

4-2002

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Dawn W. Massey  
Fairfield University, [dmassey@fairfield.edu](mailto:dmassey@fairfield.edu)

Patricia Poli  
Fairfield University, [ppoli@fairfield.edu](mailto:ppoli@fairfield.edu)

Richard Proctor

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### Repository Citation

Massey, Dawn W.; Poli, Patricia; and Proctor, Richard, "The development and evaluation of a team-based audit simulation in the introductory auditing course" (2002). *Business Faculty Publications*. 100.  
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### Published Citation

Dawn Massey, Patricia Poli and Richard Proctor. 2002 "The development and evaluation of a team-based audit simulation in the introductory auditing course", Presented by P. Poli at The American Accounting Association's Northeast Regional Meeting, Providence, April 2002

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**THE DEVELOPMENT AND EVALUATION OF A TEAM-BASED AUDIT  
SIMULATION IN THE INTRODUCTORY AUDITING COURSE**

**Dawn W. Massey**

Assistant Professor of Accounting  
Charles F. Dolan School of Business  
Fairfield University

**Patricia M. Poli \***

Assistant Professor of Accounting  
Fairfield University  
Charles F. Dolan School of Business  
Fairfield, CT 06430  
Office: (203) 254-4000 x 2882  
Home: (203) 426-5779  
Fax: (203) 254-4105  
Email: [ppoli@mail.fairfield.edu](mailto:ppoli@mail.fairfield.edu)

**Richard J. Proctor**

Professor of Accounting  
Ansell School of Business  
Western Connecticut State University

**\* Corresponding Author**

## THE DEVELOPMENT AND EVALUATION OF A TEAM-BASED AUDIT SIMULATION IN THE INTRODUCTORY AUDITING COURSE

### Abstract

For more than a decade, leaders in the accounting profession have been calling for changes to both the content and delivery of accounting courses. Three key concerns identified by these leaders are failure to incorporate in our courses: active learning activities, cooperative learning activities, and real-world examples. We address these concerns by designing a team-based audit simulation for use in the introductory auditing course. This paper describes not only the simulation, but also the evaluation of it using three measures: student response, practitioner response, and faculty response. All respondents judge the simulation as realistic. Further, students rated their learning and team experiences in working on the *Proli* simulation more favorably than they had anticipated ex ante, suggesting the active and cooperative learning features of the simulation are well-received by students. Practicing auditors assessed the simulation as a useful learning tool and confirmed the importance of the team experiences inherent in *Proli*. Given these results coupled with the adaptability of the simulation, we believe *Proli* makes an important and noteworthy contribution to accounting education in the new millennium.

*Keywords:* audit education, simulation, active learning, cooperative learning

## **THE DEVELOPMENT AND EVALUATION OF A TEAM-BASED AUDIT SIMULATION IN THE INTRODUCTORY AUDITING COURSE**

### **Motivation**

Leaders in both the academic and professional sectors of the accounting profession have been calling for a change in the education of accounting students for more than a decade (e.g., Accounting Education Change Commission, 1990; American Institute of Certified Public Accountants, 1999b; Arthur Andersen et al., 1989; Bedford Committee, 1986; Institute of Management Accountants, 1994). Recently, they jointly participated in issuing a statement, *Accounting Education: Charting the Course through a Perilous Future* (Albrecht and Sack, 2000) in which the authors repeat the prior calls of the profession's leaders in suggesting that accounting educators need to change not only the content of many courses, but also the way that courses are delivered.

One very important recommendation for educators regarding changes to the content of extant courses is to link classroom experiences to “practice reality” (Albrecht and Sack, 2000; Arthur Andersen et al., 1989). Indeed, Albrecht and Sack (2000) criticize accounting education for its lack of use of real-world examples. They highlight the comments of a focus group participant (a recent college graduate), who noted, “I’ve found that I’d never had any hands-on stuff in school—you only get that in the internship you go to during the summer. Other

than that, you get zero hands on, it's all textbook. You get out in the real world, and in these last six months, I've found it's not textbook. It's very much looking at things and seeing how the numbers interact with each other and seeing that relationship that no one helped me understand in school'" (Albrecht and Sack, 2000, 51).

