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Main article

Accounting education literature review (2000–2002)

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1. Introduction

This paper extends a series of accounting education literature review articles[1] through 2002. The purpose of this series is to organize and summarize accounting education research, which should in turn (1) facilitate application of acquired knowledge and ideas in the classroom and in administration (curriculum and faculty issues) and (2) spark ideas for future research that extend current lines of inquiry or expand into undeveloped areas. Articles in four journals dedicated to accounting education are reviewed: *Journal of Accounting Education*, *Accounting Education*, *Advances in Accounting Education*, and *Issues in Accounting Education*. The issues and volumes of these journals are presented in Table 1. Two hundred and six articles are reviewed in this paper compared to 216 in the prior 3-year period.[2]

Brief reviews of both empirical and descriptive articles are presented. As shown in Table 2, 89 empirical articles and 117 descriptive articles were published in the four journals during 2000–2002. Each journal published both types of articles in approximately equal numbers with the exception of *Accounting Education*, which published 58 descriptive and 34 empirical articles. Articles that present teaching materials and cases for use in the classroom are not reviewed in the body of this article or included in the references; instead they are presented in the Appendix.

Reviews of empirical and descriptive articles are categorized into five traditional lines of inquiry: (1) assessment, (2) curriculum and instruction, (3) educational technology, (4) faculty issues, and (5) students. Subcategories are included when appropriate, and summaries of trends and research suggestions are included for each

Table 1
Journal issues reviewed

Journal	First issue reviewed			Last issue reviewed		
	Vol.	Num.	Date	Vol.	Num.	Date
Journal of Accounting Education	18	1	Winter 2000	20	4	2002
Accounting Education	8	4	December 1999[a]	11	4	2002
Advances in Accounting Education	2		2000	4		2002
Issues in Accounting Education	15	1	February 2000	17	4	2002

[a] The December 1999 issue of *Accounting Education* was not included in Apostolou et al. (2001) because the issue was not available until early 2001. It is included here for completeness.

[1] Apostolou, Watson, Hassell, and Webber (2001) reviewed accounting education literature published from 1997 through 1999. Three prior review series papers addressed literature prior to 1999: Rebele, Apostolou, Buckless, Hassell, Paquette, and Stout (1998a, 1998b); Rebele, Stout, and Hassell (1991); and Rebele and Tiller (1986).

[2] In the previous review, articles in *The Accounting Educators' Journal* were reviewed, but new issues of this journal have not been published since Fall 1998. Though one journal dedicated to accounting education was lost, the quantity of articles published in a 3-year period has not significantly declined.

Table 2
Journals and article types by category[a]

	JAEd		AE		AAE		IAE		All journals		
Category	E	D	E	D	E	D	E	D	E	D	Sum
Assessment			2				1	1	**3**	**1**	**4**
Curriculum and Instruction	5	21	13	38	6	13	6	16	**30**	**88**	**118**
Educational Technology	2	3	4	2	3		2	1	**11**	**6**	**17**
Faculty Issues	10		4	15	3	1	3		**20**	**16**	**36**
Students	5	1	11	3	4		5	2	**25**	**6**	**31**
Journal total	**22**	**25**	**34**	**58**	**16**	**14**	**17**	**20**	**89**	**117**	**206**

[a] JAEd, *Journal of Accounting Education*; AE, *Accounting Education*; AAE, *Advances in Accounting Education*; IAE, *Issues in Accounting Education*. E, empirical articles report the results of data collection and analysis; D, descriptive articles either review literature or describe an issue and include suggestions for improvement.

of the five categories. Similar to prior reviews, the majority of articles reviewed here involve curriculum and instruction issues (118 out of 206). Compared to the previous 3-year period, 1996–1999, a sharp decline occurred in assessment articles (22 to 4) and an increase occurred in educational technology articles (9 to 17).

2. Assessment

The assessment category includes two lines of inquiry: (1) outcomes assessment and (2) classroom assessment techniques. The former refers to institutional efforts to measure curriculum outcomes. The latter includes techniques used by individual instructors to measure improved learning.

2.1. Outcomes assessment

Lane and Porch (2002b) studied the impact of prior academic performance and student age on the academic performance of nonaccounting majors in the introductory accounting courses. The sample was a cohort group of students at the University of Glamorgan ($n = 292$). Data were collected on variables of prior academic performance level and student age. Findings suggest that age and prior academic performance may explain performance in the first course, but these variables are not significant for the second course. Thus, the authors conclude that there are other determinants of student success or failure not attributable to the background characteristics studied.

Ashbaugh, Johnstone, and Warfield (2002) describe how they assessed the specific learning outcome of writing-skill improvement in accounting students due to a

writing program that is described in an appendix to the article. Both a between-subjects (accounting vs. nonaccounting students) and within-subjects (same accounting students over time) designs were used. The subjects were undergraduate students at the sophomore, junior, and senior levels; sample size varied by the experimental condition. The writing assessment instrument was designed specifically for use in this study to measure students' business writing skill, composition quality, and grammatical/other skills. Writing quality was assessed by rating each student's response to an essay question; other skills were assessed in multiple-choice questions. Results offer evidence that the writing-skill initiatives led to improved writing skills.

