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Problem-Based Learning (PBL) and Student Engagement in the Public Speaking Classroom

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To be successful, colleges and universities must do a better job of producing graduates who are truly ready for life beyond the classroom (Huba & Freed, 2000). The United States Department of Education is encouraging educational reform, and educators are feeling pressure to meet these requests (Morréale & Backlund, 2002). More specifically, college educators are being called to employ new pedagogical strategies that help students learn in ways that promote lifelong learning skills and engagement. In other words, educators must explore strategies that will “develop students’ intellectual skills [and] career skills [in order to] reshape the values of society” (Sprague, 1999, pp. 16-17). Essentially, today’s college graduates must demonstrate higher levels of critical thinking and better teamwork skills (e.g., Allen, 1998; Allen & Rooney, 1998; Betchel, 1999; Duch, Groh, & Allen, 2001; Edens, 2000; Levin, 2001).

Problem-based learning (PBL) is one instructional strategy designed to address these goals (e.g., Duch et al., 2001; Johnson, Johnson, & Smith, 1998b). PBL is both “a philosophy and a methodological approach . . .
which involves confronting students with problems derived from practice rather than the traditional didactic ‘systems’ approach” (Williams, 1999, p. 660). In essence, PBL relies on “students’ ability to learn in a self-directed mode and is considered to bridge the ‘theory-practice gap more effectively’” (Williams, 1999, p. 659).

Students work in teams to research and, ultimately, to pose solutions to ill-structured real-world problems (e.g., Butler, 1999; Lohman & Finkelstein, 2000; MacKinnon, 1999; Major & Palmer, 2001).

Moreover, PBL “offers an attractive alternative to traditional education by shifting the focus of education from what faculty teach to what students learn” (White, 2001, p. 69). The instructor’s role shifts from lecturer to facilitator who “guide[s] the learners through their own discovery without teaching them in the traditional sense” (Biley, 1999, p. 587). The facilitators play a crucial role as groups look to them for guidance, which leads to richer, more holistic learning. Ultimately, when students are provided opportunities to learn concepts in this way and in the contexts where they will be used, they take on the role of “practicing professional[s]” (Butler, 1999, p. 136), who are more likely to retain the information and better prepared to handle life and its challenges (Albanese & Mitchell, 1993). Because students learn to solve problems on their own, they become better equipped to enter the professional community (Frederiksen, 1999).

One primary reason PBL is considered effective rests with the fact that it fosters high levels of student interactive engagement. Interactive engagement methods are those designed to foster understanding through heads-on (always) and hands-on (usually) activities that
result in immediate feedback from peers and instructors (Hake, 1998). Research suggests that classrooms that promote interactive engagement result in significantly higher levels of content comprehension and retention (e.g., Ahlfeldt, Mehta, & Sellnow, 2005; Bloom, 1984; Hake, 1998; Redish & Steinberg, 1999). Hake (2002) explains that interactive engagement strategies “can increase the effectiveness of conceptually difficult courses well beyond that obtained with traditional methods” (¶2). Although non-traditional interactive-engagement methods appear to be much more effective than traditional methods, there remains the need for more research to further refine strategies for the enhancement of student learning (¶ 14, 20, 22).

The communication discipline is a prime arena for PBL because critical thinking and teamwork are fundamental outcomes of the communication degree (e.g., Backlund, 2002; Morreale & Backlund 2002). The basic course has been suggested as a course through which to introduce PBL (e.g., Sellnow & Ahlfeldt, 2005). To clarify, communication teacher-scholars are “concerned with developing pedagogical strategies for extending students’ learning experiences in the basic communication course” (Hunt & Simonds, 2002, p. 60). Moreover, there is a consistent concern that the basic course should do more than teach structure and delivery skills to also tie such skills directly to students’ lived experiences and real world issues (Sellnow & Ahlfeldt, 2005). In doing so, these courses will better “meet students’ needs” (Hunt, Ekachai, Garard, & Rust, 2001, p. 3).

