

PBL Insight

to solve, to learn, together

Vol. 2 No. 1

Inside

Aalborg University	
<i>PBL in Denmark</i>	3
<i>Focus on workshops:</i>	
University of Delaware	4
University of Newcastle Australia	5
Dr. Howard Barrows Santa Barbara	10
Samford PBL Initiative Update	7
<i>Special listing of institutions using PBL around the world</i>	8
PBL Resource roundup	11

PBL in the Faculty of Arts and Cultures at the University of Maastricht

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The University of Maastricht, founded in 1975, is the most recently established branch of the Dutch university system. From its inception, the university has been dedicated to teaching through Problem-Based Learning [PBL]. Not long after McMaster (Canada) began its pioneer PBL program, Maastricht became the second university to implement PBL in its new medical school. PBL branched out into other areas of the curriculum, moving into professional programs such as business.

The formation of the Faculty of Arts and Culture, the youngest of the seven schools in the system, represented a new challenge in adopting PBL methods to traditional instruction in the humanities. The Faculty of Arts and Culture does not have traditional departmental divisions, and it promotes interdisciplinary teaching and the exchange of ideas by every means. Typical courses treat such subjects as “The History of the Body” and “Enlightenment and Romanticism.” These subjects do not belong to one discipline but profit from the work of historians, literary critics, social scientists, and other scholars whose work is not easily categorized.

Curriculum

In the Arts and Cultures program at Maastricht, students enroll in a four-year degree program. The first two years constitute the core curriculum of interdisciplinary courses. Students enroll as cohorts and take all of their classes in the same sequence. In the third year, students select one of various tracks, such as “Technology and Culture” or “Visual Culture”; these tracks are more broadly conceived than typical academic disciplines. In the fourth year, the student writes a thesis on a topic of particular interest. Thus, the four-year degree is much like a combination of a traditional B.A. and M.A. program in the United States.

Each year of the program is divided into 6 six-week blocks. Students take one humanities course and one related practicum during each of these six-week periods. Each week the students meet once for a lecture and twice for a tutorial for each of the humanities courses. Students receive a “block-book” that contains the assignments for the entire six weeks. Faculty members collaborate to create these books, which are standardized for every section of the course. The blocks are sequenced to make the work increasingly difficult and self-directed. For instance, early blocks provide an anthology of readings for each unit. Later blocks provide only a bibliography of readings for each unit. Finally, students receive only a general bibliography for the entire block and must identify and locate the appropriate resources on their own.

Final examinations are also standardized for each block. The block coordinator, rather than the instructor, handles the grading of each block, and all grades are final. Students can request a hearing if they fail the exam, but this only allows them to review their work with the faculty. Students are allowed two more attempts to pass the exam if they have failed.

The tutorial is the heart of the PBL approach. Because the tutorials function as a small group, about 12 students to each section, students seldom divide into groups in their classes. Furthermore, most tutorials are simply discussion groups for sharing information and clarifying difficult ideas. Most of these sessions seem to resemble most closely the kind of student-led study groups put together before an examination in American universities—although the teacher is present to help facilitate the group interaction in the Maastricht tutorials. One student serves as the leader for each of the tutorial sessions. The leader offers background, guides the discussion, and questions other

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Editor's Notes:



Claire Major, Editor,
Coordinator of Problem-Based Learning Research and Communication

Welcome to the first 1999 issue of *PBL Insight*, newsletter of the **Samford PBL Initiative**. The Samford PBL Initiative is a project that involves the redesign of core elements of the Samford undergraduate curriculum to include Problem-Based Learning [PBL]. The project also involves researching PBL in undergraduate education. This issue of *PBL Insight* includes some of the information we have gathered thus far in our search for best PBL practices.

Articles written by Samford faculty and administrators tell you some of what we have learned about PBL practices at other institutions. David Chapman, professor and dean, Communication Arts/Core Curriculum; Ginger Frost, assistant professor, History and Political Science; and Rod Davis, dean, College of Arts and Sciences, have written an article based on a report that issued forth from a trip to Maastricht University (the Netherlands). This trip was scheduled in an effort to learn more about PBL in their Faculty of Arts and Culture. We are also including an article drawn from a report by several Samford administrators about Aalborg University (Denmark). In alphabetical order, authors are: Ruth Ash, dean, School of Education; Marian Baur, dean, School of Nursing; Jeanie Box, associate dean, School of Education; Rod Davis, dean, College of Arts and Sciences; Joe Dean, dean, School of Pharmacy; Carol Dean, assistant professor, School of Education; John Harris, associate provost for Quality Assessment; Tony McBride, associate dean, School of Pharmacy; and Jim Netherton, provost. These articles focus on a specific institution and its efforts to integrate PBL into the curriculum. Themes that arise in each include the following: the institutional/program character (e.g. a new program), the intent or purpose of implementing PBL, innovations in curricular structure, changes in classroom instruction, and resources used to make PBL a successful innovation.

This issue of *PBL Insight* also contains reports that faculty and staff made after attending PBL workshops. The first report is about the PBL workshop at the University of Delaware. Marlene Reed, professor, School of Business, and Valerie McCombs, PBL research associate, write about Delaware's efforts in PBL and about the Delaware PBL workshop. Rosemary Fisk, associate professor, English, and Rod Davis, dean, College of Arts and Sciences, write about the PBL workshops conducted by the Problem-Based Learning and Assessment Research Center [PROBLARC] at Newcastle, Australia. Finally, Eric Fournier, assistant professor, Geography, writes about the Howard Barrows PBL workshop in Santa Barbara, Calif. Issues that arise in each are the diversity of participants, the PBL model used in the workshop, and the outcomes that were a direct result of workshop participation.

Each article is intended to bring you information about what we have learned. Each article, we hope, will inspire you to learn more about PBL in undergraduate education and will encourage you to seek additional information about this innovative approach to learning. Finally, we hope that this issue of *PBL Insight* encourages you to tell us about what you are doing. We would like to learn more about your efforts. If you or anyone at your institution is using PBL, please contact us and tell us about your efforts. ▲

Samford University is an Equal Opportunity Institution and welcomes applications for employment and educational programs from all individuals regardless of race, color, sex, age, disability, or national or ethnic origin.