2.1.1. Descriptive article

Stivers, Campbell, and Hermanson (2000) describe an outcome assessment program that has been in place for several years at a large public university. An overview of the program, details of assessment methods used, and lessons learned are presented in the article.

2.2. Classroom assessment

Beattie and Collins (2000) report the results of a content analysis of the published assessment reports resulting from the system of teaching quality assessment (TQA) in Scotland. The TQA framework consists of 11 key aspects covering 63 elements of teaching quality. Eleven TQA reports for each of the 11 Scottish universities were analyzed, providing suggestions for enhancing the TQA framework for future use. This study examines a framework unique to the Scottish educational system, but may be useful for researchers seeking ways to assess the effectiveness of teaching quality in an institution.

2.3. Suggestions for research

In spite of the significant attention universities give to measuring learning outcomes, little research on assessment has been published in accounting journals. The AICPA has an initiative to establish and assess learning outcomes corresponding to its core competency framework (www.aicpa.org). Because outcomes assessment is now an expectation of accreditation bodies, finding effective ways to identify meaningful learning outcomes, measure those desired outcomes, and then provide feedback to improve the inputs into the system are needed. Some assessments may take place at the programmatic level and others within courses or course sequences. Combined, these efforts produce an assessment program. Investigation of measurement techniques and strategies is needed, including the effectiveness of focus groups, timing of the assessment (pre- or post-graduation), and use of standardized tests. Issues associated with assessment that require investigation include potential threats to academic freedom, achieving faculty and institutional consensus on desired learning outcomes, and preserving confidentiality of student data.

3. Curriculum and instruction

Curriculum and instruction remains the most researched area of accounting education as evidenced by the number of articles included in this category. Thirty-one empirical articles are reviewed that address curriculum and instruction issues, including seven related to curriculum reform issues and core competences, eight about instructional approach, and ten that explore instruction in specific content areas. The other four articles focus on the 150-h curriculum and graduate programs. In addition, 87 descriptive articles are included in this section, 65 of which describe teaching methods or techniques in specific courses (48) or in general (17). The 118 papers in the Curriculum and Instruction category are organized using the following subcategories: (1) curriculum reform and core competencies, (2) 150-h program, (3) graduate programs, (4) instructional approach, and (5) specific content areas.

3.1. Curriculum reform and core competencies

3.1.1. Overall curriculum issues

Murdoch and Guy (2002) hypothesized that students in small sections of introductory accounting will perform better than students in a large section of the same course when group activities make up a substantial portion of course time and point opportunities. Students enrolled in one large section ($n = 280$) and those enrolled in four small sections ($n = 39$, 39, 40, and 37) provided 434 subjects. Course content, assignments, and activities were identical across courses. Forty percent of the class time was dedicated to activities done in groups of five (± 1) randomly assigned students. The group activities were worth 270 (out of 900) points, adjusted for an individual member's own participation. The remaining points came from two 200-point tests and 230 points for individual homework. Performance, the dependent variable, was measured as final exam score excluding multiple-choice questions. The independent variables included section size (large or small), age, attendance, gender, GPA, and percent of homework points. The hypothesis was tested on 256 subjects after eliminating those who didn't complete the course and who had no prior GPA. Class size was significant (smaller classes led to higher scores), as were age, GPA, and homework completion.

3.1.1.1. Descriptive articles. Walker and Ainsworth (2001) describe a business-process approach for configuring an undergraduate business curriculum. Ainsworth (2001) describes the call for changes in accounting curricula by the AECC and other organizations and outlines a process to effect these changes; the curriculum at one university is presented. Rebele (2002) points out that change in accounting education should reflect two external environments, accounting practice and higher education; components of higher education (e.g., culture, students, faculty) are identified along with their potential effect on accounting education. Herring and Bryan (2001) identify five stages of curriculum development and reform and discuss literature relevant to each stage: (1) identifying a need for change, (2) specifying actions and processes, (3) identifying ways to accomplish change, (4) developing pedagogy, and (5) assessment

and continuous improvement. Herring and Williams (2000) discuss the role and importance of stating objectives for curriculum development.

Lindahl and Fanelli (2002) describe cultural problems faced by an American accounting professor teaching in France and a process for continuous improvement of teaching in another culture; student feedback is discussed. Chau and Chan (2001) discuss accounting challenges and reform in China and their effects on accounting education in Hong Kong in light of Hong Kong's 1997 return to China.

