be affixed to all **Level 2** documents	
[X] Check here **For Level 1 Release:** Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical) *and* paper copy.	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	[ ] Check here **For Level 2 Release:** Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical), but *not* in paper copy.
	Level 1	**Level 2**	

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but neither box is checked, documents will be processed at **Level 1**.

"I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic/optical media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Sign here→ please	**Signature:** Judith A. Beachler	**Printed Name/Position/Title:** Dr. Judith Beachler, Director	
	Organization/Address: Office of INstitutionalResearch Los Rios Community College District 1919 Spanos Court Sacramento, CA 95825-3981	**Telephone:** (916) 568-3132	**FAX:** (916) 568-3094
		E-Mail Address: beachlj@mail.do.losrios.cc.ca.us	**Date:**

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor: AVAILABLE ON WEB PAGE: http:www-opr.do.losrios.cc.ca.us
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:	Jonathan Kelly ERIC Clearinghouse for Community Colleges 3051 Moore Hall Box 951521 Los Angeles, CA 90095-1521

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to: