Fostering Meaningful Classroom Discussion: Student-Generated Questions, Quotations, and Talking Points

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Although classroom discussion can increase students’ critical thinking and communication skills, teachers may be reluctant to use a discussion format if students do not participate or if their contributions lack substance. This article describes the use of daily response papers in which students prepare a question, quotation, and talking points (QQTP) prior to each class session to serve as the foundation for meaningful discussion. Students rated the QQTP, especially the questions and talking points, as an effective method for enhancing their understanding of the reading material and preparing for class discussion.

Classroom discussion can be a powerful teaching tool to enhance students’ problem-solving expertise, communication skills, and mastery of subject matter (Bonwell & Eison, 1991; Gall & Gall, 1990; Garvin, 1991; McKeachie, 2002; Nilson, 1998; Wilen, 1990). However, most faculty and students know “the dark side” of class discussions, characterized by minimal participation or superficial comments that lack substance or focus.

Students sometimes resist discussion because they perceive no reward for participating (Brookfield & Preskill, 1999); active participation is much riskier than simply listening to a lecture (Garvin, 1991). Fear of embarrassment is one of the most compelling forces behind student passivity in class (McKeachie, 2002). Often, students have not read the material or processed it sufficiently to be able to make meaningful comments in class (Burchfield & Sappington, 2000; Connor-Greene, 2000a; Karp & Yoels, 1976; Sappington, Kinsey, & Munsayac, 2002).

To participate in a substantive discussion, students must move from a “safe” role of passivity to an active stance of articulating and supporting their ideas (McKeachie, 2002; Wilkinson & Dubrow, 1991). Writing prior to class can help students focus ideas to bring into the discussion (Bean, 2001; Ventis, 1990). Writing is more than expression; it is a way of thinking and discovering ideas (Young & Fulwiler, 1986). Writing fosters deeper involvement with the reading material (Connor-Greene, 2000b; Snodgrass, 1985), and active engagement and personal investment maximize student learning (Angelo, 1995).

Learning to ask meaningful questions is a key component of critical thinking (Wade, 1995). The quality of questions asked in a class determines the level of thinking that occurs (King, 1995). Research on the teaching of psychology emphasizes teaching students to develop questioning skills as a way to process and understand ideas more fully (e.g., Carroll, 2001; Gray, 1993; Keeley, Ali, & Gebing, 1998; Sternberg, 1999, 2003; Yanchar & Slife, 2004).

The QQTP Approach

To encourage students to read carefully, interact with the readings, articulate their ideas, and make meaningful contributions to class discussion, I assign daily response papers, “question, quotation, and talking points” (QQTP). The typed one-page QQTP includes (a) a question prompted by the assigned reading for that day; (b) a quotation from the reading, selected as particularly compelling or controversial; and (c) a brief outline of ideas prompted by the readings that the student can use as “talking points” in class discussion. If the reading assignment includes multiple articles or chapters, the question and talking points should reflect a synthesis of ideas across readings. To help students construct questions reflecting Bloom’s (1956) levels of analysis, synthesis, or evaluation, I use part of the first class to describe and give examples of questions at each of Bloom’s levels.

I began developing the QQTP after attending a workshop on student-generated questions (Steirer, 2002). Like Steirer, I ask students to create questions that have “one foot in the reading” but cannot be answered simply with facts from the reading assignment. I modified Steirer’s method (e.g., he grades each question on a 100-point scale; I use a 0 to 3 scale) and added the quotation and talking points that comprise the QQTP method.

Asking students to identify quotations they find provocative can increase their involvement in the reading material (Brookfield & Preskill, 1999; Van Ments, 1990). Thinking involves affect as well as cognition, and both positive and negative emotions can be a catalyst for critical thinking (Brookfield, 1987; Halonen, 1995). Giving students a forum to express subjective reactions to the readings demonstrates that their ideas and opinions matter. Selecting compelling or controversial quotations invites engaged rather than passive reading and helps generate material for class discussion.

Writing talking points encourages students to construct, organize, and focus their ideas prior to class discussion. As Dunn said, “Students don’t always realize what their opinions are until they put them on paper” (Goddard, 2002, p. 331). Talking points ensure that even the most reticent students have something to say in class, which may help reduce their anxiety about participating.

Each day, I ask for two volunteers to put their QQTP question on the board as a catalyst for class discussion; a posting computerized courseware management system would also be possible. I keep records to ensure equitable rotation among the students; no student posts a second question until all have posted one. To vary the format of the class and encourage students to evaluate each other’s work, I sometimes ask
students to work in small groups to select a question, quotation, or talking point that they found especially engaging.

To keep the daily grading load manageable and return papers by the next class session, I select, on a rotating basis, eight QQTPs to read, grade, and write comments on each day in addition to the two posted on the board. In a class of 30 students, each student receives written feedback on the QQTP at a minimum of every third class session. All students must bring a QQTP to class every day; I do not announce which students’ QQTPs I will collect until the end of each class. Students maintain a portfolio of all QQTPs, which I read and grade when they turn them in at the end of the semester.

I grade QQTPs on a 3-point scale: 3 = outstanding (a thoughtful question that invites analysis, synthesis, or evaluation, or makes connections between this reading and previous discussion or readings), 2 = good (goes beyond the reading but prompts little discussion), 1 = poor (confusing question or one that can be answered simply from the facts in the article), or 0 = not handed in on time. I write comments and questions on each QQTP to highlight compelling points or ask for clarification. Because the QQTPs sometimes contain insightful ideas that were not discussed in class, I read selected questions or talking points aloud as I return QQTPs during the next class. Referring to students’ comments reinforces creative and critical thinking and provides a catalyst for future discussion, questions, and talking points.

The QQTP portfolio grade (the average of all QQTP grades at the end of the semester) constitutes 25% of the final grade. Consequently, the quality of students’ written evidence of preparation for discussion has a substantial impact on their final grade.

Student Perceptions of QQTP

Using a 5-point scale ranging from 1 (not at all) to 5 (very much so), students anonymously reported their assessment of the value of the QQTP components in understanding and processing the reading material and preparing for class discussion. Table 1 shows data from two undergraduate courses, a women and psychology class and an honors seminar on the social construction of madness. The consistency across ratings from the two courses is striking. Both classes gave their highest ratings to the talking points and to creating a question as helping prepare for class discussion. In both classes, questions and talking points received higher ratings than did quotations in enhancing both understanding and preparation for class. This finding is not surprising; constructing questions and preparing talking points are more cognitively challenging than selecting a quotation. A student might not complete all of the reading assignment or have a relatively weak grasp of the material but still identify a compelling quotation. Overall, students rated all three components of the QQTP positively.

Discussion

According to McGovern and Hogshhead (1990), the four key reasons for assigning writing are to (a) assess students; (b) promote learning; (c) enhance student writing skills; and (d) encourage creative, analytic, and problem-solving skills. The QQTP reflects each of these objectives, inviting students to interact with the reading material, articulate ideas, and raise meaningful questions. As Postman and Weingartner (1969) wrote, “Asking questions is behavior. If you don’t do it, you don’t learn it. It really is as simple as that” (p. 24).

Table 1. Student Evaluations: Question, Quotation, and Talking Point Method

<table>
<thead>
<tr>
<th>Did creating a question for each class help you</th>
<th>Class 1a</th>
<th>Class 2b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand or process the reading material</td>
<td>4.07</td>
<td>4.13</td>
</tr>
<tr>
<td>Prepare for class discussion</td>
<td>4.40</td>
<td>4.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did selecting a quotation for each class help you</th>
<th>Class 1a</th>
<th>Class 2b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand or process the reading material</td>
<td>3.43</td>
<td>3.44</td>
</tr>
<tr>
<td>Prepare for class discussion</td>
<td>3.73</td>
<td>3.63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did writing talking points for each class help you</th>
<th>Class 1a</th>
<th>Class 2b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand or process the reading material</td>
<td>4.28</td>
<td>4.44</td>
</tr>
<tr>
<td>Prepare for class discussion</td>
<td>4.55</td>
<td>4.56</td>
</tr>
</tbody>
</table>

Note. Ratings were based on a scale ranging from 1 (not at all) to 5 (very much so). Class 1 = Women and Psychology; Class 2 = Honors Seminar on the Social Construction of Madness. 

References


Some instructors allow students to score their own quizzes and tests to provide students the educational advantage of immediate feedback on their performance. Instructors, however, want to be confident that this self-scoring is accurate and fair. We describe an analysis of the accuracy of a self-scoring technique that we use with short multiple-choice quizzes. Results revealed that students are accurate in scoring and reporting their quiz scores. In addition, student attitudes toward the self-scoring approach are positive. This technique can offer an instructional benefit for students and a workload reduction for faculty.

Providing timely feedback on quiz and test performance is an important component of student learning. One way to provide students with rapid feedback is to reveal quiz or test answers as soon as all students have finished the assessment. Friedman (1987) described such a test feedback procedure for introductory psychology in which students marked their answers on the test and on a separate answer sheet. Students submitted their answer sheets when they finished the test, but they retained the test itself. The instructor then provided the test answers at the end of the class period. Friedman suggested that this approach offered the advantages of immediate feedback for students, efficient use of class time, and reduced pressure for the instructor to grade the tests quickly. Smith and Wight (1988) conducted a student evaluation of Friedman’s approach and found that students liked the immediate test feedback and believed that it enhanced their learning.

Epstein, Epstein, and Brosovic (2001) described an innovative immediate quiz feedback procedure called the immediate feedback assessment technique in which students completed multiple-choice quizzes with answer sheets that were similar to scratch-off lottery tickets. Students scratched off their answer choice for each question, which immediately revealed whether their answer was correct. Epstein et al. conducted an experiment with introductory psychology students in which they compared student final exam performance between groups of students who did or did not use the immediate feedback assessment technique. Although their results showed no overall difference in final exam performance between the two groups, they did find that students who received the immediate feedback were more likely to correctly answer questions on the final exam that they had answered incorrectly on previous tests during the semester.

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**Assuring Accuracy of Student-Scored Quizzes**

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Send correspondence to Patricia A. Connor-Greene, Department of Psychology, Brackett Hall 410G, Clemson University, Clemson, SC 29634–1355; e-mail: connorg@clemson.edu.
In an effort to provide immediate quiz or test feedback, some instructors allow students to score their own tests or quizzes on completion (Conard, Spencer, & Semb, 1978). However, instructors who consider this scoring method may have legitimate concerns regarding the accuracy of such scoring. Conard et al. reported that student self-scoring of short-answer quizzes in an undergraduate developmental psychology class was accurate, but this outcome occurred under conditions in which students scored their quizzes and then discussed their responses with a teaching assistant. Without such a safeguard in place, evidence suggests that at least a few students would likely attempt some unethical behavior during the self-scoring process (Davis, Grover, Becker, & McGregor, 1992; Graham, Monday, O'Brien, & Steffen, 1994). Boren and Brady (1970) described a method to ensure accuracy in student self-scoring of objective quiz items that involved giving all students a particular colored pen with which they marked their answers on a quiz. After collecting the pens the instructor revealed the answers; the students scored the quiz with their own pen or pencil. Boren and Brady noted that in using this technique, “student grading errors are found to be very infrequent” (p. 444), but they did not present data to support this assertion.

Our approach to self-scoring with short multiple-choice quizzes is based on the method of Freidman (1987) and similar to a suggestion by Boren and Brady (1970). We give students a separate answer sheet (we call it a declaration sheet) along with the quiz. While taking the quiz, students mark their answers on the quiz itself, and they also mark (“declare”) all their answers on the declaration sheet (student names are required on the declaration sheets). When all students have completed the quiz, we collect the declaration sheets and then reveal the quiz answers so students can score their quizzes. Students write the number of items correct on the quiz and submit it. In that students have already declared and submitted their answers prior to grading the quizzes, they know that the instructor has a record of their answers. As a result, in practice we do not check each student’s actual quiz answers against their declaration sheet answers to ensure that the two are identical (obviously, we do not tell the students that we do not check each declaration sheet). Rather, we have proceeded on the assumption that this safeguard is sufficient for assuring accuracy.

In this investigation we evaluated our assumption that the use of the declaration sheet ensures accuracy in student self-scoring. Our primary analysis involved an assessment of the degree of correspondence between students’ declaration sheet answers and their actual quiz answers. In addition, we acknowledge the possibility that some students might score their quiz accurately, but attempt to gain an unfair advantage by writing an inflated score on their quiz. As such, we also assessed the accuracy with which students reported their quiz scores. Finally, we examined student attitudes toward this self-scoring technique.

Method

Participants

Participants were 22 students enrolled in a human factors psychology course taught by the first author in the Spring 2004 semester. Sixty-four percent of the students were women; 9% were first-year students, 27% were sophomores, 9% were juniors, and 55% were seniors.

Materials

The materials for our analyses were the students’ quizzes and declaration sheets from the nine quizzes given during the semester. Each quiz consisted of 10 multiple-choice questions derived from assigned reading material. Across all students, there were 192 quizzes and 192 declaration sheets.

We also developed a survey to examine student attitudes regarding the self-scoring technique. The survey consisted of five Likert scale items with responses ranging from 1 (strongly disagree) to 5 (strongly agree) and one open-ended question asking students to provide any other comments.

Procedure

Each author independently assessed the degree of correspondence between student declaration sheet answers and quiz answers for all 192 quizzes (1,920 individual item responses). Next, to determine the accuracy of the student-reported quiz scores, the first author “graded” each student’s declaration sheet for all 192 quizzes and compared those scores to the scores reported by the students on the quizzes. Finally, we administered the attitude survey at the end of the semester.

Results

Correspondence of Quiz Answers and Declaration Sheet Answers

Across the 1,920 individual item responses we discovered only two inconsistencies—both cases in which students left an item on a declaration sheet blank. Thus, we found a 99.9% rate of accurate correspondence between the declaration sheet answers and the actual quiz answers.

Accuracy of Student-Reported Quiz Scores

This analysis revealed a high degree of accuracy, with 190 of the 192 quiz scores being reported correctly by students (98.96%). In the two cases of inconsistency, 2 students reported slightly higher scores than they should have (these students were different students than the 2 who left items blank on their declaration sheets).

Survey Responses

These results indicated that students liked being able to score their quizzes (M = 4.91, SD = .29) and that they liked knowing their quiz grade immediately after taking the quiz (M = 4.96, SD = .21). Students disagreed that the scoring took too much class time (M = 1.50, SD = .86) or that having to put their answers on the answer declaration sheet was inconvenient (M = 1.59, SD = .85). Finally, students agreed that using the answer declaration sheet prevents students from cheating while scoring their quizzes (M = 4.96, SD = .21).
Eight students responded to the open-ended question. One student said, “I like the system,” and another student noted, “I very much enjoyed having instant feedback and would like to see the current self-grade system continue.” In addition, another student noted the pedagogical advantage of immediate feedback, saying, “I liked actually doing my own grades b/c it made me more aware of what I got wrong.” Regarding the accuracy of the self-scoring, one student said, “I think having us copy our answers onto a separate sheet makes us feel like we can’t cheat—or if we do, we’ll be more likely to get caught.”