3.1.2. Core competencies

Clikeman and Henning (2000) perform a longitudinal study to determine whether accounting education instills ethical values. Participants in the study were surveyed twice, first at the end of their introductory accounting course (sophomore) and 2 years later in their senior year. Respondents read a case about earnings management and indicated (on a seven-point scale) whether they "strongly oppose" or "strongly support" the postponement of costs to inflate earnings. In addition, respondents agreed or disagreed on a seven-point scale with 11 assertions about misstatements, financial disclosures, cost–benefit, and responsibility to financial statement users. Using social security number, 133 matches (56 accounting majors and 77 majors in other business areas) were made for students who did not change major between the two surveys. Accounting (nonaccounting) majors' opposition to earnings management increased (decreased) over time. Though their sophomore scores were similar, senior accounting majors were more opposed to earnings management than senior nonaccounting majors. Additional results are discussed. Clikeman and Henning conclude that the accounting curriculum significantly influences students' opinions related to accounting disclosures.

O'Connell, Webb, and Higgins (2000) describe an international study program that provides students with experiences in several countries for the purpose of gaining exposure to global issues. The results of a survey of learning outcomes shows that the participating students gain valuable insights into the connections between theory, practice, and the global business environment. Suggestions to adapt the program in different settings are offered.

Kern (2002) investigates the differences in problem-solving and conceptual recall between three groups of introductory accounting students whose exposure (i.e., learning scenario) to inventory cost allocation was experimentally manipulated: (1) lecture only ($n = 20$), (2) lecture plus instructor-manipulated conceptual model ($n = 21$), and (3) lecture plus student-manipulated conceptual model ($n = 27$). Problem-solving ability and conceptual recall were measured by a student's response to nine multiple-choice questions (five and four, respectively). Using first exam score as a covariate to control for an individual student's aptitude in accounting, Kern found that the learning scenario was a significant factor in determining the score on the five problem-solving questions, but not the conceptual questions. More specifically, the mean number of correct problem-solving questions was significantly higher for the lecture plus student-manipulated model group when compared with the other two groups.

Gammie, Gammie, and Cargill (2002) use relevant stakeholders (e.g., employers, post-placement students) to identify skills that students need to develop. Using a list of 13 skills (e.g., time management, practical research skills), British business schools were surveyed to assess whether adequate time was being spent developing these skills. Based on the results, Gammie et al. suggest considerations and methods for developing these skills, which include a second-year course entitled Business Enterprise Skills.

Francis and Minchington (1999) surveyed management accountants ($n = 296$, 8.5% response rate) and educators ($n = 36$) to identify the emphasis placed on the development and use of quantitative skills in both industry and academe. The survey results suggest that a gap exists between the quantitative skills that are taught and those regularly used in practice. The gap is primarily a result of educators placing emphasis on mathematical techniques (e.g., roots and powers, linear regression) that the management accountants do not spend a lot of time using. One reason offered for the gap is that technology can be used to perform complex quantitative tasks in industry; so, employers do not have to do complex computations by hand. However, industry members supported a high level of quantitative skill development in college so that management accountants understand how numbers are derived and are better prepared to interpret numbers generated by technology.

3.1.2.1. Descriptive articles. Thomas, Baldwin, Chesser, Davis, Hollingsworth, and Robinson (2000) discuss integrating accounting curricula to expand student competencies. Christ (2002) describes an annual report project used in intermediate accounting that is designed to develop students' analytical and communication skills. Wolcott, Baril, Cunningham, Fordham, and St. Pierre (2002) acknowledge the lack of empirical evidence in education literature regarding the effort (ability) of teachers to develop students' critical thinking skills. These authors also suggest ways to improve research designs to give empirical studies more power to assess the effectiveness of teachers' efforts in developing critical thinking skills.

Bayou and Reinstein (2000) discuss the cause and effect roles of critical thinking skills and accounting education curricula. Blazelton (2000) discusses Bloom's (1956) taxonomy, which encourages thinking at the highest levels and fosters an interest in learning, as an effective teaching methodology that develops students' cognitive reasoning skills. Kern (2000) describes advantages of using financial statement analysis projects to develop the critical thinking skills of students. Eide (2000) discusses incorporating a variety of learning strategies into accounting education to help students learn how to learn.

Kelly, Davey, and Haigh (1999) describe a course entitled Accounting, Organizations and Society that embraces a holistic approach to learning. This course teaches students to challenge traditions and learn how to learn, thus becoming more adaptable to the dynamic professional environment. Cooper (2000) comments on Kelly, Davey, and Haigh, reinforcing the need for an interactive student/teacher relationship and an emphasis on teaching students to learn how to learn. Solomon (2000) argues shortcomings of Kelly, Davey, and Haigh, such as the description of and significant developments in accounting education and related literature. Xiaohui

(2000) agrees that the course suggested by Kelly, Davey, and Haigh addresses an important and neglected theme and offers suggestions for improvement. Kelly, Davey, and Haigh (2000) respond to commentator reviews on alternative accounting education teaching methods.