As colleges and universities reinvent themselves to address the needs of students and demands of employers, public speaking fundamentals scholars ought to
clarify what are “inappropriate or outdated assumptions and practices related to public speaking course content and pedagogy (Goulden, 2002, p. 2). PBL may, in fact, be an answer to these very concerns. This study examines the use of Problem-based learning (PBL) in the public speaking classroom as it affects student engagement. More specifically, since PBL has been shown to foster engagement, which is positively linked to increased comprehension and retention, we chose to examine the following hypothesis:

H: Levels of student engagement are higher in a PBL-enhanced public speaking classroom than in a conventionally taught public speaking classroom.

**Method**

**Participants**

Students in 47 public speaking sections participated in this study (N=561). Nineteen sections of public speaking were taught using conventional methods of instruction. Twenty-nine sections were taught using a PBL-enhanced approach. Since public speaking is a required general education course, student demographics were similar across sections. Faculty, lecturers, adjunct instructors, and graduate teaching assistants who earned at least a 3.0 on a 4.0 scale on Student Ratings of Instruction (SROIs) the previous semester participated in the study. All instructors taught from a master syllabus, which explicitly detailed similar required
Problem-based Learning speech assignments, due dates, and course expectations to maintain consistency across sections.

The distinct difference between the two courses was in the classroom structure and assignment themes. In the PBL-enhanced sections, cooperative learning groups were formed during the second week of class. These groups worked together on assignments throughout the semester that built on one another in terms of topic and skill level. That is, each group examined a real world problem from a variety of perspectives and each major speech (two informative speeches and two persuasive speeches) was related to the problem the group chose to examine. The students in the conventional sections had similar major assignments (two informative speeches and two persuasive speeches) and due dates, but they did not work in groups throughout the semester, with each group focusing on a real world problem. A detailed description of the replicable PBL-enhanced course design can be found in Sellnow and Ahlfeldt (2005).

Procedure

Prior to collecting data, all instructors spent one semester learning about PBL and preparing to use it in the public speaking course. All instructors then spent a semester teaching the course from a PBL-enhanced perspective. During that semester, all instructors were required to attend weekly teacher training meetings that provided them with the tools to teach the public speaking course using PBL. The data for the present study were then collected the following semester.

Two groups were established for the study, a control group and an experimental group. The control group
consisted of students who were taught in classrooms using conventional teaching techniques. The experimental group consisted of students taught in classrooms using PBL-enhanced teaching techniques.

Instructors self-selected the type of class (PBL-enhanced or conventional) they would teach for the study. The program director asked teachers their preferences and assigned them class sections that coincided with those preferences. The researchers hoped that honoring instructor preference would reduce instructor resentment that could contaminate the study results. Since all teachers earned above average teacher evaluations, the potential for selection bias was reduced. Each group of instructors (i.e., PBL-enhanced and conventional) attended weekly training meetings focused on assignments and expectations in the syllabus, as well as teaching strategies.

**Instrument**

The National Survey of Student Engagement (NSSE) assesses the extent to which colleges and universities participate in educational practices that are strongly associated with high levels of learning and personal development. The National Survey of Student Engagement data focus on *how* students use resources for learning (Kuh, 2001).

The first national report emphasized the important link between effective educational practices and educational quality by featuring five benchmarks of effective pedagogy. These benchmarks were created from student responses to 40 key items on the original survey. The benchmarks are: level of academic challenge, active and
collaborative learning, student interactions with faculty members, enriching educational experiences, and supportive campus environment (Kuh, 2001; “National Survey,” 2000). Russell Edgerton, director of the Pew Forum on Undergraduate Learning, claims that students, parents, policy-makers, and accrediting bodies should be asking colleges the same questions the NSSE asks them: “How much do students study and how rigorous are their assignments? How much writing is expected? How often do students interact with their teachers in meaningful ways?” (“Improving the College Experience,” 2001, p. 2).