Discussion

These findings may be of interest to instructors who want to provide their students with the pedagogical advantage of immediate scoring on quizzes, while being confident that the scoring is accurate. Our data suggest that using a declaration sheet when students self-score their quizzes assures that students will accurately score their quizzes and accurately report their scores. Instructors may thus follow our practice of not checking each student’s actual quiz answers against his or her declaration sheet answers for each quiz. As such, this technique offers instructors a useful option for administering and scoring short multiple-choice or true–false quizzes.

Our data do not address the degree of accuracy in student self-scoring without the use of a declaration sheet. We do not have data from a “control” class that scored their quizzes without the declaration sheets or some other type of safeguard in place. Although it is not immediately evident how to determine the scoring accuracy of such quizzes, it may be that accuracy in self-scoring would be just as high if students did not use declaration sheets. Evidence suggests, however, that this outcome would be unlikely (Davis et al., 1992).

Another consideration in the use of the declaration sheet is the possibility that it may create a perception that the instructor does not trust the students. We always stress to students that we believe most students are honest, but that we also realize a small percentage of students may try to take advantage of self-scoring to unfairly enhance their score. Thus, we encourage students to think of the declaration sheet as a way for them to feel confident that other students are not doing anything inappropriate in the self-scoring of quizzes. Students typically accept this explanation, and some students have commented that they are glad the safeguard is in place.

This approach to quiz scoring provides an instructor the obvious advantage of reduced grading time. A recent longitudinal study on faculty workload and time allocation indicated that faculty now spend more time on both research and responsibilities.

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This approach to quiz scoring provides an instructor the obvious advantage of reduced grading time. A recent longitudinal study on faculty workload and time allocation indicated that faculty now spend more time on both research and teaching than they did previously (Milem, Berger, & Dey, 2000). Given these increased time demands, allowing students to score their quizzes in class is one way that some faculty may choose to afford themselves more time for other responsibilities.

References


Notes

1. We thank Randolph Smith and three anonymous reviewers for helpful comments and suggestions on an earlier draft of this article.

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Testing Pseudoscientific Claims in Research Methods Courses

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We describe a 10-week research methods course that introduced students to research design, data collection, statistical analysis, and manuscript preparation. Rather than focusing on lectures and brief activities, the course immersed students in a professional-grade, quarter-long laboratory experiment designed to empirically investigate the effectiveness of computer software that ostensibly detects deception through voice stress analysis. We discuss the relative merits of comprehensive laboratory projects, focusing specifically on investigations that test dubious, pseudoscientific claims. Furthermore, we highlight a basic schedule that enables instructors to incorporate full-scale laboratory projects successfully into their 10-week methods courses.

Research methods courses are ubiquitous (Messer, Griggs, & Jackson, 1999), yet difficult to teach. Consequently, *Teaching of Psychology* has published more articles on research methods than on any other topic (Johnson, 2001). Contributors have suggested a variety of course designs, most of which have focused on a mix of lectures, demonstrations, and brief research projects (e.g., Benedict & Butts, 1981; Brems, 1994; Carroll, 1986; Fontes & Piercy, 2000; Kerber, 1983; Sommer & Sommer, 2003; Underwood, 1975; Yoder, 1979). Although brief projects have several advantages, we
believe they risk trivializing psychological science and may implicitly teach students that they are incapable of conducting more rigorous, professional-grade research.

In contrast, several authors have described projects that required students to parallel the work of professional research psychologists. Whereas some projects have required students to replicate previous research (Chamberlain, 1988), others have required students to design new studies (Chamberlain, 1986; Pury, 2001), typically involving survey methods (e.g., Chapdelaine & Chapman, 1999; Froese, Vogts-Scribner, Ealey, & Fairchild, 2003; Marek, Christopher, & Walker, 2004).

This article focuses on a professional-grade, quarter-long laboratory experiment in which students tested dubious, pseudoscientific claims regarding Truster, a new computer program that ostensibly detects deception via voice stress analysis (Meyer, 1998; Taylor, 2002). Although the manufacturer reported that Truster had proven effective in controlled tests (Truster, 1997; Van Damme, 1998), several warning signs forced us to view their evidence with skepticism (Ruscio, 2002). For example, the manufacturer placed significant emphasis on anecdotal information, and their astonishingly positive empirical findings have never been replicated or published in a peer-reviewed journal. Furthermore, the manufacturer failed to address critical theoretical issues, such as whether a unique physiological lie response exists (Hollien, 1990; Lykken, 1998). Thus, it is not clear if the software can detect voice stress that is specific to telling lies.

Because most pseudoscientific and parapsychological topics are inherently interesting, they are particularly well suited for testing in methods courses (Lilienfeld, Lohr, & Morier, 2001). Students are likely to harbor pseudoscientific beliefs (Feder, 1985; Shermer, 1998), and instructors are eager to help them think more critically (e.g., Connor-Greene, 1993; Lawson, 1999, 2003). Indeed, Cole (1982) probably spoke for most instructors when he stated that the undergraduate curriculum should “seek to liberate the student from ignorance … and from standing helpless before extravagant pseudoscientific assertions about human behavior” (p. 25).

Course Description

Precourse Preparation

Because review boards are slow to grant approval, the instructor (the first author) submitted a preliminary proposal that outlined several methods featured in the deception-detection literature (e.g., guilty knowledge test, mock theft). In addition, the instructor conducted a comprehensive literature search and created a local information archive that would later allow students to obtain obscure sources without suffering the delays of interlibrary loans.

Week 1 to Week 4: Teach Basic Concepts

Twenty-three sophomores and juniors who satisfied a statistics prerequisite spent the first 3 weeks learning the fundamentals of research methodology (e.g., quantitative and qualitative designs, operational definitions, confounding variables, reliability, validity, research ethics). To help students learn concepts quickly, the instructor selected a concise textbook (Martin, 2000) that addressed nearly all the methodological concepts identified in Boneau’s (1990) psychological-literacy survey. Near the end of the 4th week, students completed a comprehensive midterm examination.

During these initial weeks, students acquainted themselves with the literature on detecting deception. They searched electronic databases (e.g., PsycINFO, Criminal Justice Abstracts), creating annotated APA-style reference lists in the process. After students completed their electronic searches, the instructor allowed them to borrow articles from the archive he compiled previously. Although the instructor did not require students to read a minimum number of articles, he selected four specific items for all the students to read and summarize. For example, he selected Kubis’s (1973) research because it described a fascinating experiment involving a simulated theft.

Week 5: Design Study

After teaching themselves to operate Truster, students discussed how to test its effectiveness. Ultimately, they decided to design a simulated theft, similar to Kubis (1973). Specifically, they decided to randomly assign volunteers to be thieves or innocent suspects in a staged theft of two exams.

To help students identify threats to internal validity, the instructor noted several design flaws. For example, after discovering that innocent suspects would be ready for interrogation sooner than thieves, he asked, “How can we ensure that interrogators will remain blind to condition assignment?” Students provided solutions in class and via an online discussion board. To ensure efficiency, the instructor coordinated the creation of laboratory materials (e.g., consent form, interrogation script) based on student input and assistance.

Week 6 to Week 8: Conduct Study

All students worked in pairs to conduct the experiment. There were approximately 12 pairs of students and 63 participants who volunteered to participate for extra credit, which allowed each experimenter–interrogator pair to conduct approximately 5 sessions.