3.2. 150-h curriculum

Boone and Coe (2002) studied the relationship between the 150-h requirement and the decline in the supply of accounting majors during the period 1989–2000. The treatment group consisted of universities in 28 states and the District of Columbia with the 150-h requirement (except Florida and Hawaii because they adopted the rule prior to 1989); the control group was comprised of universities in 20 states not having the 150-h requirement. The statistical model shows that only 38% of the decline in accounting graduates can be attributed to the imposition of the 150-rule, with the remaining 62% unexplained. These findings contribute evidence to the ongoing debate over whether the 150-h rule is causing accounting enrollments to decline.

Donelan and Philipich (2002) examined alternative ways of achieving 150-h (master's in accounting, MBA, other graduate, and undergraduate) and whether these programs affected CPA candidate satisfaction in four skill areas: (1) general, (2) accounting, (3) general business, and (4) information technology. The survey collected satisfaction data on 41 specific skills using a seven-point Likert-type scale. The results show that those meeting the 150-h requirement with a master's in accounting degree were more satisfied than others for general, accounting, and information technology skills. No satisfaction differences were noted with respect to general business skills across program type. Institutions offering master's degrees in accountancy may use these results to promote their programs.

3.2.1. Descriptive article

Nikolai (2001) describes developing, implementing, and monitoring a 150-h program and includes successes, failures, and needed and implemented changes. Also included are recommendations for implementation at other institutions.

3.3. Graduate courses

Krausz, Schiff, Schiff, and Van Hise (2001) investigated four factors that may influence student performance (final grade) of 215 MBA students in the entry-level, graduate accounting course: (1) GMAT scores (math, verbal, and total); (2) undergraduate GPA; (3) work experience involving preparation, interpretation, or analysis of financial statements; and (4) whether the student had previous accounting coursework. Correlation tests were conducted among the variables, and several regression models were examined, which indicate higher GMAT scores, particularly the math portion, were associated with better performance. Krausz et al. note that of all the factors investigated, GMAT score is the only one not considered when granting a waiver of the entry-level course at MBA-granting institutions they

surveyed. Additional tests indicate a combination of work experience and prior coursework led to better performance.

3.3.1. Descriptive articles

Walker and Shenkir (2000) describe a course designed to develop competency in risk assessment and related skills in master's students, consistent with the AICPA's recommendation for accounting curricula. Fessler (2001) recounts the lessons he learned after teaching one semester in an Executive MBA program in which his expectation conflicted with those of the students. Hughes and Berry (2000) present a case study in which a qualitative research project was used to teach fundamentals of accounting research to graduate students.

Collett (2000) describes the development of a merger and acquisitions group project over a 20-year period. The project is included in the second year of an MBA program at a UK university. Advantages and disadvantages of various versions of the project are presented. Collett concludes that a multidisciplinary, closed-bounded project achieves the learning objectives of verbal learning, discrimination, specifying and demonstrating rules, and generating higher-order rules and cognitive strategies more successfully than an open-ended, consultancy type project.

3.4. Instructional approach

Papers reviewed in this subsection of Curriculum and Instruction involve the methods that instructors use in the classroom. Instructional approach includes such topics as instructor's presentation method, in- and out-of-class assignment development, student management, and testing. Empirical articles in this subsection may compare techniques, often a traditional technique to a more innovative method, or use student feedback. Descriptive articles illustrate an approach used by the author.

3.4.1. Cooperative learning

Metrejean, Pittman, and Zarzeski (2002) describe the planning process and implementation of guest speakers in the classroom. Feedback from 158 students in eight undergraduate accounting courses that had an invited guest speaker was analyzed. Students responses to four open-ended questions (e.g., would you recommend future guest speakers?) indicate a positive student opinion of guest speakers. Follow-up feedback was requested from students (130 of the original 152 had addresses available) up to 5 years later (the period covered by the study). The follow-up questionnaire asked whether the student benefited from the speaker, whether the speaker improved the student's attention and awareness of accounting career opportunities, and whether the guest-speaker was beneficial. The 71 usable responses revealed an overall positive reflection of using guest speakers. Benefits to the faculty, university, and business professionals are also discussed.

Grudnitski (2000) studied the impact on individual achievement when cooperative-learning groups are provided different incentives (group vs. individual incentives). Students in two sections of a managerial accounting course ($n = 54$ and $n = 46$) at a major university were randomly assigned to a cooperative-learning group of

four–six students. Average scores on 12 mini-tests given prior to the cooperative-learning project and scores on three exams given after the cooperative-learning project were used as measures of learning (achievement). One section was offered the opportunity for a bonus based on the differential between the group's average scores on the two measures, while the other section's bonus was based upon the individual's average scores on the two measures. The results indicate that the differential between an individual's mini-tests and exams performance was statistically higher for those students whose bonuses were based on a differential between group averages. This result indicates that performance in a cooperative-learning environment can be enhanced with better sharing and less free riding when group incentives are offered.