The Survey of Student Engagement (SSE), adapted from the NSSE (“National Survey,” 2000), was used to measure student perceptions of engagement. This survey assessed the level to which each student reported being engaged in class interactions and in class material. Key questions from the original survey were adopted for the SSE based on their measurability of student engagement specifically at the classroom level. The SSE examined level of academic challenge, active and collaborative learning, and enriching educational experiences from the NSSE benchmarks of effective educational practice.

The modified version of the original survey used in the present study consisted of 14 questions. The factor groupings were taken directly from the original survey instrument. Questions one through four come from the section on the original instrument related to the cooperative learning variable. Questions five through nine come from the section related to the cognitive level variable. Questions ten through 14 come from the section related to the personal skills variable. All responses were ranked on a four-point scale with four being very
much or very often, three being quite a bit or often, two being some or occasionally, and one being very little or never. The alpha for the 14-item instrument is .84 (Ahlfeldt, Mehta, & Sellnow, 2005).

One of the questions (number five, memorization) correlated negatively and reduced the reliability of the instrument. Kuh (2002) notes:

The five items about the extent to which the institution emphasizes different kinds of mental activities represent some of the skills in Bloom’s (1956) taxonomy of educational objectives. The standardized alpha for these items is .70 when the lowest order mental function item, memorization, is included. However, the alpha jumps to .80 after deleting the memorization item. This set of items is among the best predictors of self-reported gains, suggesting that the items are reliably estimating the degree to which the institution is challenging students to perform higher order intellectual tasks. (p. 9)

For this survey, the cognitive level had an alpha of .54 when question five was included and .77 when it was removed. Hence, question five was removed from the analysis.

The alpha for the instrument with question five removed was .86. The alpha for each variable of the instrument was also calculated. The alpha for the cooperative learning variable was .61, for the cognitive level was .77, and for the personal skills was .84.

**Data Analysis**

To test the hypothesis, engagement scores were calculated by summing the responses to each of the 13 remaining questions on the SSE. A MANOVA was con-
ducted to compare the overall engagement scores of the PBL-enhanced and conventional classrooms, as well as to compare engagement levels of the PBL-enhanced and conventional classrooms for the three dependent variables (cooperative learning, cognitive level, and personal skills).

RESULTS

The hypothesis (levels of student engagement are higher in a PBL classroom than in a conventional classroom) was supported, multivariate $F(3, 557) = 3.71$, $\Lambda = .980$, $R^2 = .022$. Table 1 reveals students in the PBL-enhanced sections were more engaged than those taught in the conventional sections.

Table 1
Engagement Scores for PBL-Enhanced and Conventional Courses

<table>
<thead>
<tr>
<th></th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBL-Enhanced</td>
<td>325</td>
<td>33.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Conventional;</td>
<td>236</td>
<td>23.2</td>
<td>6.0</td>
</tr>
</tbody>
</table>

A MANOVA revealed a significant difference in the cooperative learning variable ($F(1, 559) = 11.09$, $p < .01$, $R^2 = .019$). Students in the PBL-enhanced sections scored higher than students in the conventional sections on cooperative learning. There was no significant difference in cognitive level ($F(1, 559) = 2.38$, $p = .12$, $R^2 = .124$) or personal skill development ($F(1, 559) = 2.60$, $p$
= .11, \( R^2 = .108 \) between the PBL-enhanced and conventional sections, although the PBL means were slightly higher (see Table 2). Table 3 shows the correlations between the variables.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Composite Variable Scores for PBL-Enhanced and Conventional Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
</tr>
<tr>
<td>Cooperative Learning</td>
<td></td>
</tr>
<tr>
<td>PBL-Enhanced</td>
<td>325</td>
</tr>
<tr>
<td>Conventional</td>
<td>326</td>
</tr>
<tr>
<td>Cognitive Level</td>
<td></td>
</tr>
<tr>
<td>PBL-Enhanced</td>
<td>325</td>
</tr>
<tr>
<td>Conventional</td>
<td>236</td>
</tr>
<tr>
<td>Personal Skills</td>
<td></td>
</tr>
<tr>
<td>PBL-Enhanced</td>
<td>325</td>
</tr>
<tr>
<td>Conventional</td>
<td>236</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Correlations between Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cognitive Level</td>
</tr>
<tr>
<td>Cooperative Learning</td>
<td>.397**</td>
</tr>
<tr>
<td>Cognitive Level</td>
<td>.566**</td>
</tr>
</tbody>
</table>