At the beginning of each session, the experimenter instructed thieves to steal the exams without being seen and to later deny their involvement. The experimenter informed control participants that there had been a staged theft and that they should simply deny their involvement. Each interrogation included a calibration procedure, a stimulation test, a guilty knowledge test, and several straightforward crime-

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1Truster is available at http://www.truster.com for $108 and through various resellers for as low as $20. The software is easy to operate using a standard personal computer and microphone.

2The textbook contained 13 chapters, each approximately 20 pages long. The students read all but 3 chapters: dishonest scientific activities, multiple-variable designs, and statistical analyses.
related questions (e.g., “Did you steal the missing exams?”). Each session lasted approximately 35 min.

Week 9: Analyze and Interpret Data

Each student entered the complete set of data into SPSS and computed descriptive statistics and group comparisons for homework. Later in the week, students discussed how to interpret the results. Overall, Truster performed poorly, failing to distinguish between thieves and innocent suspects on all measures.

Week 10: Finalize Research Reports

Throughout the quarter, the instructor encouraged students to write specific sections of their APA-style research reports using the textbook as a guide. For example, after students reviewed the literature, the instructor directed them to write their introduction sections. This strategy enabled students to focus on each section independently, making an otherwise difficult writing assignment more manageable. Although the instructor provided feedback throughout the quarter, he reserved the 10th week for individual meetings. Completed reports were due during finals week.

Results

Overall, students performed well on their midterm examinations ($M = 87\%$, $SD = 9\%$) and on their research reports ($M = 84\%$, $SD = 10\%$), suggesting that the rapid pace of the course was not detrimental and that they succeeded in communicating their research findings effectively. Whereas we acknowledge that grades are inextricably linked to question difficulty and assessment criteria, these results suggest that students met course objectives. However, without comparative data (i.e., from a similar class taught using traditional methods), it is difficult to interpret the results because it is possible that students could have learned more (or less) if exposed to more traditional teaching techniques. Also, student evaluations provided evidence that they enjoyed the experience. On a scale that ranged from 1 (poor) to 5 (excellent), students rated the course favorably ($M = 4.55$, $SD = 0.67$).

Discussion

Some instructors may be leery of weaving courses around phenomena likely to produce null results. They fear students may become disappointed and be left with little to discuss in their reports. Our class experience suggests otherwise. After debunking Truster’s reported efficacy, students felt empowered and were eager to expose the software as a fraud. Nevertheless, the instructor noted that Type II errors are possible with all significance tests, and he highlighted the importance of future replication. Through these discussions, students learned that nonsignificant results are just as important as significant results, particularly when testing pseudoscientific claims. In their reports, students noted the utility of experimentation, and they wrote about important theoretical issues such as whether a unique physiological lie response exists. Regardless, students who yearn for statistical significance can easily include factors likely to result in group differences.

Instructors can find other interesting pseudoscientific topics to investigate in books (e.g., Hines, 2003; Ruscio, 2002), magazines (e.g., Skeptical Inquirer), and on myriad Web sites. For example, students can test suspicious product claims (e.g., “Can the Q-Ray ionized bracelet relieve pain?”), natural remedies (e.g., “Can herbal supplements improve memory?”), subliminal advertising (e.g., “Can subliminal primes influence behavior?”), extrasensory perception (e.g., “Can psychics perceive remote events?”), or even intercessory prayer (e.g., “Can the prayers of strangers have therapeutic effects on others?”). Whereas some topics lend themselves to laboratory investigations, others may require alternative procedures and slight adjustments to the proposed 10-week schedule.

References

I have used this activity twice in small 400-level adolescence courses that met for lengthy blocks of time. During a 1.5- to 2-hr period in a reserved computer room, students analyzed two to three blogs individually or in pairs either by doing a search (e.g., “Teen + blog”) or by visiting hosting Web sites (e.g., DeadJournal.com, Diaryland.com, Freeopendiary.com, Livejournal.com, My-diary.org, Teenblogs.studentcenter.org).

Although formats vary only slightly, the sites that host the blogs may attract somewhat different crowds (Nussbaum, 2004); DeadJournal.com, for example, has a somewhat morbid theme. Although many posts are just a few lines, the blogs appear to be primarily online journals, pages of commentaries and photos that their authors often update monthly, weekly, or daily, sometimes moments before you read them. Although many teen blogs are brief experiments, for numerous adolescents they become a paradoxical way of life, a public record of one’s private thoughts.

What Are Blogs and Why Should Students Analyze Them?

Blogs are basically online journals, pages of commentaries and photos that their authors often update monthly, weekly, or daily, sometimes moments before you read them. Although many teen blogs are brief experiments, for numerous adolescents they become a paradoxical way of life, a public record of one’s private thoughts.

Learning Activity Goals and Description

**Activity Goals**

I had three major goals for the blog learning activity. First, students examined blogs as primary sources of data on adolescent friendship, romantic relationships, and the attendant emotions. Second, students were to learn of blogs’ existence as part of current teen culture and Internet use. Only 11% of Internet users visit blogs written by others (Lenhart, Horrigan, & Fallows, 2004). Finally, students analyzed blogs as a specific type of media, as described by Santrock (2003).

**Description of Teen Blogs**

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Although teachers of undergraduates have used the Internet successfully to teach about psychological disorders (Casteel, 2003) and developmental psychology (Mazur, 2003; Sheldon, 2004), no one has discussed exploiting blogs as firsthand source material for teaching about adolescence. Similar to the taped reports of National Public Radio’s (NPR’s) Teenage Diaries (described in Sheldon, 2004) and contrary to typical Web pages, blogs “have voice and personality. They’re human” (Grossman, 2004, p. 66). However, unlike the 15 Teenage Diaries currently available, the pool of blogs is vast and unedited by adults.

**Learning Activity Goals and Description**

**Activity Goals**

I had three major goals for the blog learning activity. First, students examined blogs as primary sources of data on adolescent friendship, romantic relationships, and the attendant emotions. Second, students were to learn of blogs’ existence as part of current teen culture and Internet use. Only 11% of Internet users visit blogs written by others (Lenhart, Horrigan, & Fallows, 2004). Finally, students analyzed blogs as a specific type of media, as described by Santrock (2003).

**Description of Teen Blogs**

I have used this activity twice in small 400-level adolescence courses that met for lengthy blocks of time. During a 1.5- to 2-hr period in a reserved computer room, students analyzed two to three blogs individually or in pairs either by doing a search (e.g., “Teen + blog”) or by visiting hosting Web sites (e.g., DeadJournal.com, Diaryland.com, Freeopendiary.com, Livejournal.com, My-diary.org, Teenblogs.studentcenter.org).

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most helpful for this assignment tend to be lengthy, detailed accounts of the writer’s days. Sometimes tedious, frequently dramatic, and occasionally hilarious, teen bloggers may describe drinking, drugs, sex, eating disorders, parental strife, skipping school, suicide, and self-mutilation. Thus, some blogs contain adults’ worst nightmares regarding adolescents.

How easy it is for a student to learn the writer’s age and other demographic characteristics depends on the particular hosting Web site and the blogger. Most blogs display user profiles that state the author’s age or birth date, gender, location (which may be international), and, occasionally, school attended and ethnicity. Although undergraduates in my course often felt frustrated in trying to find this information from Diaryland.com, they lauded Freopendiary.com as the easiest site from which to retrieve demographic information. Because blogs typically connect to others through links called “friends” or lists of other diarists, once a reader has located one teen journal, it is usually fairly straightforward to find others.