Invitation for Submissions:

The editor welcomes contributions to *PBL Insight*. The following are guidelines for those who would like to contribute work on Problem-Based Learning [PBL] in higher education.

Content

The editor welcomes both scholarly and research papers on PBL as well as reports of actual classroom practices.

Format

Scholarly papers, research papers, reports, essays, book reviews, news items, and letters to the editor are welcome. Please send both a hard copy and a disk copy of your article. Microsoft Word is preferred.

Length

Scholarly papers and research reports should be four to eight typed double-spaced pages (1,000–2,000 words). Book reviews, news items, or work documenting practices should be 100–500 words.

Style

Chicago style is preferred for documenting sources.

Deadlines

Future issues will be finalized one month before publication of the newsletter. Please send contributions for the next newsletter by June 1, 1999.

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Samford 
University

PBL at Aalborg University

Ruth Ash, Dean, School of Education; Marian Baur, Dean, School of Nursing; Jeanie Box, Associate Dean, School of Education; Rod Davis, Dean, College of Arts and Sciences; Joe Dean, Dean, School of Pharmacy; Carol Dean, Assistant Professor, School of Education; John Harris, Associate Provost for Quality Assessment; Tony McBride, Associate Dean, School of Pharmacy; and Jim Netherton, Provost, Samford University

Aalborg University, founded in 1974, is an institution in which students learn as much by doing as by reading and listening. It has become Denmark's third-largest university, with more than 10,000 students and a faculty of 1700–1800 full-time employees. The university offers 60 post-graduate, graduate, and undergraduate degree programs. All of them rely on student group projects designed for project-organized, problem-oriented learning. Many of the projects come from external businesses and professions.

Project groups teach students to function cooperatively and to monitor themselves. They also provide social structure and opportunities for bonding. In fact, the close working relationships among students seem to contribute to the high morale and enthusiasm that were evident during our visit. Students and faculty must accept a great deal of personal responsibility, as self-motivation and self-direction are critical to the success of the program.

Students can earn a Bachelor of Science degree in six to eight semesters. After four additional semesters, they can earn a Master of Science degree. A doctoral-level degree requires a total of 14–16 semesters, including bachelor's and master's degrees, with approximately 90 percent of the students earning a master's degree. The majority of Aalborg students spend at least half of one semester abroad.

Most programs at Aalborg are organized around subject [SE] courses, which are not directly related to their project, and project [PE] courses, which relate directly to their project. During the first year, students often take a variety of subject courses and complete small projects assigned by the teacher. As they advance in their studies, however, students take fewer SE courses and may hear only mini-lectures on specific areas of interest. All degree programs are based on a model of student group work focused around problem orientation and project organization. After the first year, group projects are often selected by the students and last the entire semester.

SE courses are usually evaluated in a traditional way with written exams. Written group projects are evaluated by an external reviewer and include oral exams to test each individual's knowledge and understanding of the project.

Groups average around four students, but can contain five to eight members depending on the project under study. In the freshman year, groups can be as large as ten. Some groups change each semester, while others remain the same. The groups also appear to function without a hierarchy;



no one person leads consistently; instead, leadership rotates.

Students select the members with whom they will work; agree on and define a project; assign research tasks; condense and teach material to other group members;

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Students and faculty must accept a great deal of personal responsibility, as self-motivation and self-direction are critical to the success of the program.

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and reach consensus, create the joint document, and defend their work. In addition to organizing their own work, the students learn self-discipline and self-pacing. They must complete a specific amount of work by an inflexible deadline. When necessary, they discipline one another to keep the group on track. They learn to either work with difficult people or remove them from the group.

For students, independent work is time consuming; for faculty, grading exams and projects is also labor intensive. Students report spending an average of 50 hours per week at the beginning of the term and 70–80 hours per week at the end of the term.

One faculty member supervises each group. The goal is to assign teachers according to their expertise; in practice, however, they are often assigned according to their availability. Faculty members try to supervise minimally to allow students to solve problems by themselves. For that reason, students see them as resources for guidance on specific problems and go to faculty for direction when they do not know where to look for answers.

Each problem revolves around one theme. Communications majors devote one semester to analyzing texts, for instance, and another to studying personal communication. Their group project and all of their courses involve some aspect of the semester's theme. Everything blends to form a whole: projects, problems, classroom exercises, and traditional lectures.

Aalborg University provides approximately 1,000 project offices or study rooms for student work groups. They contain desk/tables, chairs, a computer linked to the campus mainframe, and a file cabinet. Students usually contribute personal computers and decorations. These rooms are open 24 hours a day, 365 days a year. Each room is assigned to one project group for an entire semester. Additionally, many laboratories and their staffs support the research efforts of both faculty and students.

At Aalborg, students are actively involved in and responsible for their learning, and the "real problem" nature of their work inspires a high level of commitment. The focus on teamwork teaches interdependency among peers as they teach and learn from each other. They also learn how to delegate work and how to integrate the components into a project. The theoretical is tied to the practical so that mastery of

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Aalborg University

continued from page 3

concept and practice become more important than recall. As students learn to find and to use information, they gain a more comprehensive view of problems than they would if they concentrated only on memorizing facts. Aalborg's approach improves students' written and verbal expression. In general, it produces analytical thinkers, creative workers, and team players. Faculty and students share a mutual responsibility for learning. Teaching becomes coaching and mentoring instead of lecturing and judging. The process builds bonds between teachers and students.

The Aalborg type of teaching leads naturally to research so that the faculty member's knowledge base is constantly updated. This approach attracts both faculty and students who want to be on the cutting edge; it incorporates a new model for assessing and allocating faculty work. Cooperative arrangements with local employers benefit everyone—the students and the employers. Since the inability to work well with others is a major cause of job failure, students gain a valuable skill when they learn to collaborate on a series of projects with a number of different people. Problem solving in a project framework provides the kind of portable skill that easily transfers from one job to another and is the best kind of flexible education for students whose careers are likely to change. ▲

This article is based on a report resulting from a site visit to Aalborg. Ruth Ash and Carol Dean condensed the report for the purposes of this publication.

references continued on next page

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WORKSHOP

Report from a PBL Workshop: University of Delaware

Marlene Reed, Professor, School of Business
Valerie McCombs, Research Associate, Samford University

Although Problem-Based Learning [PBL] initially began in medical institutions in the 1960s, it moved quickly into professional schools, and now many undergraduate institutions are beginning to implement PBL in the general curricula. The University of Delaware may be characterized as a model of an undergraduate institution using PBL. In fact, the university was cited in the recent Boyer Report as showing signs of improvement in research universities based on its PBL efforts (Boyer 1998).