With respect to the way that we deliver our courses, Albrecht and Sack (2000, 43) write, "Our rule-based, memorization, test-for-content, and prepare-for-certifying-exam educational model is inefficient, but more importantly, it does not prepare students for the ambiguous business world they will encounter upon graduation." In particular, Albrecht and Sack (2000) echo calls from the Accounting Education Change Commission's (AECC) 1990 position paper in suggesting that accounting educators emphasize group experiences in their courses.

Further, Albrecht and Sack (2000) repeat prior calls for accounting faculty to include active learning experiences in their classes. This suggestion is similar to those posed by the Bedford Committee's (1986) report and the AECC's (1990) position paper. The Bedford Committee report urges faculty to "design educational experiences for students that require them to be active, independent learners and problem solvers rather than passive recipients of information" (p. 187). The AECC position paper (1990, 309) states "learning by doing should be emphasized."

Thus, three key concerns with accounting education are identified – failure to incorporate in our courses: real-world examples, cooperative learning activities, and active learning activities. Inspired by the national recognition of these weaknesses in the content and delivery courses in the accounting curriculum, we decided to address them in the course designed to prepare our graduates for careers in public accounting – the introductory auditing course.

### **Literature Review**

Knechel (2000, 709) recently provided the following insight for educators:

So what should we, as auditing educators, be doing to respond to [the] challenges [we are facing]? At a minimum, instructors should continue to develop and make available instructional materials that *move the student from the role of passive recipient of information to an active participant* in a dynamic and interactive learning experience. Educational approaches to auditing that increase a student's ability in critical reasoning, effective information search, and making decisions are clearly desirable. *The use of realistic cases and audit simulations are examples of effective approaches. Role playing...and group assignments* are also useful in providing students with an appreciation of the interactive, judgmental, and decision-making aspects of the audit process.

Second, *students should be introduced to the new audit methods that have been developed by the Big 5* and that are now in use on most large, audit engagements. Even entry-level staff are being asked to conduct more control and risk analysis and less traditional substantive testing. Since few audit

textbooks incorporate these methods in a meaningful manner, exposing students to such topics will require significant instructor effort. (Emphasis added.)

Thus, in teaching auditing students, Knechel (2000) suggests using real-world examples and activities (such as simulations that utilize risk-based auditing approaches), team activities, and active learning strategies. Findings from the literature for each of these three areas will be discussed in turn.

#### *Real-World Examples*

Consistent with recommendations in Arthur Andersen et al. (1989), results in some studies suggest the importance of linking classroom experiences in the auditing course to “practice reality” (Etnier, 1983; Mohrweis, 1993). For instance, Etnier (1983) found that an exercise using completed working papers helped the students to obtain a more realistic understanding of the nature and function of audit documentation. Mohrweis (1993) found that case materials enhance student understanding of audit planning and risk assessments.

#### *Cooperative Learning*

Cooper et al. (1990, 1) define cooperative learning as, “An instructional technique which requires students to work together in small fixed groups on a structured learning task.” Students in Pillsbury’s (1993) study analyzed internal control

cases in a team atmosphere and achieved higher test scores than did previous classes however, her study did not specifically test the effect of cooperative learning on performance. Indeed, we found no study that has directly assessed the appropriateness of cooperative learning in audit education.<sup>1</sup>

Nonetheless, Cottell and Millis (1992) as well as Bryan and Prater (1991) addressed cooperative learning in accounting courses in general. Several authors have assessed the appropriateness of cooperative learning exercises for introductory financial accounting (Albrecht, 1995; Knechel, 1989; Knechel and Rand, 1994; Ravenscroft et al., 1995; Specht and Sandlin, 1991), managerial accounting (Lancaster and Strand, 2000; Adler and Milne, 1997; Peek et al., 1995; Tyson, 1986), and intermediate accounting (Catanach et al., 2000). Consistent with recommendations from leaders in our profession (AECC, 1990; Albrecht and Sack, 2000; Bedford Committee, 1986), the general conclusion reached in all the above studies is that cooperative learning is a valuable pedagogical technique in accounting education. Specifically, students enjoy the courses more, are more motivated to learn, think they understand the material better and achieve higher grades than control groups using the traditional lecture-only format.

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<sup>1</sup> Although Dombrowski (1993) reports on an approach using teams to provide students with practical experiences in operational audits, the author does not assess the students' performance relative to their cooperative learning experience.



### *Active Learning*

According to Bonwell and Eison (1991, 2), active learning is, “anything that ‘involves students in doing things and thinking about the things they are doing.’”

Results from studies investigating the relationship between the use of active learning techniques and performance in accounting suggest the value of active learning techniques for accounting education (Ferguson et al., 2000; Groomer et al., 1992; Pillsbury, 1993; Scheiwe and Radich, 1997).

Groomer et al. (1992) used an audit simulation and found that the students participating in the simulation were better able to apply the information that had first been presented in a lecture format. Pillsbury (1993) also found an active learning technique useful. In her study, auditing students evaluating internal control using a game were able to achieve higher test scores on this topic than previous classes that had received instruction only via lecture format. Similarly, Ferguson et al. (2000) found that students with internships in public accounting who also completed a traditional auditing course scored marginally closer to practicing auditors than did students without internships in public accounting.

Not surprisingly, Albrecht and Sack (2000, 55) report that faculty and practitioners alike rank internships with companies that last three to four months as the most important of six different out-of-classroom learning activities.<sup>2</sup>

However, it is not always possible for students to participate in public accounting

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<sup>2</sup> Note that other choices included: field study projects with real companies; service learning assignments; shadowing professionals; foreign business trips; and online (internet) classes.

internships and, due to competitive pressures in the profession, public accounting firms prefer that new recruits who enter the profession require a minimum of on-the-job training (Earley, 2001).

Fortunately, evidence from colleagues in psychology suggests that individuals who work through a single, real-world problem can abstract the underlying features of the problem and transfer the knowledge when solving new problems (Chi et al., 1989; Zhu and Simon, 1987). Thus, despite the potential difficulty in providing students with real-world experiences through internships, evidence from psychology suggests that providing students with activities such as simulations, “whose rules tend to generate in the total behavior of the participants a model of some real world process” (Heyman 1975, 11), can proxy for internship experiences.

### **Development of the Audit Simulation**

Because simulations offer the advantage of providing an activity for participants to behave as if they were in a real-world setting (Heyman, 1975), we believe a simulation of an audit addresses the calls for action from the leaders in our profession to link classroom experiences to practice reality. Further, simulations have the added benefit of being not only capable of incorporating cooperative learning techniques (c.f., Cottell and Millis, 1993; Dombrowski, 1993; Peek et al.,

1995), but also, by their very nature, serving as active learning activities (c.f., Bonwell and Eison, 1991; Dombrowski, 1993; Ferguson et al., 2000).

Thus, in consultation with practitioners, and as more fully described below, we developed a simulation of an audit (*Prolis*) to afford students the opportunity to work (in teams) through all phases of a mock audit. After development of the *Prolis* simulation, we assembled a group of three experienced audit partners (Delphi panel) to ensure that the simulation provided realistic and appropriate experiences for the students.

We use a risk-based audit approach in *Prolis* because the auditing profession focuses on using a risk-based audit approach (Bell et al., 1997; Cushing et al., 1995; Knechel, 2000). Further, we present a high-risk scenario for the students because using a high-risk scenario makes the discussions of audit risk more relevant and raises issues related to risk areas, thereby facilitating the students' in-class discussions. Based on feedback from practitioners, high-risk factors that we included are: first-year audit of a family-owned business, imminent decision to go public, lack of accounting policy manuals as well as supervisory review, unsophisticated accounting managers, and lack of an audit committee (AICPA, 1999a; Beasley, et al., 2000; Konrath, 2001, 177-179; Wells, 2000).

### *Topical Coverage in the Simulation*

The course begins with coverage of the following rudimentary audit topics: audit evidence, audit planning, audit program design, workpaper techniques, internal control evaluation, and risk assessment. These topics are covered using both lecture and discussion. Consistent with Knechel's (2000) recommendations, subsequent assignments in the *Proli* simulation involve the *application* of audit procedures to specific cycles and areas of the balance sheet and income statement such as revenue recognition, prior period adjustments, lease classification, income tax calculations and related party transactions. (Appendix A contains a detailed list of the assignments.)

To enhance instructors' ability to integrate the simulation into their courses, the assignments are designed to correspond to typical course and textbook content (see, e.g., Knechel, 2000; Konrath, 2001). Thus, the assignments are used to reinforce information in the textbook by requiring the students to perform specific audit procedures, to relate those procedures to management assertions and to analyze the resultant audit evidence, often applying knowledge from previous accounting courses (intermediate, advanced, tax). For example, in the "completing the audit" assignment, the audit teams must prepare an adjustment to record deferred income taxes and prior period adjustments for income tax related transactions that were incorrectly recorded by the client. Interestingly, consistent with Adler and Milne's [1997] peer assisted learning

approach, *Proli's* team-based approach allows the instructor to cover more audit content areas because the students learn not just from the instructor, but also from themselves and their teammates.

### *Administration of the Simulation*

We also are careful to ensure that our simulation includes appropriate grouping, an emphasis on social skills and group monitoring (Cottell and Millis, 1993). No less than three and no more than five individuals make up each group. As Cottell and Millis (1993, 41) suggest, teams of this size “work effectively because they are small enough to promote interaction, large enough to tolerate an occasional absence, and balanced enough to permit focused activities in pairs.”

Each team completes and hands in each of the nine assignments weekly and a different team is responsible each week for making that week’s presentations to the class. The student presentations consist of two parts: a meeting with the client (i.e., the instructor) and the actual presentation of the audit findings and recommendations for the specific assignment.

The meeting with the client provides the presenting audit team with the opportunity to obtain additional information and to clarify information contained in the client-prepared schedules. Importantly, through the meeting with the client, students hone an important, but often-overlooked skill: interviewing (Wells, 2001). After the presenting group obtains additional information from the client

(during a meeting which non-presenting teams observe), all of the teams work independently to complete the assignment. After all groups turn in their assignments, the team responsible for presenting the findings to the class then gives a thirty-minute professional presentation using appropriate audio and visual aids. Members of the presenting team are required to answer any questions from the class and the instructor regarding their presentation.

We emphasize social skills in the simulation by giving written feedback on both the meeting and the formal presentation. Prior to the start of the *Proli* simulation, the students are reminded that these activities are to be conducted in a professional manner and that the presentations are graded for content *and* professional demeanor. The written feedback given to the teams is based on evaluations from both the instructor and peers. Finally, we monitor the groups by requiring students to submit to the instructor “report cards” to assess the participation of other members of the group. This confidential mechanism allows the instructor to assess relative participation levels among all members of the group.

#### *Cooperative Learning Features of Simulation*

Our simulation draws on many facets of cooperative learning. As noted in Arthur Andersen et al. (1989) students need to learn to function well as a team and be able to make group decisions. The *Proli* simulation requires that the student audit

teams work together to determine appropriate additional information required from the client, to complete audit documentation and to reach a consensus regarding the required audit adjustments and audit recommendations. The AECC (1990) emphasizes the need for students to possess communication skills, including “both receiving and transmitting information and concepts . . .” (p. 307). The students must rely on information they receive from the client during client meetings and present their findings in both written and oral form. We thus allow the students to hone their interpersonal and communication skills.

An important element of cooperative learning is group (or positive) interdependence (Cottell and Millis, 1993; Peek et al., 1995). Positive interdependence is achieved when students have a “vested interest in working together” (Cottell and Millis, 1993, 41). Peek et al. (1995) describe four ways to achieve group interdependence: 1) positive goal interdependence 2) positive reward interdependence; 3) positive resource interdependence; and 4) positive role interdependence. Goal interdependence is achieved by exempting from the final exam the one group with the highest final score on the simulation. This also results in greater constructive competitiveness and prevents the students from divulging confidential client information to other teams (i.e., sharing solutions). This gives the teams a clear goal (i.e., goal interdependence) that can lead to a definite reward for the winning team (i.e., reward interdependence).

In addition, some assignments are very detailed and require a review of material from previous courses. Students quickly realize that they must divide the preparatory work and be efficient at sharing and applying knowledge in the team meetings. This results in what Cottell and Millis (1992, 96) describe as “locating knowledge in the community rather than in the individual” and achieves both positive resource and role interdependence.