**Description of Learning Activity**

After locating appropriately informative teen blogs, students, with the aid of a handout, considered why adolescents write blogs, their appeal and drawbacks for both the writers and their readers, and whether blogs will be a passing or a lasting phenomenon. Other questions, some keyed to particular pages in Santrock (2003), asked students to describe the portrayal of friendships, dating, and romantic relationships; the depiction of positive and negative emotions; the most popular topics; the function of blogs in terms of adolescent media, specifically computer use; and the most surprising, distressing, and interesting aspects of the blogs. Students noted the most frequent topics as romantic relationships, friends, sex, popular culture, parents, and school; as one undergraduate succinctly summarized, “myself.” Students often were surprised and distressed by how much personal information bloggers posted, such as the descriptions and reported frequency of romantic relationships and of sexual activities. Students commonly noted as most interesting the bloggers’ “dramatics,” their “inconsistent thought processes,” and the diversity of adolescent experience, such as, “how everyday life can be so complicated for some people and happy for others.”

**Evaluation of the Learning Activity**

During the last 10 min of class, students completed anonymous evaluation forms. Due to the classes’ small sizes (Intersession 2003, n = 7; Winter 2004, n = 18), I combined results from both semesters. As an overall learning experience, students’ mean evaluation was 4.3 (SD = .54) on a 5-point Likert scale ranging from 1 (poor) to 5 (excellent). Eighty-eight percent of the undergraduates endorsed the statement that the activity increased their knowledge of the concerns of adolescents, and 92% endorsed the statement that the activity increased their knowledge of adolescent computer use. In response to the question, “Were the blogs a good source of data for learning about adolescents?”, 100% answered “yes,” with many adding comments such as, “Because they don’t expect adults to read them!” and “So much can be discovered about teens, how they think and feel through these blogs.” In response to requests for additional comments, most students demonstrated that the learning goals of the activity had been met. For example, students, all but 2 of whom were between ages 17 and 22, wrote that “we got to look into the ‘real’ lives of adolescents and compare similarities and differences,” which, according to another, “opened my eyes to a new world.” One student specified that he or she “could easily relate many things to class (implicit personality, personal fable, etc.).”

Negative comments indicated that there were “lots of boring journals online but not a fault of the activity,” that there was too much “swearing,” and that “some of the entries were extremely immature and hard to relate to.” Although one student wrote that the activity “was good to do at leisure,” another complained about the time limit. Two disliked “filling out the worksheet” and “comparing things to textbook.”

Although many students positively commented about how candidly some bloggers described their experiences, one student expressed dismay that some blog writers “show their pictures and give too much information.” Instructors might discuss this perceptive concern in terms of the real possibilities of online harassment and offline stalking, especially of young adolescent girls (Moran, 2002; Richter, 2001).

**Possibilities and Limitations of Blog Analysis**

Instructors could easily modify the analysis of teenagers’ blogs to study diverse topics within adolescence, such as adolescent egocentrism (Elkind, 1976), the development of self-understanding (Harter & Monsour, 1992), and gender stereotypes and gender roles. The chronologically grouped blogs of Freopendiary.com might provide useful material for the study of issues that adults of different ages may confront (Bee & Bjorklund, 2004). In addition, similar to Sheldon’s (2004) use of NPR’s *Radio Diaries*, students could analyze blogs using one or more theoretical approaches. Instructors could encourage students to analyze the whole phenomenon of blogs with its linked diaries and notes from readers as a new form of communication. Blogs may constitute a new type of community that transcends geography, one with a relaxed view of privacy and a large amount of both self-chronicling and often supportive responses (e.g., “Wow, you are such a talented writer!”).

For some instructors and courses, drawbacks may be the required length of time and the need for a connected classroom. Although I enjoyed seeing my students so excited and engaged with the material, instructors should adapt this exercise into an independent project, one with the extra advantage of being unlikely to be plagiarized if students must simultaneously submit copies of the analyzed blogs. Another concern is that a search using the terms “teen + blog” might pull up sex or erotic Web logs on computers without screening filters, which occurred on my laptop, although not in the connected classroom. To prevent this possibility, students should begin the activity with names of possible hosting Web sites, as listed previously, rather than use a search engine.

I also suggest that instructors discuss with their students the representativeness of the bloggers in terms of demographics and personality characteristics as well as their representa-
tions. For example, because in the United States there currently are large income and racial disparities in Internet use (Pew Internet & American Life Project, 2004), Black adolescents and those from families with yearly household incomes under $30,000 are less likely to be blog writers than adolescents who are White, Hispanic, or from households with incomes over $50,000. Undergraduates also could hypothesize about which “Big 5” personality traits (Digman, 1990) are most likely to correlate with blogging behavior (Dollinger, 2004). Finally, as some students noted, the veracity of some writers’ assertions were in doubt. Instructors can indicate that such statements may illustrate the bloggers’ possible selves, the various alternative and often ideal identities that adolescents may adopt (Dunkel, 2000).

Overall, despite their own closeness in age to the authors, undergraduates found that blogs gave a surprisingly intimate, almost unlimited, firsthand glimpse of what it currently means to be an adolescent. As one undergraduate explained:

It was really interesting to go through all the blogs and see the expressions they used. There were things they considered so important, like getting drunk. It took me back to when I was that age. It’s a whole different perspective on adolescence.

References

Mazur, E. (2003, August). Teaching students to critically utilize the Internet for psychology information. In N. Melucci (Chair), Teaching media literacy in undergraduate psychology classes. Symposium conducted at the meetings of the American Psychological Association, Toronto, Ontario, Canada.

Note

Send correspondence and requests for copies of the assignment to Elizabeth Mazur, Penn State McKeesport, 4000 University Drive, McKeesport, PA 15132–7698; e-mail: emazur@psu.edu.

Collaborative Teaching of Developmental Psychology: An Easy-to-Implement Interdisciplinary Approach

Louise Katz
Columbia State Community College

James L. Senefeld
Department of English
Columbia State Community College

This article describes an easily implemented interdisciplinary teaching method and the benefits it offers in teaching developmental psychology. A developmental psychology instructor and a literature instructor arranged their classes to meet during the same time block and collaborated in course planning. The method included periodic joint class meetings with coordinated presentations by the instructors, students, and guest speakers as well as a common reading. This innovative method may be adapted for use with a variety of courses and is well suited to colleges where the size of the student body, limited course offerings, or budgetary considerations make teaching traditional interdisciplinary courses impractical.

As the pace of knowledge acquisition accelerates, interdisciplinary studies will increasingly be needed both for research and solving practical problems. Psychology and literature are a natural interdisciplinary match, as psychological theory aids the understanding of literature, and literature provides a wealth of examples to elucidate psychological theory (Williams & Kolupke, 1986). Developmental psychology, which involves the multidisciplinary study of human development, is a rich and underexplored area for interdisciplinary teaching.

Instructors may design interdisciplinary approaches in various ways, including a class taught by one instructor incorporating interdisciplinary themes (Boyatzis, 1992; Chrisler, 1990; McGovern, 2001), two or more courses taught to the same cohort of students (Bennett, 1985; Parisi, 1985), or a class team taught by instructors from different disciplines or specialties (Albrecht & Nelson, 2001;
Hammer & Giordano, 2001; McDaniel & Colarulli, 1997; Williams & Kolupke, 1986). Although students may potentially benefit from all these approaches, their logistics may pose problems. At many institutions, curtailed funding has led to fewer course offerings, reductions in elective courses, and elimination of faculty overload or underload options. Small colleges may not have enough students in a semester wanting to take two linked courses. Specialized courses may not transfer to another institution.