PBL at University of Delaware

The University of Delaware was chartered in 1833 and is located in Newark, Del., which is situated between Philadelphia and Baltimore. Offering 125 undergraduate programs, the university has an undergraduate enrollment of around 16,000. Since 1992, the University of Delaware has adapted PBL in both introductory and advanced undergraduate courses in a number of disciplines including Biology, Biochemistry, Chemistry, Criminal Justice, Education, International Relations, Marine Studies, Mathematics, Nutrition/Dietetics, Physics/Science, Political Science, and Exercise Science. Faculty members at Delaware led the way to incorporate PBL into undergraduate courses, and PBL has continued to spread as faculty members from core disciplines who teach first- and second-year students have been recruited to use the method. More information on PBL courses and syllabi may be found at the following URL: <http://www.udel.edu/pbl/courses.html>.

Support for PBL at Delaware includes the Center for Teaching Effectiveness, an administrative unit that helps faculty improve teaching by providing individual consultations, development workshops, and a week-long conference on teaching with technology. More information on the Center for Teaching Effectiveness is located at the following URL: <http://www.udel.edu/cte>.

Additionally, support has extended to providing classrooms suited to group work. The university library also provides resources such as Internet access and other services to students and faculty.

Additional support comes from the Institute for Transforming Undergraduate Education, supported by a grant from the National Science Foundation. The institute promotes reform of undergraduate education through faculty development and course design. A Faculty Fellows program allows faculty to apply for summer pay to support a variety of activities including course design, materials development, incorporation of technology in PBL, and workshop participation. More information on Delaware's Fellows is located at the following URL: <http://www.udel.edu/inst/whoware.html>.

Additional grant support from the Howard Hughes Medical Institute [HHMI] as well as The Pew Charitable Trusts (including matching university funds) has also contributed to PBL research and dissemination at Delaware. The Pew grant is providing funding for faculty development, technology, students (who act as peer tutors in the classroom), national conferences and workshops, and evaluation efforts. A group of Samford University faculty and staff recently attended the university's workshop and had the following information to report.

University of Delaware PBL Workshop, January 11–15, 1999

The "Problem-Based Learning: Integrating Real-World Cases with Internet Resources" workshop held on January 11–15 was sponsored by the Institute for Transforming Undergraduate Education, the National Science Foundation Division of Undergraduate Education, The Pew Charitable Trusts, and the Mathematics and Science Education Resource Center. Since the institution began offering this regular workshop, more than 300 faculty and administrators from the U.S. and international institutions have attended the PBL workshops at the university.

The following questions were posed to PBL workshop participants at the University of Delaware. "If a pregnant woman involved in an automobile accident miscarries as a result of the accident, will the driver of the other vehicle involved in the collision be guilty of vehicular homicide if he ran a red light and hit her? Will the bartender at the



WORKSHOP Report from a PBL Workshop: University of Newcastle

Rod Davis, Dean of Arts and Sciences
Rosemary Fisk, Associate Professor, English, Samford University

tavern where the drunk driver became inebriated be charged with a criminal act? Might he be charged with negligence in a civil suit brought by the victim? And how would the negotiations between the defendant, defense attorney, prosecuting attorney, and the victim be conducted? What might the outcome be?"

In searching for the answers to these questions, participants were assigned to groups and asked to explore resources on the Internet to assist with their deliberations. Elements of a good PBL problem were involved: an ill-structured question to be explored, collaborative learning development of negotiation skills by the participants (all parties were unfavorably disposed to a protracted court trial), and the use of the Internet as a source of information to pursue issues relevant to the problem.

To determine how effectively PBL dealt with content and collaborative learning issues, a panel of University of Delaware students who had participated in PBL courses shared their experiences. All expressed an initial anxiety at the realization that at least a part of their grade would be determined by the productivity of other people in their collaborative learning group. Some summarized their experiences with collaborative learning by explaining that although it was sometimes difficult to inspire other group members to hold up their end of the group contract, they all believed it was a beneficial real-world experience that would later have invaluable benefits to them.

In addition to the "Experience It Yourself" exercise, participants explored PBL issues such as group dynamics, writing effective problem-based materials, developing course evaluations and assessment, incorporating PBL models, utilizing peer tutors, and incorporating Internet resources and technology in the classroom.

Participants learned new insights about PBL, and we learned that implementing PBL in the classroom requires thinking "outside the box." The staff paced the workshop to allow for group participation, course material preparation, and the use of technology labs to work on individual course design projects. ▲

Reference

The Boyer Commission on Educating Undergraduates in the Research University (1998). *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*. New York: The Carnegie Foundation for the Advancement of Teaching.

Many Australian universities have been adopting Problem-Based Learning [PBL] throughout more and more of their curricula. Perhaps the leader in this effort is the University of Newcastle, about two hours by car north of Sydney. Even the university's home page (www.newcastle.edu.au) displays a prominent link to its work with PBL, coordinated by the Problem-Based Learning Assessment and Research Centre [PROBLARC] housed on its main campus just west of downtown Newcastle. Promotional material for on-site workshops by PROBLARC led Arts and Sciences Dean Roderick Davis, Samford's PBL Coordinator Claire Major, and English Professor Rosemary Fisk to attend one given in November 1998.

The "Uni," as the Aussies call it, is impressively located on the outskirts of a city known for its beautiful harbor with a convict-ship past and beaches with some of the best surfing along the New South Wales coastline. The university itself, founded in 1965, today ranks ninth out of the 36 public universities in Australia in winning major government research funding. It has moved from being largely a technical, teacher-training and medical institution into a more broadly based university with a student body of approximately 18,500. In its attempt to engage students with real-world issues, it has increasingly employed PBL in the technical fields but has had less success in the arts and humanities.