Lancaster and Strand (2001) compared exam performance and attitudes of students in two types of managerial accounting classes: (1) lecture-based courses that included several team activities (control group, 82 students), and (2) cooperative learning classes in which student grades had individual, team, and contribution-to-team components with classes structured to involve team participation. Performance was measured by scores on a common final exam. No differences in the group mean scores were found using ANCOVA, and one-tailed *t*-tests revealed that student perceptions about the teachers and the course did not differ between groups. The results document that academic performance and student perceptions did not decline when students who took a course that used the Team-Learning model were compared with a group that used a more traditional format. This outcome addresses the concern of some faculty that group work takes too much time away from coverage of technical content. The study is limited because (1) the performance measure did not focus on attributes and skills that might be developed through cooperative learning, and (2) team-learning activities were included in both groups.

Etter, Burmeister, and Elder (2000) describe supplemental instruction, defined as an educational intervention that has been used in high-risk courses to improve student performance by emphasizing collaborative learning techniques, learning strategies, and critical-thinking skills. The model is aimed at reducing attrition rates (or improving success rates) in high-risk courses, primarily with the use of out-of-class study sessions. Introductory accounting classes using supplemental instruction at 21 colleges provided descriptive data on student performance, failure, and withdrawal rates for a total of 132 classes ($n = 9043$ students). Data show that attrition rates declined after implementation of supplemental instruction, suggesting it may be an appropriate approach for those institutions seeking to reduce attrition rates in introductory accounting courses.

Jones and Fields (2001) investigated whether supplemental instruction enhanced student performance (measured by exam points) in the first accounting course. In the first phase of the study, 935 introductory accounting students were grouped into supplemental instruction (185) and non-supplemental instruction (750) samples based on whether they voluntarily participated in five or more supplemental instruction sessions. ANCOVA was used to analyze whether total performance was affected by supplemental instruction participation using two covariates (SAT score and GPA) and three control variables (gender, major, and professor). In phase two,

the total examination points of 301 students who were required to participate in supplemental instruction were examined using the same control variables and covariates. The results indicate that participation in both voluntary and mandatory supplemental instruction sessions was positively associated with total points earned in the course after controlling for self-selection bias and that performance increased in a step fashion with increased levels of participation in supplemental instruction.

Kilpatrick, Linville, and Stout (2001) examined the use of peer evaluations in group-based learning within the framework of procedural justice theory, which refers to the perceived fairness of a system. The sample consisted of 669 students from three universities. The survey asked the subjects to evaluate four alternative peer evaluation forms and respond to a series of questions about peer evaluation and small group experiences. Six hypotheses derived from procedural justice theory are supported, suggesting that students perceive fairness in a system that provides structure. The students believe that a fair peer evaluation should consist of clear evaluation criteria, open-ended comments, self-evaluations, mid-term peer feedback, and confidentiality. The study is helpful for educators trying to develop fair evaluation systems in a group-learning environment.

3.4.2. Case studies

Gobeil and Phillips (2001) tested whether a student's acquisition (recall) and application (use) of facts from a case are influenced by the student's level of knowledge (course grade) and case presentation style. Introductory accounting students ($n = 210$) read one version of a case on the last day of class. Two versions of the same case contained the same relevant and irrelevant facts but varied by presentation style. The narrative version (story-based) contained 15 irrelevant statements to develop a story not included in the expository version (fact-based). Acquisition (ability to recall facts) was positively influenced by knowledge but not by presentation style. However, application (ability to solve a related problem) was influenced by the interaction: low-knowledge (high-knowledge) students reading the narrative case did better (worse) at problem solving. In addition, Gobeil and Phillips found that low-knowledge students had higher self-reported comprehension on narrative cases.

Weil, Oyelere, Yeoh, and Firer (2001) investigated students' perceptions about the usefulness of case studies in accounting courses. A class of 121 graduate-level students at a South African university was divided into two formats, traditional lecture and case-based. During a 12-week semester, 71 students who chose the case format were introduced to cases and suggested solutions, read and discussed cases each week, and each group prepared one written solution worth 20% of their grade. The final was a 4-h case study. A questionnaire was given to the 71 participants to elicit their perceptions about the extent to which case studies developed 31 skills. The skills ranked highest (lowest) related to exposure to reality and complexity of the business world (written communication and listening skills), although the mean score for every skill was above four (middle of scale). When the samples were split by gender and by academic performance, differences in highest and lowest ranking skills were significant. No comparison to the students in the lecture formats is presented.

3.4.2.1. Descriptive article. Boyce, Williams, Kelly, and Yee (2001) suggest that case studies provide a framework to develop a student's deep and elaborative learning skills and generic skills (e.g., problem-solving, organization) in an accounting context.