In contrast, the interdisciplinary teaching approach described here is simple to implement even at the smallest institutions. It affords students many of the advantages of other interdisciplinary approaches, yet requires no added costs or changes in course offerings. The courses Developmental Psychology: Life Span and Introduction to Literature I and II are part of our Collaborative Teaching Project that began in the Fall 2002 semester. Instructors may adapt the model for use with a variety of disciplinary collaborations. In this article we describe our use of the method in the Fall 2002 semester and summarize our use of the method in subsequent semesters.

Planning

At our college, life span students are typically nursing majors who take the course as a requirement; Literature I and II students generally have not yet declared a major and take literature as an elective. The life span course covers human development with a text featuring a chronological presentation. The Literature I course covers narrative, short stories, and novels; the Literature II course covers drama and poetry. We decided to pair a section of life span with a section of Literature I in the fall semester and a section of Literature II in the spring semester. Each semester’s collaboration was wholly distinct because it included a different theme and different thematically related common reading, lectures, presentations, and guest speakers. We secured approval for our assignment to sections that met at the same time. Scheduling was the only administrative accommodation required. Having both classes scheduled at the same time is essential for joint class meetings, the central and defining feature of this method. Students in each class read the same text and receive the same course credit as students in other sections of that course.

We began by compiling a list of areas of interest common to both fields. Next, we determined a theme that would link a book read by both classes and provide discussion topics for joint meetings. Themes may reflect, for example, emerging areas in the disciplines, current events, or predicted areas of high student interest. We chose the theme of addictions, and we carefully considered many potential books. Our choice, Go Ask Alice (Anonymous, 1998), the anonymous diary of a young girl who dies of a drug overdose, presents both developmental issues and complex literary elements. We have found high student interest in autobiographies, and they offer a valuable insider perspective (Norcross, Sommer, & Clif- ford, 2001).

The Joint Meetings

To present the shared content, we scheduled a joint meeting of our classes in an auditorium on campus approximately every 2 weeks, for a total of eight joint meetings. The content and frequency of joint meetings may vary depending on such factors as instructors’ preferences and students’ academic level. We reserved two joint meetings for guest speakers. We invited students in all our classes to attend joint meetings and extended invitations to hear guest speakers to the campus community, local high schools, and the public. In four joint meetings we discussed a topic covered in both classes’ textbooks or the common reading. During half of these four joint meetings, the literature instructor presented the topic from a literary point of view, including lecture and illustrative film clips; during the other half, the psychology instructor presented the same topic from a psychological point of view.

As the semester progressed, the two instructors met regularly to plan and evaluate the joint meetings and discuss student response. Toward the end of the semester, we reserved two joint meetings, one for each class, for the classes to give coordinated presentations. Life span students gave oral, poster, or handout presentations based on research and interviews. Literature students presented group projects involving reports on literary critique, interviews, and illustrative film clips. Table 1 gives themes, common reading books, and guest speakers for four semesters.

Student Evaluation

At the end of the Fall 2002 semester, we surveyed students in both classes with the same anonymous evaluation form. As shown in Table 2, the ratings revealed that students found the collaborative components of their class to be “interesting, worthwhile, and useful.” We believe the lower ratings from the literature students should be interpreted with caution because there may have been other variables affecting their perceptions.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Theme</th>
<th>Common Reading</th>
<th>Guest Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2002</td>
<td>Addictions</td>
<td>Go Ask Alice (Anonymous, 1998)</td>
<td>Panel from adolescent alcohol and drug treatment facility; panel from adult alcohol and drug treatment facility</td>
</tr>
<tr>
<td>Spring 2003</td>
<td>Resiliency</td>
<td>The Quiet Room: A Journey Out of the Torment of Madness (Schiller &amp; Bennett, 1994)</td>
<td>President of a nearby university; well-known journalist</td>
</tr>
<tr>
<td>Fall 2003</td>
<td>Stress</td>
<td>The Prize Winner of Defiance, Ohio: How My Mother Raised 10 Kids on 25 Words or Less (Ryan, 2001)</td>
<td>Medical doctor; family counselor; panel of faculty on stresses growing up in the 1950s</td>
</tr>
<tr>
<td>Spring 2004</td>
<td>Creativity and mental illness</td>
<td>His Bright Light: The Story of Nick Traina (Steel, 1998)</td>
<td>Panel of faculty from a variety of disciplines</td>
</tr>
</tbody>
</table>
on which the two classes differed, such as level of career decisiveness. Seventy-one percent of life span students and 83% of literature students responded “yes” to the question, “Assuming that you needed or wanted to take that class, would you take another course with collaborative instruction such as Psychology and Literature II (Drama and Poetry)?” The most frequently mentioned response to the open-ended question, “What did you like best about the interdisciplinary approach?” was getting two viewpoints on the topics. Many students mentioned enjoying the change from the usual classroom routine.

Discussion

Instructors may adapt the collaborative teaching method in accordance with their students’ needs, interests, and academic level as well as their own interests and expertise. Compatible teaching philosophies augur well for success. Some pointers on beginning a collaboration include planning for reduced lecture time due to the joint meetings and allowing ample time to select a common reading that will ignite students’ interest. Large class sizes may make grading on student presentation days daunting. The psychology instructor, who wanted to assign individual grades, gave life span students the option of participating in a poster session or presenting an oral report, an approach that proved engaging and motivating. We enjoy and recommend trying new things. For example, when we could not locate a guest speaker on our theme of creativity and mental illness, we asked the two, four, five, or eight components of each category.

The method offers benefits to faculty. We have found it intellectually stimulating to look at phenomena through the eyes of another discipline and prepare lectures with a different approach. We have enjoyed doing class planning with a supportive colleague and have found it renewing and energizing to reinvent the collaboration each semester.

References

Notes

1. Some of the concepts and examples discussed in this article were presented at the 15th Southeastern Conference on the Teaching of Psychology in Atlanta, Georgia, February 2003, and at the 16th Southeastern Conference on the Teaching of Psychology in Atlanta, Georgia, February 2004.
2. Details of events in the Fall 2002 joint class meetings are available at http://www.columbiastate.edu/katz/senefeld.htm.
3. Send correspondence and requests for copies of syllabi, listings of literary works and films for each semester, and a detailed outline of events in the Fall 2002 joint class meetings to Louise Katz, Department of Psychology, Columbia State Community College, P.O. Box 1315, Columbia, TN 38402–1315; e-mail: katz@columbiastate.edu.

Teaching the Science of Practice: Evaluation of a Research Course in Counseling

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St. Mary’s College of Maryland

I describe a course designed to teach advanced undergraduate students how to conduct research on counseling. Specifically, I created the course based on the scientist-practitioner model of training, which emphasizes both the strategic approach to therapy (theoretical and technical) and the use of scientific methodology to study and critique various aspects of therapy. I discuss the course structure and assignments as well as a pre–post evaluation of student perceptions. I suggest that the research laboratory course improves both specific psychotherapy-related knowledge and skills as well as more broadly defined research and critical thinking skills.

In the clinical and counseling literature, there are numerous articles on the training of counselors and psychotherapists (e.g., Baker, Daniels, & Greeley, 1990; Multon, Kivlghan, & Gold, 1996; Romans, Boswell, Carlozi, & Ferguson, 1995; Stein & Lambert, 1995; Vakoch & Strupp, 2000). Given the expressed importance of the scientist-practitioner model in these training approaches and the increased focus on evidence-based practice (Chwalisz, 2003; Hays et al., 2002; Orlinsky, Botermans, & Ronnestad, 2001), one finds surprisingly little information on teaching the science of therapy, particularly at the undergraduate level.