The workshop drew participants from a variety of higher education, or tertiary, institutions around Australia. We three from the U.S., two from Korea, and one from Thailand joined the 40 or so enrolled in all or part of a two-week offering. We had assumed that since the university gave such prominence to PBL in its publicity, we might learn how faculty here applied this method in the humanities. Yet we discovered that even after 11 years of guidance from PROBLARC, faculty here are doing PBL all around the humanities but not in the core courses such as literature and history. The strength of active learning is most apparent in the sciences and medicine. In fact the workshop was led by nursing faculty Jane

Conway and Penny Little, centre director. The most animated discussions came from faculty in occupational therapy, medicine, music, and geology, yet faculty from psychology, philosophy, and anthropology also worked on devising problems in their disciplines.

Like a good PBL problem, the sessions were well-designed to give basic pedagogical information and to be interactive, yet ill-structured to allow large blocks of time for participants to create problems and get group feedback. We would have preferred two or three condensed informational sessions so that we could be tourists in our remaining days, but we recognized that the workshop was designed more for the nationals than for us jet-lagged Americans. Rosemary Fisk praised the workshop most highly because it provided solid guidance on how to construct a real-world problem: information she can share with other Samford faculty. The workshop discussions on using peer tutors would be helpful to faculty from large research institutions with large numbers of students per course section.

Rod Davis appreciated the workshop leaders' articulation of their understanding of the pedagogical philosophy behind PBL. The most valuable later sessions to him were those in which the workshop participants were given the chance to observe an unrehearsed student group go through the throes of defining, analyzing, researching, and coming to consensus on a solution to a realistic problem dealing with a health issue.

Anyone interested in attending a PROBLARC workshop can find information on its Web site, along with an updated PBL bibliography and links to other PBL sites. The staff is busy coordinating the July 1999 PBL conference in Montreal, but the November workshop in Newcastle is an annual event.

For more information about Problem-Based Learning at the University of Newcastle, visit the institution's PBL Web page at the following URL: <http://www.newcastle.edu.au/services/iesd/learndevelop/PROBLARC/index.html>. ▲

Maastricht University

continued from page 1

students. One student serves as a secretary for the group, taking notes that students later use in preparation for the exam. All of the students read and research in preparation for the tutorial session. However, unlike most PBL approaches in place in the U.S., students do not work collaboratively in their research, nor do they receive any collective grades. The instructor is present at the tutorial to clarify concepts and issues, provide information when appropriate, and generally facilitate the group's work. If the instructor begins to dominate the discussion, students have been known to suggest that the instructor take a less active role.

In addition to the tutorials, first-year students are also assigned to a faculty member who serves as a mentor and writing coach. Mentors are selected from various disciplines, and each mentor/coach is responsible for eight students. At group meetings with their mentors, students receive general instruction on writing, particularly about form and style. However, each student also meets with the mentor once during each of the six-week blocks to discuss his or her writing. Additional conferences are at the student's discretion. Maastricht is unusual for a European university in the explicit attention it gives to student writing in the curriculum.

The specific attention to writing is part of a series of practica that parallel the humanities courses. In the first block, the students receive a formal introduction to problem-based learning. In the second block, students write four papers of increasing complexity that their writing coaches review. In the subsequent blocks, students complete other practicum requirements, including creating a Web page and designing a multimedia project using StorySpace.

Library Resources

As a new university, Maastricht has had to build a library to support their academic efforts. Library holdings in the humanities were extremely limited (only a handful of books in the classics, for instance). Since the university is located in various buildings throughout the city, there are several libraries supporting the work of different schools. Each library is divided into two areas: a research library and a "learning landscape." The research library is a

traditional collection of books and magazines. The learning landscape contains multiple copies of required texts that support specific units in the humanities courses. Rooms for group and individual study are located in the learning landscape to facilitate student research and group projects. The learning landscape functions in part as a place for books on faculty reserve, but the books are reserved collectively for the course instead of for an individual instructor. The learning landscape reduces the number of books that students are required to buy, encourages student use of library resources, and simplifies the task of library research for new students.

Each library also contains computer labs that students use for word processing, e-mail, and Internet searches. Students sometimes complain that these resources are inadequate for their needs. Students use a separate laboratory for their multimedia project. Multimedia laboratory staff members assist faculty in designing multimedia courses and developing Web resources for classroom use.

General Observations

Much more emphasis is placed on the responsibility of the individual student than in American universities. This is possible, in part, because all the students enrolled in the university are products of a selective high school system that places the top students into a college preparatory curriculum. And since the students have chosen to attend the University of Maastricht because of its PBL curriculum, they seem less likely than their American counterparts to blame the school or the faculty if they are not successful. Although developing independent learners is a goal of most educational institutions, many American students (and their parents) would want more feedback from their instructors during the course, more class meetings to help students understand the material, and more opportunities for students to bring up their grades if they are doing poorly than they would be given at Maastricht.

The curriculum at Maastricht is much more prescribed and regimented than in American universities. Dutch universities tend to regularize curriculum and individualize instruction. Higher education in the U.S. tends to diversify curriculum and regularize instruction (i.e., meeting at regular and frequent intervals). Although

Maastricht instructors have fewer contact hours in class with their students than similar courses at American universities, faculty members do spend a significant amount of time working with individual students.

Another distinctive feature of the program is the six-week blocks devoted to a single course. Although the six-week blocks allow students to focus exclusively on one area of study, some projects are difficult to complete in such a short term. Students complained, for instance, that they had no time to plan their multimedia projects; they simply had to plunge into them and do the best they could. The six-week blocks also allow little time to reflect about the reading and writing experiences they have during each course.

Faculty members at Maastricht make a convincing case for the applicability of problem-based learning in the humanities. A significant body of research shows that students learn more and retain it longer when they are applying information toward the solution of a problem. Professor Joop de Jong, for instance, wants students to understand that all Enlightenment thinkers were not pure rationalists, as is commonly thought. Instead of making this point in a lecture, he has students review several eighteenth-century documents: statistics on literacy, a book order placed by a Paris bookseller, a letter from Voltaire with recommended books to be read. Students study these materials and form an opinion about the reading habits of Enlightenment thinkers, and by extension, the *Weltanschauung* of the age. Such an approach seems intuitively more interesting and effectual than simply hearing these ideas in a lecture.