The second important feature of cooperative learning is individual accountability (Cottell and Millis, 1993). That is, despite working in a group environment, it is important to assess students’ academic achievements individually to ensure that grades of “free riders” do not unfairly reflect their achievements. To enhance individual accountability, the audit simulation comprises only about one-third of the students’ course grade. Individually earned grades comprise the remaining two-thirds of the students’ course grade. Independent exams make up about 50 percent of the students’ individual grades (i.e., about one-third of the course grade).<sup>3</sup> Because exams cover information in the simulation as well as the textbook, exam grades for “free riders” in the cooperative learning experience would suffer. Accordingly, we achieve individual accountability by not only limiting the proportion of the students’ course grade awarded for group performance, but also by assessing individual performance through students’ independent achievement – particularly on exams.

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<sup>3</sup> Note that students’ individual grades are also derived from: homework and in-class participation.



### *Delphi Panel Assessment of Simulation*

To assess realism of the simulation as well as appropriateness of the activities it includes, we asked a panel of three audit partners (Delphi panel) to review and evaluate the simulation. The Delphi panel included two men and one woman. Two of the partners work in Big 5 firms and one works in a local CPA firm. On average, the Delphi panel members reviewing the *Proli* simulation materials had over 21 years of audit experience (range 17-30 years), of which more than 10 years were at the partner level (range 7-16 years).

After reviewing the *Proli* simulation materials, members of the Delphi panel indicated the degree to which they agree (strongly agree – agree – neutral – disagree – strongly disagree) with each of three key statements:

- 1) *Proli* simulates the team working environment inherent in auditing.
- 2) *Proli* provides an experience that simulates a real-life audit.
- 3) The topics included in *Proli* are relevant for auditors.

As shown in Table 1, all Delphi panel members strongly agreed or agreed with each of the three statements. Two of the partners also provided written comments about the simulation. The first noted, “The materials are appropriate. We have found that ‘how’ it is taught determines the true ‘simulation’ impact to the staff.” The second thanked us for the opportunity to review our, “impressive audit simulation” adding, “I am so impressed that I’d like to present this to the auditing instructors at [another university], with your permission. In all my years

of studying auditing, I can honestly say that I have not seen an auditing simulation as comprehensive.” Because the audit partners’ assessments suggested that the simulation is not only realistic, but also that it includes appropriate activities, we began using it in the introductory auditing course during the spring 2000 semester.

**(Table 1 about here.)**

### **Evaluation of the Audit Simulation**

We measure success of the *Proli* simulation in three ways: based on student response, based on practitioner response, and based on faculty response to the simulation. Student response to the simulation is based on both a qualitative measure and a quantitative measure. The qualitative measure of student response is derived from comments from students who used the simulation. The quantitative measure is based on a comparison of student responses to questions both before and after they participated in the simulation.

Practitioner response to *Proli* is derived from opinions about the simulation from practicing auditors who, as undergraduates, used the simulation in their introductory auditing course. Faculty response to the simulation is based on the willingness of faculty not involved in development of the simulation to adopt and retain it.

### *Student Response*

Students at one private university using the simulation completed both a pre- and post-survey to assess their perceptions about the learning experience associated with the simulation, prior experiences with practice sets, and team assignments as well as expectations about the real-life potential for a simulation. (A copy of the pre-survey appears in Appendix B; a copy of the post-survey appears in Appendix C.)

Table 2 contains descriptive information about the students included in this study. According to Barron's (2000), they are drawn from an independent Jesuit institution located in New England with approximately 4,100 students. A majority of the students are Catholic and have graduated from public high schools. The school requires successful candidates for admission to be in the upper 40% of their class, with an average of B or better. The average SAT score is 1171. All students are senior accounting majors in the 19-25 year age range. More than half the students (35 out of 65) have participated in audit internships. Of the remaining 30, eight have worked in other departments in public accounting firms and 22 have not worked for a public accounting firm. Interestingly, very few of the students have used practice sets in any other courses, including accounting (20 percent of those who responded to this question). In addition, 30 students (46 percent) indicated that they had previously participated in a team assignment.

**(Table 2 about here.)**

*Qualitative Measure:* Table 3 contains a list of selected student comments.