Many interesting and innovative ways to teach undergraduate students about psychotherapy have been proposed (Akillas, 2003; Low, 1996; Pomerantz, 2003); some authors have even suggested the importance of an approach that pairs the teaching of counseling strategy with the teaching of research methods and theory (e.g., Hoshmand, 1984). However, there is little evidence that such a combination is being explicitly used in undergraduate education. To address this pedagogical gap, I designed a research laboratory course in counseling for advanced undergraduates. Based on the scientist-practitioner model, the course explicitly required students to learn about the strategies of therapy while learning how to analyze and critique those strategies through a variety of research methods.

Course Description

The lab in counseling is a research-based course in which students review the major theoretical and applied topics in counseling. Not all students who take the course have taken previous coursework in counseling; therefore, I provide an overview of ethics and theory at the beginning of the course where we read primary source works from a variety of orientations (e.g., psychoanalytic, psychodynamic, person-centered, gestalt, cognitive-behavioral, multicultural, feminist). I also give a review of statistical and research methods and then provide information about how these general research methods have been applied to the specific content areas in counseling (e.g., basic skills, group therapy, career counseling).

Students meet in lecture and discussion as well as a lab section in which they conduct projects that include both an individually written lab report and an oral group presentation. Specifically, students carry out three lab projects in which they employ a variety of research analytic designs. Each lab simulates what they would actually do to study psychotherapy, including completing an institutional review board form, collecting data, analyzing data, and writing and presenting a report. Finally, the course also includes a research proposal as a final project.

In the first lab, using Fischer and Turner’s (1970) Help Seeking (HS) scale and information about factor analysis, students design a brief questionnaire based on a construct they can compare to the HS scale. For example, students have hypothesized about a wide variety of variables that might contribute to a person’s willingness to seek psychological help (e.g., persistence, self-efficacy, willingness to self-disclose). They create surveys, collect and analyze the data, and present their findings to the class. I chose the survey design for the first lab because most students I work with have used correlational methodologies before taking the counseling research lab.

After having reviewed the major theoretical orientations and basic counseling skills, students engage in role plays for the second lab where one person plays a fictional client and the other plays the helper (and then they switch roles). I ask that they audiotape and transcribe the sessions and then rate the types of verbal techniques they used in the session (Williams, 2002). They then compare the frequency of their use of counseling techniques with those of Rogers, Perls, and Ellis (based on the film series Three Approaches to Psychotherapy; Shostrom, 1965). They also must calculate interrater reliability using a kappa statistic (Suen, 1988). As with all the labs, they individually write up a lab report and make a group presentation of their findings.

Students again have the opportunity to participate in role plays in the third lab to study covert processes in counseling (e.g., client reactions, therapist self-awareness, the therapeutic relationship; for an overview, see Hill & Williams, 2000). After each dyad has completed a mock helping session, the research teams administer questionnaires designed to tap covert processes in clients and helpers. During lecture, students...
learn about conducting a videotape-assisted process recall (Hill et al., 1994); the dyads then watch the videotapes of their sessions while answering questionnaires designed by the student research teams. For this lab, there is much less guidance given about the types of questions they might ask, measures they might use, or analyses they might run. It is a chance for the students to use the information they have been studying all semester.

Finally, students write a research proposal on any topic in the counseling field that interests them. They write a brief literature review and proposed methods and analysis sections and then present their work to the class. Students have the opportunity to study something of unique interest to them (e.g., Buddhist meditation in therapy, importance of race and gender in counseling dyads, proposed outcome comparisons for therapies to treat borderline personality disorder). One extracourse benefit of this final project has been that many students use the research proposal as a basis for their senior capstone project. Several students have used their initial research to further develop a testable research idea and have even presented their findings at a regional psychological conference (e.g., de Gregorio & Williams, 2001; Jobe & Williams, 2003; O’Brien & Williams, 2002).

### Evaluation

I invited students enrolled in the counseling laboratory course to participate in a pre–post assessment of the course. To provide anonymity, I made every effort to protect the identity of the participants, including the use of code numbers (which they chose). I handed out the surveys and then left the room until all students had the opportunity to either complete the survey or leave without completing the survey. Twenty-two students completed the survey. Specifically, they responded to 10 questions related to writing, reading, and knowledge of counseling (see Table 1) at the start of the course (pretest) and at the conclusion of the course (posttest).

The results of the paired samples $t$ tests showed that students rated the lab course experience as quite positive. Table 1 lists the means and standard deviations of the pre- and posttest scores, along with $t$ score results. A Bonferroni correction was used (dividing $p = .05$ by 10) to set a more conservative threshold for significance ($p < .005$). Nine of the 10 items reached significance at this level. For example, students reported that they had gained a better understanding of how to generate testable research ideas, choose appropriate research methods, and choose appropriate statistical tests. They also felt more confident in their knowledge of existing studies and primary findings in the psychotherapy research field. The only item that was not statistically significant was the question about use of American Psychological Association (APA) style. Although students reported feeling more confident in their use of APA style at the end of the course, they had rated this item the highest of the 10 items at pretest, suggesting a ceiling effect. Prior to taking the research lab in counseling, students have completed a year-long sequence of courses in statistics and research methods, which include an emphasis on APA style (Lasane, Hiris, Van Abbema, & Williams, 2003).

### Conclusions

Based on the course evaluation, the course appears to have helped students both in terms of gaining specific counseling-related knowledge and skills as well as in developing their general research and critical thinking skills. The course may help eliminate the false dichotomy between science and practice (Hayes, Barlow, & Nelson-Gray, 1999; Williams & Hill, 2001) while helping students hone their methodological, statistical, and writing skills. Students often erroneously believe that all one needs to do to become a counselor or therapist is to be empathic or want to help people; they rarely consider the more empirical aspects of psychotherapy. Yet by taking a course such as the lab in counseling, students who do pursue careers in counseling or psychotherapy have a professional advantage: they understand the importance of evaluating what happens in therapy and have the skills to analyze their work and the claims of others.

![Table 1. Means, Standard Deviations and $t$ Test Scores for Pretest–Posttest Differences](image-url)

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have an overall understanding of how to choose appropriate research methods to answer questions about psychotherapy.</td>
<td>2.91</td>
<td>4.23</td>
<td>5.48*</td>
</tr>
<tr>
<td>I have a clear understanding of the important details involved in each type of research method (e.g., sampling issues, establishing reliability).</td>
<td>3.32</td>
<td>4.32</td>
<td>4.81*</td>
</tr>
<tr>
<td>I feel confident in my ability to think critically about existing studies in the counseling field.</td>
<td>3.64</td>
<td>4.59</td>
<td>4.28*</td>
</tr>
<tr>
<td>I feel able to generate new testable research ideas about counseling on my own.</td>
<td>2.91</td>
<td>4.55</td>
<td>6.52*</td>
</tr>
<tr>
<td>I know a good deal of the literature on research in psychotherapy.</td>
<td>2.23</td>
<td>4.46</td>
<td>12.86*</td>
</tr>
<tr>
<td>I feel confident in my ability to know which are the appropriate statistical tests to use with different research designs.</td>
<td>2.46</td>
<td>3.23</td>
<td>3.15*</td>
</tr>
<tr>
<td>I feel ready to conduct a research study on psychotherapy on my own.</td>
<td>1.77</td>
<td>4.14</td>
<td>9.42*</td>
</tr>
<tr>
<td>I feel comfortable presenting the results of research studies I have conducted on counseling.</td>
<td>2.73</td>
<td>4.50</td>
<td>7.49*</td>
</tr>
<tr>
<td>I feel confident in my use of APA style.</td>
<td>3.82</td>
<td>4.36</td>
<td>2.24</td>
</tr>
<tr>
<td>I am familiar with the main research findings regarding counseling and psychotherapy.</td>
<td>2.50</td>
<td>4.55</td>
<td>8.60*</td>
</tr>
</tbody>
</table>

*Note: The items were based on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). $^*p < .005$. 