Although some PBL proponents recommend that students and the instructors establish objectives for the course collaboratively, this does not seem to be the case for most of the courses at Maastricht. The course instructor prepares all of the course objectives and readings in advance. Even more significantly, a final examination, which faculty members write and grade, determines the student's grade in the course. Students are aware that their success in the course is ultimately dependent on having the right answers to the questions on the examination.

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Faculty and staff reinforce the extensive time and effort required to develop PBL modules. Faculty members spend many hours organizing the learning experience for the students. Problems may be ill-structured in that they permit various solutions, but they are not ill-structured in the sense of being badly or carelessly designed. Good problems require ingenuity, creativity, research, and clarity of purpose. Even more time is necessary when a group of faculty members, who will all use the same problems in multiple sections of the same course, must create and approve problems collaboratively.

Most faculty members agree that teaching a PBL class does not decrease the time required for faculty preparation. Although the dean of the school argues that faculty could be effective in facilitating a PBL class even with limited knowledge of the subject matter, none of the faculty agree. Students also confirm that they would lose respect for an unprepared faculty member who was not in command of all the texts in use by the tutorial group. They believe that the faculty member does not necessarily need to teach the texts, but his or her presence is the safety net that ensured all important ideas are covered and that students were correct in their understanding.

Maastricht serves as an example for re-thinking our own curricular decisions and pedagogical approaches. Many of the basic ideas that guide our thinking about teaching and learning are so entrenched that we do not even consider other possibilities. The opportunity to observe another educational system, quite different from our own, gives us increased confidence to maintain and preserve our educational strengths and increased incentive to change those areas that need improvement. ▲

This article is based on a report that grew out of a site visit to Maastricht to learn about their efforts in PBL in the humanities.

The Samford PBL Initiative Update

Editor's Note: Last year, we devoted a regular column of PBL Insight to introducing Samford University and describing the Samford PBL Initiative. Since then, we have made considerable progress in our efforts in the Samford PBL Initiative, and as part of our pledge to communicate our results, we will continue this regular column to keep you updated on our project.

The Samford PBL Initiative represents a major change for Samford University; one that has required preparation, planning, and a continuous effort to promote and sustain change. Several factors have influenced the direction and the success of the project.

Perhaps the first factor that has influenced Samford's readiness for change is the culture in and around the institution. The renewed emphasis placed on teaching and learning at a national level has brought with it a culture in higher education that forecasts, anticipates, and even initiates change toward student-centered inquiry-based learning. In addition to the culture in higher education, Samford has had a culture ready for change on its own campus. The institution's earlier focus on Continuous Quality Improvement, its renewed sense of mission, and its recent curriculum redesign efforts have prepared constituents to try new things, to adjust with experience, and to seek continuous feedback.

In facilitating the project, leadership has made efforts to promote campus openness to and support for change. One method that has helped to accomplish this goal was the use of cross-functional teams that consisted of academic administrators, faculty, and students. Another was using facilitating agents, such as project leadership and PBL Center staff, to allow for opportunities to move the project forward. Another strategy to encourage enthusiasm and support for PBL was to provide faculty and administrators with direct exposure to instruction. (Reports from on-site visits make up the body of this issue of *PBL Insight*.) In addition, early success with the method in Samford schools of Pharmacy and

Education furthered support for PBL.

Also to promote change, faculty members worked together in teams to design courses to include PBL. This allowed faculty members to share ideas, and it encouraged the spread of PBL: faculty members not originally scheduled to teach PBL courses who assisted in course design often decided to try PBL in their courses as well. This happened most often when faculty teaching the same sections of a course worked together in teams.

Another method used to allow openness to change was an integrated assessment plan. The project assessment effort had to be relatively painless—to require as few additional instruments and to use as little class time as possible. We also wanted to use as many authentic assessment measures as possible. Faculty needed to own the assessment process, so one of the major



assessment pieces was the Samford Course Portfolio. Each faculty member who taught a PBL course developed a course portfolio which contained a literature review, a thesis (or problem to be solved), a description of methods, a description of evidence of student outcomes, and a reflective piece. You may view the outline faculty members used in their work at the following URL: <http://www.samford.edu/pbl/portfolio.html>. We will publish these portfolios so that they will be available to interested faculty members and administrators.

In addition to the course portfolios, we used three new assessment instruments. Faculty members completed an Instructional Landscape Survey [ILS] before the school year started. This instrument measured instructional activities of Samford faculty members in the 1997–1998 school year by asking faculty members to estimate the amount of time they spent on different types of activities during one semester. We expect that during the life of our project, we will see some changes in the activities that faculty use.

We also administered a Student Attitudes and Activities Assessment [SAAA]. This instrument measured student

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Samford PBL Initiative Update

continued from page 7

attitudes at the beginning of the semester and again at the end of the semester, in an attempt to evaluate change. The second administration, conducted at the end of the semester, allowed us to measure the in-course instructional activities students had been engaged in during the semester.

In addition, we administered an End of Course Evaluation [ECE] that asked PBL-specific questions and left a section open for student comments. This short instrument (six questions and space for open responses) was given in tandem with the regular end-of-course evaluations. It allowed us to see how students rated their experience in the PBL courses. If you are interested in seeing any of these instruments, please contact Claire Major by e-mail (ccmajor@samford.edu) or by the additional contact information listed at the front of this issue of *PBL Insight*. We will let you know about what we find through our assessment in a future issue of *PBL Insight*.

Also important in this change process has been celebration and recognition of efforts. To that end, we started the spring semester with a dinner event for new faculty participating in the PBL project and those that used PBL during the last year. President Thomas Corts talked about the value of teaching and about the good work that faculty have done over the past year. He expressed his belief that “the paradigm has shifted” and his belief that colleges and universities are beginning to recognize the importance of teaching and learning. Corts also noted that we must begin to recognize and reward good teaching. The School Facilitators Team led the meeting; the meeting chair, Associate Provost Joe Lewis, recognized PBL participants from last year with a letter written and a certificate signed by Provost James Netherton.

On the heels of this major event, we will now begin another series of course design activities. We have visits scheduled for consultants to come to campus during the spring, and we have planned a two-week PBL workshop event, the “Summer PBL Academy.” During this workshop, faculty members will participate in sessions on PBL problem construction, course portfolio development, effective group work, using peer tutors, and PBL assessment techniques.