3.4.3. Other instructional approaches

Davis, Hwang, and Shoaf (2001) studied the learning impact of individualized problem assignments in the advanced accounting course. Individualized problem assignments are essentially the same problems with different numbers for each student so that the accounting task and difficulty level are the same. Thus, a class of students can work together on their assignments, but cannot copy the answers. The technique for creating individualized problem assignments is described. The sample consisted of 89 students (62 senior undergraduate and 27 graduate) at a major urban university. The sample was randomly split so that half worked individualized problem assignments and half solved a traditional problem identical for all subjects in that partition. The results show that undergraduate in-class test performance improved when moderately difficult individualized problem assignments were assigned vs. traditional problems. Diligent graduate students did not appear to benefit from individualized problem assignments, and problems rated as difficult did not produce improved test performance. The results suggest that individualized problem assignments have potential benefits for learning.

Smith, Davy, Rosenberg, and Haight (2002) analyzed the cheating behavior of 606 accounting majors (introductory through graduate level) at three universities with respect to demographics, attitudes, and in-class deterrents. The following data were collected for each student: (1) age, gender, and level, (2) self-reported academic performance (3) perceived academic performance compared to peers; (4) frequency student observed 12 cheating deterrents for exams in prior courses; (5) student's sense of alienation measured by dis/agreement with 18 statements (6) student's level of neutralization (rationalizing dishonest behavior) measured by dis/agreement with 11 statements; (7) frequency that the student engaged in 12 cheating behaviors; and (8) given the inability to make a desired grade, the likelihood that the student will cheat in the future when the same 12 deterrents (see item 4) are implemented. Using structural modeling to test a theoretical model, several path estimates were produced that indicated an influence of one variable on another. Some conclusions were that males (females) are more likely to report prior cheating (to rationalize cheating); deterrents have a negative effect on the likelihood of cheating; and prior cheating and neutralization have positive effects on the likelihood of cheating.

Togo (2002) investigates whether test performance is influenced by topical sequencing of test questions (presenting questions in the same order as class coverage). Subjects were students in two sections of managerial accounting in which four multiple-choice tests were given. Two formats of each exam, a random version and a topically-sequenced version, contained the same questions. Data collected from 112 students included score on each exam, format of each exam, and GPA, which was used to classify students into one of three categories (above 3.28, below 2.6, and in between). For each exam, a variable was used to indicate the degree to which that

test relied on advance organizers (a graph or table used to make a connection between prior knowledge and knowledge to be acquired) For example, graphs of variable costs and fixed costs were used to develop the idea of a mixed cost. ANCOVA revealed that administering topically-sequenced test questions has a significant positive effect on test score after controlling for GPA and exam sequence. When the degree of reliance on advance organizers was measured categorically, an interaction was found with exam format, indicating that students benefited from topically-sequenced exams that relied heavily on advance organizers.

3.4.3.1. Descriptive articles. Hoque (2002) reports the perceptions of six students who were given journal articles (both academic and professional) as part of their study materials for a course in public-sector accounting. A majority used a deep approach in reading the articles (i.e., tried to fully understand) and found professional (as opposed to academic) articles more useful. A schedule of articles assigned is included. Milne and McConnell (2001) describe the development and uses of problem-based learning and related research and conclude that problem-based learning increases motivation, develops clinical reasoning skills, and is a bridge between higher education and professional life. Foran and Olds (2002) propose a class presentation format consisting of three main focuses, including (1) a traditional presentation, (2) a discussion of *The Wall Street Journal*, and (3) the use of the Internet. Cook and Hazelwood (2002) describe a learning game modeled after a popular primetime game show: "Who wants to win some mini Chips Ahoy?" Bashir (2000) describes the use of open learning in accounting to stimulate student involvement, flexibility, autonomy and active involvement in the learning process by giving students several formats of instruction from which to choose.

Craig (2000) reflects on negative aspects of lecture facilities and equipment and the phenomenon of the ringing telephone in the classroom. Halabi (2001) reflects on an incident that exploited the difference between a student's and a teacher's perception of advanced accounting student skills. Bloom (2000) reflects on using historical vignettes to motivate and captivate irritable students, to enhance students' thinking skills, and to minimize classroom heckling. Lan (2001) gives anecdotal evidence that caring on the part of the instructor elicits interest and effort from a student. Rama, Ravenscroft, Wolcott, and Zlotkowski (2000) review literature on service learning and suggest guidelines for implementation, assessment of outcomes, and research.

Buckmaster and Craig (2000a) describe (1) student presentation of accounting topics in the format of television shows (e.g., news, game show) and (2) evaluative feedback by students in the audience, which uses the student-as-consumer metaphor to address acculturation and critical engagement. Three accounting educators comment on Buckmaster and Craig's idea. Owsen (2000) compliments Buckmaster and Craig's television-format presentation and points out several benefits derived from the method including encouraging creativity and nondirectional learning. Mathews (2000) believes that the television format and innovative teaching methods encourage students' enthusiasm for the topic, but points out that learning theory and the reality of accounting education may make this learning environment inappropriate.