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Notes

1. I thank Wesley Jordan and Terell Lasane for providing comments on a draft of the article.

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A Business-Game Demonstration for the Undergraduate Industrial/Organizational Course

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“Business games” are training tools in which participants make decisions in an environment that simulates the real world. Such games are an important part of the training processes of many companies and almost all business schools, yet contemporary simulations are often too complex, expensive, and time-consuming for use in undergraduate industrial/organizational psychology courses. This article describes a new freely available computer-based business game for such use. Pretest–posttest data indicated that the program improved students’ understanding of such simulations, and attitude-report data indicated that the students found the simulation to be worthwhile, enjoyable, and educational.

“Business games,” often called management games or business simulations, are learning tools in which participants make decisions in a simulated world much as they would in the real world. Such games are often highly specialized, including functions such as marketing, finance, and human resource management (Keys, 1997). A primary purpose of such games is to allow participants to gain experience in making decisions that may help them be more effective in their places of work. As such, many games are tailored to specific business environments: Some currently used games require participants to make decisions as employees of companies manufacturing athletic shoes, running a regional airline, and buying and selling commodities (e.g., Hill & Bender, 1996; Keys, 1997).

Such simulations play an important role in employee training across many industries. For example, in a 2002 study, 57% of 1,488 U.S. companies surveyed indicated that they used business games as part of their training programs in the prior
year (Galvin, 2002). This proportion seems to be stable, as 54% of companies indicated using such simulations in a 1992 survey (Filipczak, 1992). Producers of such games boast that well-known industrial giants such as General Electric, Boeing, and General Motors use them in their training programs (Bolch, 2003). Perhaps because business games play such an important role in employee training, over 97% of member schools of the American Assembly of Collegiate Schools of Business also used such games in 1995 (Wolfe & Rogé, 1997). It is not surprising, then, that many contemporary industrial/organizational (I/O) textbooks discuss such simulations (e.g., Levy, 2003; Riggio, 2003; Spector, 2003).

Because business games are an important part of employee training for many companies and business schools, students in I/O courses should gain an understanding of them. How, then, should instructors help their students understand such an important training tool? Giving students the chance to take part in actual business games is not a viable option. Contemporary business games require specialized knowledge beyond that held by typical undergraduates and take a great deal of time for participants to learn (e.g., Wolfe & Rogé, 1997). In addition, such games may be cost- or time-prohibitive.

This article presents an alternative. I have written a computer-based business game suitable for use by undergraduate students. The purpose of the demonstration is not to teach students any specific management skill or technique, but rather to teach them about business games in general. It requires little time to learn and understand, is engaging, and requires as little as 15 min to complete. Most important, it provides students with an understanding of an important training tool so commonly used in industry and business schools.

**Method**

Twenty-four undergraduate students enrolled in an upper level I/O psychology course took part over 2 days. On the first day, I randomly assigned students to complete one of two six-item examinations consisting of multiple-choice questions about management games. This instrument served as the pretest. Once students completed the test, I provided each of them with an instruction sheet detailing the rules and procedures of a game to be played on the following day. On the second day, students took part in the demonstration, completed the multiple-choice test that he or she had not previously completed, then provided his or her attitudes toward the demonstration.

**The Demonstration**

**Overview.** In the simulation, teams of students serve as the management boards of four different soda companies competing for business on “Sucrose Island.” The island is divided into 12 provinces, each of which has a stable market size. The game is played over the course of a predetermined number of rounds. In each round, teams must decide how much money to spend on advertising in various provinces. When a company advertises in a province, that company’s market share in the province increases, whereas market shares of competing companies decrease accordingly. Teams subsequently earn money from how much product they sell, as determined by their market shares in each province. After each round, the computer calculates each province’s new market shares as well as each team’s new net worth (see Figure 1 for the presentation as students see it). After all rounds are complete, the team with the greatest net worth is declared the winner.

**Procedure.** The procedure follows the three-step procedure of business games as outlined by Biggs (1990), including instruction, decision, and feedback. Biggs’s first step of a business game, instruction, is to present players with a manual. Because the current demonstration is simpler than the common business game, participants instead read a two-sided instruction sheet before class. The sheet describes the rules, procedures, and potential strategies in detail.

Biggs’s (1990) second step of management games involves participants providing their decisions to the game administrator. To provide decisions, each team indicated its advertising choices (e.g., how much to spend on advertising in each province) on a piece of paper. I covered the computer’s projector while I entered each team’s decisions into the computer, so that no team could directly learn other teams’ strategies.

Biggs’s (1990) final step of business games is to provide feedback to the participants after they made their decisions. I did this by uncovering the projector so that students could see which teams had gained and lost market share in which provinces as well as each team’s updated net worth.

**Debriefings.** Finally, I conducted two debriefings. In the first, I asked students to discuss their strategies and how they would play the game next time, modeling debriefings conducted after standard business games. Next, I debriefed students about the demonstration itself, explaining how what they took part in is not altogether different from the complex games played by company executives and business school students.

![](image_url) **Figure 1.** Image of Soda Wars simulation. Each letter, A through L, and corresponding information represents 1 of the 12 provinces. Each number beneath the letter indicates the market share that each team has in each particular province. For example, Team 1 has a 45% share of the market in Province A, a 22% share of the market in Province B, and so forth. The scoreboard at the bottom indicates which round is taking place (Round 2 has just been completed), and how much money each company has (in millions of dollars) at that point in time.
Measurement of Learning and Attitudes

Pretest–posttest items. Each test consisted of six items assessing students’ understanding of business games. To choose the correct answers, students needed to rely on their experience in taking part in the simulation (see Table 1 for question items).

Student evaluation of demonstration. Five items with response options ranging from 1 (strongly disagree) to 5 (strongly agree) measured the extent to which the demonstration was enjoyable, interesting, and useful.

Results

Empirical Assessment of Learning

A paired-variables t test assessed student learning. Participants provided significantly more correct responses after taking part in the demonstration (M = 3.79 correct items out of 6, SD = 0.93) than before taking part (M = 2.38, SD = 1.17), t(23) = 4.18, p < .001.

Student Evaluations of the Demonstration

Students enjoyed the demonstration (M = 4.50, SD = .51), found it interesting (M = 4.50, SD = .51), and believed future I/O classes should experience it (M = 4.58, SD = .50). In addition, students believed that they learned about management games through the exercise (M = 4.46, SD = .51) and that they better understood how managers and executives work together to make decisions (M = 4.13, SD = .61).

Conclusions

The business game is a common tool used for employee training in both companies and graduate business schools. Because these games are so ubiquitous in the business world, students should have the opportunity to learn about them in undergraduate I/O courses. To date, however, instructors of I/O courses have been restricted to simply describing the games rather than actually demonstrating them. This research shows that a scaled-down demonstration game can explain how business games work, and in so doing, demonstrate to students the concept of employee training on a more general level. Because students both learned from and enjoyed the demonstration, the demonstration may prove useful for I/O courses.

References


Notes

1. All “Soda Wars” materials (computer program, instruction sheet, game-play materials) are freely available at http://psych.eiu.edu/bizer/soda.html. The program works on any PC and requires no additional software to run.
2. I thank William E. Addison for his valuable comments on an earlier draft of this article.
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