Communication about the project, both on campus and off, has been critical to the success of the project. Faculty, administrative, and project leaders made early efforts to communicate on campus. Campus sharing sessions allowed PBL faculty members to share course designs with others. Problem circles motivated faculty members to share PBL problems and to receive critiques. The PBL Listserv encouraged faculty members and administrators to join an on-line discussion about PBL and other teaching and learning issues. In addition, all faculty members and academic administrators received this newsletter, *PBL Insight*, at each issuing. This year we have also included information about the PBL project in the campus newsletter, *Inside Samford*, and will disseminate information through other media as well.

Perhaps our main on-campus target audience for our communication efforts was students. We had an open panel discussion involving PBL faculty and administrators and invited students to attend. Several articles about PBL appeared in the student newspaper. Faculty learned of the importance of communicating ideas about the purposes of PBL and classroom expectations. Despite our efforts, however, this is one area where we fell short. Indications are that not all students understand why the project is taking place, and that not all students understand why faculty members are using PBL in the classroom. We are taking steps to have better communication with students this year. Among the first steps is assessing the communication gap and regrouping. We are holding a meeting in which the School Facilitators Team (a cross-functional team consisting of faculty, administrators, project leaders, and a student representative) will discuss a communication plan to address student questions and concerns. We will inform you about the steps that meeting prompts us to take and about the outcomes of our actions in a future issue of *PBL Insight*.

Our efforts to communicate to a national higher education audience have also been crucial to our project’s success. As we have reached out to you, you have told us about your work. We are learning from the experiences of others who are partners in promoting the change that PBL brings. This issue of *PBL Insight* is dedicated to telling you about some of what

we have learned so far, as are other dissemination pieces that I will describe below.

We have worked to make our Web site a clearinghouse of information about PBL. You may access that site at www.samford.edu/pbl. On that site we present information about the method’s history, about the reasons behind its existence and use, and about who is doing what where. You may also learn how to get more information about PBL. The site is ever evolving as we gain new information about PBL. We hope that you will visit and use the site, and that you will let us know about your PBL efforts so that we may add your work to the base of information we are building.

We have begun planning a major conference on PBL, “PBL 2000: Promises, Breakthroughs, and Lessons,” to be held in Birmingham, Ala., October 29–31. We established several committees to help us with this major undertaking: a Campus Advisory Committee, a Campus Planning Team, and a National Advisory Committee. Members of the last are: Lou Albert, San Hose/Evergreen Community College District; Trudy Banta, University of Indianapolis/Purdue University; Howard Barrows; Southern Illinois University; Pat Cross, Emerita University of California, Berkeley; Jerry Gaff, Association of American Colleges and Universities; Mary Ann Rehnke, Council of Independent Colleges; Ellen Wert, The Pew Charitable Trusts.

We have lined up our plenary speakers for the conference. They are as follows: Lee Shulman, The Carnegie Foundation for the Advancement of Teaching; Wim Gijsselaers, Maastricht University; Barbara Duch, University of Delaware; Trudy Banta, Indiana University and Purdue University at Indianapolis; Russ Edgerton, The Pew Charitable Trusts. For more information about the conference, visit our Web site (www.samford.edu/pbl), or for registration information, visit the following URL: <http://www.samford.edu/pbl/conference2000.html>.

We will continue to keep you posted on our course design efforts and on what we are learning in our search for the best PBL practices. ▲

Undergraduate Institutions with Faculty Members Using PBL

United States

Allegheny University; Philadelphia, Pa.: Public Health
Belmont University; Nashville, Tenn.: Humanities/Philosophy
California State University—Bakersville; Bakersville, Calif.: Education
Clemson University; Clemson, S.C.: Computer Science, Engineering
Ivy Tech State College; Terre Haute, Ind.: Science and Mathematics
Itawamba Community College; Fulton, Miss.: English, Biology, Computer Technology, Economics, Science, Math, Electronics, Nursing, Respiratory Therapy
Maricopa Community Colleges; Tempe, Ariz.: PBL materials for several courses
New College of University South Florida; Sarasota, Fla.: Natural Science
Northeastern Illinois University; Chicago, Ill.: Educational Psychology
Rose-Hulman Institute of Technology; Terre Haute, Ind.: Engineering
Samford University; Birmingham, Ala.: Arts and Sciences, Education, Business, Nursing, Pharmacy
San Diego State University; San Diego, Calif.: Education
Stanford University; Stanford, Calif.: Engineering
Texas Tech University; Lubbock, Texas: Nursing
University of Colorado at Boulder; Boulder, Colo.: Medicine, Life Sciences
University of Connecticut; Storrs, Conn.: Engineering
University of Alabama at Birmingham; Birmingham, Ala.: Nursing
University of Delaware; Newark, Del.: Biology, Biochemistry, Chemistry, Criminal Justice, Education, International Relations, Marine Studies, Mathematics, Nutrition/Dietetics, Physics/Science, Political Science, Exercise Science
University of Denver; Denver, Colo.: Business

University of North Carolina at Chapel Hill; Chapel Hill, N.C.: Nursing
University of Minnesota; Minneapolis, Minn.: Civil Engineering
University of Texas—Galveston; Galveston, Texas: Nursing
University of Texas Houston Health Science Center; Houston, Texas: Nursing
Utah State University; Logan, Utah: Education, Technology
Washington University; St. Louis, Mo.: Biology, Biomedical Sciences

Australia

Deakin University; Geelong, Victoria: Physical Education
Griffith University; Nathan, Queensland: Nursing
Flinders University of South Australia; Adelaide, South Australia: Nursing
LaTrobe University, College of Northern Victoria; Bundoora, Victoria: Science Education, Nursing
Monash University; Clayton, Victoria: Civil Engineering and Mechanical Engineering
New South Wales College of Law; Kensington, New South Wales: Law
University of Adelaide; Adelaide, South Australia: Architecture
University of Newcastle; Callaghan, New South Wales: Medicine, Nursing, Occupational Therapy, Architecture
University of New South Wales; Sydney, New South Wales: Social Work
University of South Australia, Underdale; Underdale, South Australia: Nursing
University of Sydney; Sydney, New South Wales: Programming, Computer Science
University of Sydney, Cumberland College; Lidcombe, New South Wales: Health Sciences, Community Health
University of Technology, Sydney; Sydney, New South Wales: Architecture, Electrical Engineering
University of Western Sydney; Macarthur, New South Wales: Faculty of Health