Overall students felt that the simulation was a good learning tool and provided them with a real-life experience. They believe that not only was the audit simulation realistic, but that it will help them to “hit the ground running” when they begin their audit careers. They indicated that the group experience was an important component that was necessary for success in completing the simulation. The students think that the simulation and teamwork experience helped them to improve their individual auditing knowledge. This suggests the students not only felt the simulation was realistic, but also appreciated the cooperative learning experience.

**(Table 3 about here.)**

*Quantitative Measure:* Table 4 contains a summary of student responses to pre- and post-survey questions about their expectations and experiences in taking part in the simulation. The question pairs are intended to assess the success of our simulation in addressing all three weaknesses in traditional accounting education. Thus, we assess: realism of the assignments, the students’ opinions about the quality of the cooperative learning experience inherent in the simulation, and the

benefits students derived from participating in the simulation as an active learning activity. Note that because no differences by gender were detected, we present only total sample results in Table 4.

**(Table 4 about here.)**

To assess differences in expectations and experiences for the perceived realism of the simulation, subjects responded to pre-survey (post-survey) question number eight (four), “Do you think that this audit simulation will be (was) like an actual audit experience?” on a five-point Likert scale. One, signifying, “It won’t be (wasn’t) like an audit” and five, signifying, “It will be (was) like working on an audit” anchored the scale. As shown in Table 4, the students’ average response to the pre-survey question was 3.3, while their average response to the post-survey question was 3.7. Thus, students’ rated their experiences as more realistic than they had expected, *ex ante*.

The second survey question pair focuses on the students’ cooperative learning experience with the simulation vis-à-vis other team assignments. On a five-point Likert scale, pre-survey question 11a (post-survey question 5) asked students to indicate, “How would you rate your experience working on a team assignment (the team working experience)?” One, signifying “Poor experience” and five, signifying, “Excellent experience,” anchored the scale. As shown in

Table 4, the students' average response to the pre-survey question was 3.3, while their average response to the post-survey question was 4.1. Thus, students rated their team experiences with the simulation more favorably than they rated their prior team experiences.

Finally, to assess differences between expectations and experiences regarding the extent to which the *Proli* simulation (an active learning activity) enhanced students' knowledge of the topics covered in the course, students responded to pre-survey question seven and post-survey question three. The pre-(post-) survey question queried, "What do you think your personal learning experience will be (How would you rate your personal learning experience) from using this audit simulation?" Responses were elicited on a 5-point Likert scale anchored by one, "Poor learning experience," and five, "Outstanding learning tool." As reported in Table 4, the students' average response to the pre-survey query was 3.6, while their average response to the post-survey query was 4.1. Thus, students rated more favorably their learning experiences for topics covered in the course than they had expected those experiences to be at the outset of the simulation. This suggests that students felt that the simulation, as an active learning activity, enhanced their learning experiences.

As described above, both qualitative and quantitative results from the students suggest that: the simulation was realistic (in fact, more realistic than the students had believed, *ex ante*); the cooperative learning experience inherent in

the simulation was generally a positive one; and the simulation (as an active learning experience) improved their individual learning of the material covered in the course. Taken together, these results indicate that student response to the simulation is positive.

### *Practitioner Response*

We also conducted a follow-up survey of 34 former students working in public accounting.<sup>4</sup> Responses from 16 (47%) were received. Of these 16, only 12 work in the audit department of their firm. All 12 respondents are first year staff.

*Qualitative Responses:* Overall the auditors believed that the *Proli* simulation was a helpful learning tool and that it was realistic. Their comments were:

- ✓ Good hands-on experience
- ✓ What we learned was very important
- ✓ I actually applied much of what I learned

One respondent also noted that the skills obtained working on a team assignment were important by writing:

- ✓ I am always working with other people

Because practicing auditors may be better qualified to assess the actual working environment auditors face, their responses suggest the validity of the

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<sup>4</sup> The number of students using the simulation was 65, but we were not able to obtain the addresses of all graduates and some do not work in public accounting

students' opinions. Accordingly, the practitioners' qualitative responses reinforce the opinions of the students and indicate that the simulation was a realistic learning tool.

*Quantitative Responses:* The first question (question 5) in the follow-up survey focused on the team experience. The auditors indicated that their current work environment is more team-based than individual. Using a five-point Likert scale, the auditors were asked, "Regarding your current work experience, do you think that you," one, "always work by yourself," through five, "always work in a group environment." Sixty-seven percent of the respondents described their current work environment as a four or five. This suggests the appropriateness of utilizing, in an auditing course, a simulation like ours that incorporates cooperative learning activities.