Simga-Mugan (2000) suggests that television formats actively involve students in the learning process, but that a comparison is needed between this format and others with respect to advantages and disadvantages. Buckmaster and Craig (2000b) reply to critiques.

3.5. Specific content areas

3.5.1. Accounting information systems (AIS)

Jones and Lancaster (2001) discuss the specifics of process mapping and identify the advantages of incorporating process mapping into the AIS curriculum. Specifics of how to draw a process map are presented. Scripts, which are typically prepared by accountants and used by programmers in the configuration of ERP software, and an example are also presented. Jones and Lancaster describe the inclusion of process mapping in a traditional AIS course and two proposed courses that deal with business processes. In an exit survey of the test AIS course, students reported understanding the connection between business processes and exercises they had completed using vendor software.

3.5.2. Auditing

McCartney, Marden, and Adair (2002) investigated whether a gap exists between content being taught in internal auditing courses and practitioner needs. The study was motivated by professional concerns about whether accounting graduates are prepared for entry-level positions coupled with the fact that students show an increased interest in internal auditing. The sample consisted of both academicians ($n=40$, 56% response rate) and practitioners ($n=130$, 10% response rate). Both groups were asked to complete a questionnaire that (1) elicited importance ratings for 25 topical areas in internal auditing (five-point scale) and (2) asked open-ended questions about using outside professional speakers and using case studies to teach. The results show a high level of agreement between academicians and practitioners on the curriculum emphasis of the 25 topics and on the use of case studies and the use of practitioners as guest lecturers.

3.5.2.1. Descriptive articles. Clikeman (2000) describes four topics to integrate a research experience into the first auditing course: (1) expectation gap, (2) risk analysis, (3) audit evidence reliability, and (4) auditor litigation. Knechel (2000) discusses behavioral research related to auditor judgment and the implications for audit education given the shift to risk-based audit applications.

Boylan (2000) describes a classroom activity that uses the experimental asset market to illustrate the value of auditing. Bierstaker, Bedard, and Biggs (2000) discuss critical thinking and analytical procedures used in auditing courses. Nieschwietz, Pany, and Zhang (2002) describe an ongoing assignment for an auditing course using generalized audit software; assignments that investigate the revenue cycle and inventory include getting familiar with the software, attributes sampling, substantive tests, and relational database analysis.

3.5.3. Environmental accounting

Stevenson (2002) replicated and extended a study by Owens, Humphrey, and Lewis (1994) to investigate the teaching of social and environmental accounting and how it has changed over time. Questionnaires were sent to un-named recipients (department heads) and named recipients (those who listed social and environmental accounting as an interest) at UK and Irish universities. Stevenson compared the 45 responses (response rate = 44%) received to the results of Owens et al. and also compared the responses of named and unnamed respondents. Eleven schools reported teaching a full social and environmental accounting course; 12 reported teaching a course in which at least 10% of the course was devoted to social and environmental accounting; nine schools reported teaching a course with less than 10% devoted to social and environmental accounting; and 13 had no social and environmental accounting coverage. Changes over time in the percent of universities teaching full, partial, and no social and environmental accounting were not significant; however, there were some significant changes in the level of coverage of specific topics over time. Comparisons between named and unnamed respondents indicated many differences, including coverage levels of specific topics and the respondents' opinions about the importance of teaching social and environmental accounting.

3.5.3.1. Descriptive articles. Lockhart and Mathews (2000) recommend a four-part framework for expanding the teaching of environmental accounting courses. Grinnell and Hunt (2000) discuss the development and structure of an integrated accounting course with a focus on environmental issues.

Mathews (2001a) suggests curriculum materials and assessment methods for a course in social and environmental accounting and discusses its relevance with regard to accounting education, ethics, society, and stakeholders. Six reviewers comment on Mathews's suggestion. Bebbington and Thompson (2001) indicate that Mathews did not consider the potential resistance to the course by faculty and students, which will be a result of the conflict between the social and environmental accounting objectives and conventional accounting. Booth (2001) agrees that the social and environmental accounting course suggested by Mathews may lead to a better educational experience, but questions its place in accounting education and whether accounting education should focus on good educational outcomes in general or try to improve those outcomes through an social and environmental accounting course. Owen (2001) critiques the need and value of including social and environmental accounting issues in the core accounting curriculum, as discussed by Mathews, and questions the course's effect on the breadth and depth of current coverage. Gordon (2001) offers four reasons for optimism regarding Mathews's proposed social and environmental accounting course, which address deficiencies in conventional accounting courses, and four reasons for pessimism, which focus on the role of the course related to motivating students, professional exams, failure of similar ethics courses, and lack of ideal instructors. Grinnell and Hunt (2001) generally complement the synthesis of information and literature review of Mathews regarding a social and environmental accounting course and give specific comments and suggestions. Milne (2001) believes Mathews' intent is to encourage students and

faculty to think, but questions why one would teach or take a social and environmental accounting course, whether it can assist in moral development, and the curriculum materials recommended by Mathews. Mathews (2001b) addresses the six commentaries as they related to his original manuscript.