University of Wollongong; Wollongong, New South Wales: Law
The University of Southern Queensland; Toowoomba, Queensland: Education, Technology, Nursing

Belgium

Université Catholique De Louvain; Louvain-la-Neuve: Engineering

Canada

McMaster University; Hamilton, Ontario: Chemical Engineering, Medicine, Nursing, Physical and Occupational Therapy
University of Montreal, Quebec; Montreal: Biology
University of Alberta; Edmonton, Alberta: Nursing
University of British Columbia; Vancouver, British Columbia: Civil Engineering
University of New Brunswich, South Walesick; Fredericton, New Brunswich: Forestry

Denmark

Aalborg University; Aalborg, Denmark: Humanities, Social Sciences, Sciences, Engineering

Hong Kong

The University of Hong Kong; Hong Kong: Medicine, Dentistry, Speech and Hearing Sciences

The Netherlands

Delft University of Technology; Delft: Faculty of Architecture
Maastricht University; Maastricht: Arts and Culture, Business, Education, Medicine

New Zealand

Auckland Institute of Technology; Mt. Albert: Integrated Business Studies
The Open Polytechnic of New Zealand; Lower Hutt: Applied Science, Business

continued on page 12

Report from a PBL Workshop: Howard Barrows at Santa Barbara, California

Eric Fournier, Assistant Professor, Geography, Samford University

Each January Dr. Howard Barrows and colleagues leave snowy Springfield, Ill., to spend a week sharing their PBL insights in a more temperate setting. This past January the destination was Santa Barbara, Calif. The workshop, "Problem Design and Curriculum Development in Problem-Based Learning," was conducted at the Upham Hotel, an 1890s-era inn and conference center, sandwiched between the Santa Ynez Mountains and the Pacific Ocean. A diverse group of participants converged from all over the world. Attendees included Swedish firefighters, a faculty development specialist from Hong Kong, a lawyer from Denver, a mixed group of faculty from Samford University, and an Ohio middle school teacher. About half of the workshop participants were physicians from the U.S., Netherlands, Greece, Argentina, South Korea, and Japan. Barrows, a professor of Medicine at Southern Illinois University and a pioneer in the development of PBL, led the workshop. Other workshop facilitators included Ann Kelson from the Southern Illinois University [SIU] Department of Medical Education, and Linda Distlehorst, associate dean of the SIU Office of Education and Curriculum. Rosemary Beiermann of the SIU Department of Medical Education coordinated the workshop.

The workshop began with a medical problem. As an introduction to the problem-based learning process, participants used a Problem-Based Learning Module [PBLM]. The PBLM are simulations of actual patient problems in a printed format. The PBLM permits students to question patients about symptoms, obtain medical histories, and order any medical tests. In the Barrow's method, students break a problem down into hypothesis, facts, and learning issues. Students generate, revise, and sometimes discard hypotheses as they progress through the PBLM. As students investigate the problem, they obtain a list of facts, and the acquisition of facts drives the learning issues.

Workshop participants divided into small groups to investigate the problem much as a group of students would. Once

groups generated a list of learning issues, they broke up for individual study and investigation. A table piled with medical texts and journals served as a surrogate library for the workshop. After a short period of time, participants reconvened to share their findings with other group members. Based on individual participant findings, groups ordered tests, revised hypotheses, and finally developed a diagnosis and treatment plan. This introduction to PBL took place in a single afternoon, with a mixed group of physicians and non-medical participants. The introduction helped illustrate the power of this method.

Workshop attendees spent the majority of time crafting, sharing, and revising their own problems. Participants received a template to aid in problem design. The template included the following elements:

- ◆ Problem Presentation (how students will first encounter the problem)
- ◆ Problem Overview (description of the problem for the tutor)
- ◆ Inquiry Approach and Sources
- ◆ Performance/Products
- ◆ Learning Resources
- ◆ Anticipated Learning Issues
- ◆ Advice for the Tutor

After developing their initial problems, participants broke into small groups to share their problems with other workshop attendees. These problem feedback sessions provided valuable insights and helped provide a student perspective to the problems being developed. Eventually each workshop participant developed five PBL problems.

One workshop participant, Teri Novak, a professor at Cleveland's Case Western University, said, "The rich diversity of the disciplines and countries represented by the participants made it a truly unique and energizing experience. The SIU staff presented the material in a relaxed yet professional way that kept me engaged and created a comfortable learning environment."

Another participant, Dr. Hector Castano, a professor of Internal Medicine in Buenos Aires, Argentina, said, "The PBL workshop provided me with very important

information. The experience was worth travelling such a long distance. I could see that so many people from many different disciplines and different cultures participated, and this helped me to discover that we all have the same practical difficulties, the same questions, and the same feeling that this new methodology will provide us with a better way of teaching. I am sure that it is worth the effort to put it into practice."

At the conclusion of the workshop, it was clear that two elements were essential for a successful PBL experience: skilled tutors and well-designed problems. In the Barrows method, good tutors (group facilitators) are crucial. In addition, compelling and authentic problems remain at the heart of the PBL enterprise. By following the steps outlined throughout the workshop, it was possible to create engaging problems and to see exemplary tutoring techniques modeled by Dr. Barrows and staff.

The next "Problem Design and Curriculum Development in Problem-Based Learning" workshop is scheduled for May 31-June 4, in Springfield, Ill. For more information, contact Rosemary Beiermann at rbeiermann@wpsmtp.siumed.edu or see the SIU PBL Web site at www.pbli.org. ▲

Who is using PBL?

If you are currently using Problem Based Learning (PBL) in your undergraduate courses or if you know of someone at your institution who is using PBL in undergraduate education, please contact us. We are very interested in learning about your efforts and PBL at your institution.