The second question (question 6) on the follow-up survey is intended to assess the simulation as a useful learning tool. It asks, "As you remember your experiences with the *Proli* simulation: Did the simulation prepare you for your current audit experience?" For this question, one, signifying "Poor training experience," and five, signifying, "Outstanding training tool," anchored the scale. Sixty-seven percent of the respondents rated as four or five the ability of *Proli* to prepare them for their current audit experience.



Taken together, responses from practicing auditors who had utilized the simulation in their introductory auditing course suggests not only the realism of the simulation, but also the appropriateness of the cooperative learning experience inherent in it. Moreover, because practitioners consider the simulation a useful learning tool, the value of the simulation as an active learning activity in audit education is also supported.

### *Faculty Response*

Five institutions in New England have adopted the simulation; three of them are not affiliated with an author of the simulation. Of the non-author-affiliated adopting institutions, two are public and one is private. The non-author-affiliated institutions decided to use the *Proli* simulation after it was described to them. Further, they have expressed an interest in using it in the future. According to Barron's (2000), the three schools range in size from 3,100 students to 9,400 students with average SAT scores between 960 and 1050.<sup>5</sup> Thus, faculty members from both public and private as well as small and large schools have favorable opinions about the simulation, suggesting that faculty response to the simulation is positive.

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<sup>5</sup> The other author-affiliated adopting institution has 4,600 students and an average SAT score of 965.

## **Conclusion**

Our introductory auditing simulation uses an innovative approach to address our profession's calls for students to complete real-world cases by engaging in cooperative and active learning activities (AECC, 1990; AICPA, 1999b; Albrecht and Sack, 2000; Arthur Andersen et al., 8, 1989; Bedford Report 1986; IMA, 1994; Knechel, 2000). Additionally, students, practitioners, and faculty have positively received it. Accordingly, because our introductory auditing simulation is easily adaptable by other schools,<sup>6</sup> we believe that it makes an important and noteworthy contribution to accounting education in the new millennium.

## **Acknowledgements**

The authors gratefully acknowledge the helpful comments of participants at the 2001 Northeast Business and Economics Association annual Conference as well as the audit partners who served on the Delphi panel.

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<sup>6</sup> The audit simulation is currently available to other faculty (contact the corresponding author for details).

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**Table 1**

**Delphi Panel Responses to Evaluative Questions  
Regarding *Proli* Simulation Materials**

INSTRUCTIONS: After reviewing the *Proli* simulation materials, please indicate the degree to which you agree with each of the following statements:

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	<i>Proli</i> simulates the team working environment inherent in auditing.	3				
2.	<i>Proli</i> provides an experience that simulates a real-life audit.		3			
3.	The topics included in <i>Proli</i> are relevant for auditors.	2	1			

**Table 2**

**Descriptive Information about Students**

	Female	Male	Total
# (%) who are 19-25 years old	34 (100%)	31 (100%)	65 (100%)
# (%) who have audit internship	18 ( 53%)	17 ( 55%)	35 ( 54%)
# (%) who previously used a practice set	2 ( 6%)	4 ( 13%)	6 ( 9%)
# (%) who previously worked on team assignment	13 ( 38%)	17 ( 55%)	30 ( 46%)



**Table 3**

**Selected Student Comments about the Simulation**

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*Regarding the simulation – its realism and topical coverage:*

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- The simulation did a good job of teaching the actual audit process and allowed an opportunity to use existing (hopefully!!) knowledge in a real life situation.
- I think this simulation is a very good learning tool because it has a “real world” feel to it
- I believe the simulation is very much like a real audit, since at this time, the auditors are at my company doing an audit and this year I really understand what they are asking for and why
- This does simulate a real audit
- Will help us prepare for actual accounting work.
- This was a good tool
- Textbook does not prepare you to effectively complete an audit – the simulation helps

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*Regarding the cooperative learning process:*