**\( p < .01 \)
A good deal of research has been conducted regarding the utility of a PBL approach in the fields of business, education, medicine, law, and physics (e.g., Albanese & Mitchell, 1993; Allen, 1998; Baker, 2000; Barbian, 2002; Betchel, 1999; Biley, 1999; Duch et al., 2001; Edens, 2000; Hake, 1998; MacKinnon, 1999; Major & Palmer, 2001; Redish & Steinberg, 1999; Williams, 1999). Few experimental studies to date, however, have focused on the role of PBL in communication courses (Ahlfeldt, Mehta, & Sellnow, 2005). Since PBL is designed to promote critical thinking and teamwork skills—two fundamental learning outcomes of most communication degrees—it follows that PBL might be an appropriate teaching methodology for communication courses.

Research has also been published about what ought to constitute an undergraduate communication program generally, as well as the basic communication course specifically (e.g., Backlund, 2002; Goulden, 2002; Hunt & Simonds, 2002; Hunt et al., 2001; Morreale & Backlund, 2002; Rosenthal, 2002; Sellnow & Ahlfeldt, 2005; Sprague, 1999). Such debate points clearly to concern about how best to teach undergraduate communication curricula.

This study contributes to the existing research, then, in two ways. Initially, it adds to our understanding about PBL as a useful methodology to foster interactive engagement in the basic communication course which, in turn, promotes learning (e.g., Hake, 1998; Kuh, 2001). Moreover, the study adds to our understanding...
about possible ways in which to enrich the basic communication course.

This study revealed that levels of student engagement were, in fact, higher in a PBL-enhanced public speaking classroom than in a conventionally taught public speaking classroom. Students in the PBL-enhanced sections were more engaged than students in the conventional sections. If the conclusions drawn by others are true, then PBL can serve to improve not only engagement in public speaking classrooms, but consequently also comprehension and retention of material.

Several limitations of the study must be acknowledged. First, the data come from students enrolled in a Public Speaking Fundamentals course at one mid-sized Midwestern university. Although a census was used, the results may not be generalizable to other populations. Second, the data are based on student self-reports. Hence, the data are based solely on student perceptions of engagement. Third, although all instructors (a) were trained in PBL methods prior to data collection, (b) were allowed to choose which course-type they taught, (c) taught from a master syllabus, and (d) used the same textbook, the fact that multiple instructors taught the sections could have influenced the results. Moreover, the fact that the instructors self-selected the course approach they would employ could have introduced a selection bias error even though only instructors who had previously earned above average teaching evaluations were included. Finally, as with any quasi-experimental study, any number of confounding variables that emerge when studying people in natural settings could have influenced the results.
Nevertheless, this study should spark interest in future research on the effectiveness of PBL in the basic communication course, as well as in other communication curricula. Beyond the notion of interactive engagement, future studies ought to explore student performance on speeches and examinations in classrooms taught using a PBL approach compared to a conventional approach. Can a PBL approach be effective in an online environment? Are there some communication courses that ought not be taught using a PBL approach? Is a PBL approach inherently biased with regard to sex, learning style preference, ability/disability, ethnicity, or race? These and other questions ought to be examined to further understand what role PBL might play not only in the basic communication course, but also in the field of communication.

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