Please contact Claire Major via e-mail (ccmajor@samford.edu) or regular mail at the following address:

Claire Major, Editor
PBL Insight—The Center for
 Problem-Based Learning
 Samford University
 800 Lakeshore Drive
 Birmingham, AL 35229

Resource Roundup

Alan D. Hargrave, Associate Provost for Learning Resources
Valerie McCombs, Research Associate, Samford University

The Samford PBL Initiative has a distinctive two-pronged emphasis. One prong involves redesigning core areas of our undergraduate curriculum to include PBL. Another involves researching PBL locally, nationally, and internationally. The Center for Problem-Based Learning serves as a clearinghouse of PBL information (that we gather both internally and externally) so that others who wish to embark on this journey will find a ready source of information and supporting materials.

The Center for PBL Web site was created to disseminate information about PBL. From the home page, you will notice that the site features a main navigation bar to link to information including the following questions: "What is PBL? When did PBL begin? Why is PBL important? Who is using PBL? Where is PBL being implemented? How do you find out more about PBL?" We hope that by understanding the who, what, when, where, how, and why of PBL, you will gain new insight into the method.

Links from the home page to our research and communication efforts include the following: on-line issues of *PBL Insight*, information on the upcoming "PBL 2000 Conference," and a direct link to our searchable database of institutions/programs integrating PBL.

You will also find information about **The Samford PBL Initiative**, including information on PBL courses, dissemination activities, and the course portfolio/peer review process that we are implementing here at Samford. From this page you will be able to link to a site to learn more about the

organization of the project, upcoming project events, and ongoing assessment efforts.

We hope that you will visit our site and that you will find the information interesting and relevant. While you are on the site, we invite you to stop by and sign our Guest Book page to tell us more about your interests in PBL. As with most Web sites, this one will certainly evolve over time, so bookmark the URL for the Center for PBL Web site in your Web browser and come back regularly to view updates on PBL research and resources. Also, if you are aware of additional resources or other institutions using PBL that we might include on our Web site, please let us know via the "contact us" e-mail link, or e-mail Valerie McCombs at vlmccomb@samford.edu.

To access the Center for Problem-Based Learning Web site, you may link from the main page Samford Web site <http://www.samford.edu>, or you may go directly to the home page by using the following URL: <http://www.samford.edu/pbl>.

American Educational Research Association [AERA] has announced the formation and certification of a Special Interest Group [SIG] on Problem-Based Learning—SIG:PBL.

The purpose of this group is to bring together educational specialists, curriculum developers, discipline specialists, educational theorists and researchers, and classroom and policy experts concerned with the establishment of problem-based learning as a sustainable option for program design, development, and delivery at all levels—elementary through professional school.

SIG:PBL will provide a forum for:

- the examination of issues related to the institutionalization of PBL in multiple settings with diverse student populations
- the expansion of the knowledge base in PBL across levels
- the exploration of the critical components of PBL as a curriculum organizer and as an instructional strategy of worth
- the implications for the future of educational programs which strive to integrate rigor with relevance

The URL for the PBL:SIG is <http://spicy.atd.depaul.edu/pbl>.

PBL 2000

Promises, Breakthroughs & Lessons

A Conference on
Problem-Based Learning
in Undergraduate and
Professional Education

[Sponsored by Samford University &
The Pew Charitable Trusts]

October 29–31, 2000
Birmingham, Alabama U.S.A.

Date: October 29–31, 2000
Place: Sheraton Birmingham Hotel
2101 Civic Center Boulevard
Birmingham, AL 35203
(205) 324-5000

Keynote: Lee Shulman—The Carnegie Foundation for the Advancement of Teaching

Plenary Speakers: Wim Gijsselaers—Maastricht University, The Netherlands

Trudy Banta—Indiana University—Purdue University Indianapolis

Barbara Duch—The University of Delaware

Russell Edgerton—The Pew Charitable Trusts

Focus: PBL and other "powerful pedagogies" in undergraduate and professional education.

We invite proposals for (1) interactive, team-learning sessions, (2) presentations, (3) posters, and (4) subject-based course portfolios. Beginning January 1, 2000, submission guidelines will be available at www.samford.edu/pbl.

If you have conference reservation questions, contact PlanNet (703) 917-8000, Ext. 107.

Qualify to win a free registration for PBL 2000 by registering on-line now at www.yourmeeting.com/pbl2000.

For hotel reservation information, call the Sheraton Birmingham Hotel (205) 324-5000 • FAX (205) 307-3045

For conference program and proposal information, contact Claire Major

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PBL 2000

Promises, Breakthroughs & Lessons

A Conference on
Problem-Based Learning
in Undergraduate and
Professional Education

[Sponsored by Samford University &
The Pew Charitable Trusts]

See Page 11 for information!

Institutions Using PBL

continued from page 9

Sweden

University of Karlskrona; Karlskrona:
Computer Science and Business
Administration

United Kingdom

Aberdeen University; Regent Walk,
Aberdeen: Teacher Training
Anglia Polytechnic University; Nursing
Bell College; Nursing
Bournemouth University; Poole, Dorset:
Nursing
Brighton University; Brighton: Nursing,
Physical Therapy
Bristol University; Bristol: Social Work
Brunel University; Uxbridge, Middlesex:
Occupational Therapy
Cardiff University; Occupational
Therapy, Physiotherapy, Speech
Therapy
City University; London: Occupational
Therapy
Coventry University; Coventry:
Mechanical Engineering, Electronic
Engineering

Dundee University; Scotland: Nursing,
Medical
Glasgow University; Scotland: Nursing,
Medical
Glasgow Caledonian University;
Scotland: Nursing, Vision Sciences
Liverpool John Moores University;
Liverpool: Nursing
Luton University; Luton, Bedfordshire:
Nursing
Manchester Metropolitan University;
Manchester: Management and Business
Newcastle University; Newcastle upon
Tyne: Medicine, Speech Therapy
Paisley; Paisley, Scotland: Nursing
Portsmouth University; Portsmouth:
Business
Robert Gordon University; Aberdeen:
Computing, Nursing
Southampton University; Southampton:
Nursing, Medicine
Strathclyde University; Glasgow:
Mechanical Engineering, Health
Sciences
University of Manchester; Salford: PBL
is the main educational method used
throughout the curriculum

PBL Insight

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You may download the newsletter from our Web site.
The URL for **The Samford PBL Initiative** Web site is
as follows:
<http://lr.samford.edu/PBL/default.html>

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