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- The group was great for bringing in shared experiences and ideas
- I learned a lot from working with others
- The group process was fine – very productive and educational
- I thought the group part was a valuable experience
- Each section took a lot of time and working in groups helped
- Group process was essential for getting through the simulation
- I’m not convinced the group process is a necessary part of the learning experience
- I feel lucky to have worked with the group I was in. Everyone was very cooperative and we worked hard together
- I liked the size of the group – 3 is a manageable number for arranging meeting and it is also enough to get more knowledge sharing among the group
- I made two new friends
- Possibly consider creating new groups for every assignment so people can experience working with different people

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**Table 4**

**Summary of Responses to Pre- and Post- Survey Question Pairs**

<b>Pre-Survey</b>			<b>Post-Survey</b>			<b>Change</b>
<i>Question Number/ Text</i>	<i>Likert Scale Anchors</i>	<i>Subjects' Average Response</i>	<i>Question Number/ Text</i>	<i>Likert Scale Anchors</i>	<i>Subjects' Average Response</i>	<i>Pre- to Post- Survey</i>
8. Do you think that this audit simulation will be like an actual audit experience?	1=It won't be like an audit 5=It will be like working on an audit	3.3	4. Do you think that this audit simulation was like an actual audit experience?	1=It wasn't like an audit 5=It was like working on an audit	3.7	+0.4
11a. How would you rate your experience [in working on a team assignment]?	1=Poor experience 5=Excellent experience	3.3	5. How would you rate the team working experience?	1=Poor experience 5=Excellent experience	4.1	+0.8
7. What do you think your personal learning experience will be from using this audit simulation?	1=Poor learning experience 5=Outstanding learning tool	3.6	3. How would you rate your personal learning experience from using this audit simulation?	1=Poor learning experience 5=Outstanding learning tool	4.1	+0.5

**APPENDIX A**  
**List of Assignments Contained in the Audit Simulation**

**INTRODUCTORY MATERIALS:**

1. *Overview*
2. *Prolif Footwear, Inc.*
3. *The Auditors: West & Fair, CPAs LLC*
4. *Organizing & Starting The Audit*
5. *Audit Documentation Format and Technique*
6. *Tickmark Conventions*
7. *Audit Documentation Helpful Hints*
8. *Student Analyses and Presentations*
9. *Submitting Your Written Group Assignments*
10. *Timeline for the Audit*
11. *Audit Budget*
12. *Grading Guidelines*
13. *Information for Instructors*
14. *1998 Client Prepared Draft Financial Statements*
15. *1998 Client Prepared Working Trial Balance*

**ASSIGNMENTS:**

1. *Creating the Permanent File*
2. *Planning the Audit*
3. *Auditing Cash*
4. *Auditing the Accounts Receivable and Sales Cycle*
5. *Auditing the Inventory and Purchases Cycle*
6. *Auditing Long-Lived Assets*
7. *Auditing Liabilities*
8. *Auditing Stockholders' Equity and Final Accruals*
9. *Completing the Audit*



**APPENDIX C**  
**Survey Given At the End of the Audit Simulation**

1. Your name.....
2. Gender (circle one).....Female.....Male .....
3. How would you rate your personal learning experience from using this audit simulation?  
1..... 2..... 3..... 4.....5  
Poor learning experience Outstanding learning tool
4. Do you think that this audit simulation was like an actual audit experience?  
1..... 2..... 3..... 4.....5  
It wasn't like It was like working  
an audit on an audit
5. How would you rate the team working experience?  
1..... 2..... 3..... 4.....5  
Poor experience Excellent experience
6. Please list any comments or suggestions regarding possible improvements to this  
simulation .....
7. Please list any comments or suggestions regarding possible improvements to the group process  
.....

**APPENDIX D**  
**Follow-Up Survey for Students Working in Public Accounting**

1. Your name: .....

2. Name of your employer: .....

3. Office: .....

4. In which area do you do the majority of your work:  
Tax                  Audit                  Consulting                  Other (please specify)

5. Regarding your current work experience, do you think that you:  
1..... 2..... 3..... 4.....5  
Always work by myself                                  Always work in a group environment

6. As you remember your experiences with the *Proli* simulation: Did the simulation prepare you for your current audit experience?  
1..... 2..... 3..... 4.....5  
Poor training experience                                  Outstanding training tool

7. If you have time (or at a later date), feel free to give comments about possible improvements to the simulation and for the group process used in the simulation.  
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