3.5.4. Ethics

Guffey and McCartney (2000) tested a multidimensional ethics measure for construct, content, and predictive validity. Results show that the measure is robust to alternative ethical situations with different subjects. The sample consisted of 268 upper-level accounting students (86% usable response rate). The subjects completed a survey that required responses to four academic dishonesty situations. The multidimensional ethics measure is described, and suggestions for teaching ethics and extending the research are discussed.

3.5.4.1. Descriptive article. Waldmann (2000) discusses the impact that Confucius had on ethical thought, laying the groundwork for a cross-cultural perspective to accounting ethics education. Ethical norms may be related to cultural norms, leading to consideration of cross-culture factors that may be used to educate students on doing business in a global economy. Examples of cross-cultural factors that differ across cultures include attitudes toward gift giving, codes of ethics vs. loyalty to employer, acceptability of paying bribes, and family obligations vs. the public good.

3.5.5. Financial accounting

Ackert, Church, and Turner (2001) investigated accounting students' ability to apply knowledge of the concept of permanent earnings to a market setting by conducting eight experimental asset markets, which included introductory accounting students, undergraduate intermediate accounting students, or graduate intermediate accounting students, for a total of 18, 17, and 12 students, respectively. During every market, subjects were provided with an income-statement template for each of the 12 periods during which they traded one-period certificates; the template could be used to identify components of earnings as permanent. The period-end dividends were five percent of permanent earnings, or zero when permanent earnings was negative. Students earned an average of $24.18 for the 80-min experimental sessions. Ackert et al. argue that asset price should converge to certificate value if market participants could apply their knowledge of permanent earnings to accurately estimate certificate value. Plots of average asset price and value per period showed that market price was closer to asset value with intermediate students vs. introductory students. All participants could identify permanent earnings, but intermediate students applied that knowledge better in a market setting. Ackert et al. suggest their findings highlight that successful completion of an introductory accounting course with a user-perspective emphasis does not necessarily mean that students can apply knowledge of permanent earnings in a market setting. The findings are limited because student level (i.e., introductory student, etc.) is used in place of a measure of development of procedural knowledge in students' memory.

Helliar, Michaelson, Power, and Sinclair (2000) describe a computer-based game called Finesse (Finance Education in a Scalable Software Environment) that was developed by a set of UK universities with objectives related to teaching finance courses, encouraging group work, saving staff time in monitoring student performance, and aiding in the assessment of students' understanding of financial issues. The computer game, during which student groups manage their own portfolio of securities, is accessed through a Web browser, provides up-to-date data, allows portfolio updates at any time, and incorporates transaction costs and dividend income. Analyses of student reports on portfolio performance and student responses to feedback questionnaires (e.g., usefulness of the game, ease of use, enjoyment, and enhanced understanding) indicate that the objectives of the project were met.

Doucet, Doucet, and Essex (2000) studied the expectations of nonaccounting (i.e., finance, management, marketing) faculty for the introductory financial accounting course. A survey was developed from several sources (described in the paper) that includes questions on technical, communication, and group skills. A usable response rate of 20.8% was achieved across the three surveyed disciplines (randomly selected from directories for those disciplines). Financial statement preparation and use ranked high; functional area skill in auditing, systems, and tax ranked low. Faculty interested in redesigning the first course in accounting should find the inputs from these disciplines useful.

3.5.5.1. Descriptive articles. Bloom and Schirm (2000) analyze advantages and disadvantages of using international annual report projects in advanced accounting courses. Schoderbek and Slaubaugh (2001) encourage the use of exposure drafts in class so students are familiar with official standards, gain an understanding of the standard-setting process, and better understand the accounting topics; the exposure draft on accounting for business combinations and intangible assets is used as an example. Wilkins and Loudder (2000) compiled a list of companies with clean articulation (consistent values for single line items between the statement of cash flows and other financial statements) for use in teaching; also included is a description of how to update or modify the list and an analysis of variations in reporting on the statement of cash flows. Ashbaugh and Johnstone (2000) describe a three-case sequence technique used to develop students' technical knowledge and professional skills related to intermediate financial accounting topics.

Bessner (2001) explains a classroom exercise about splitting partnership income and the ramifications associated with such decisions. Chasteen (2002) illustrates accounting for intercompany transactions by an investor company when the full equity method is used to account for an investment but financial statements are not consolidated. O'Bryan, Berry, Troutman, and Quirin (2000) discuss the importance of teaching the statement of cash flows in the introductory financial accounting course through a proposed expanded accounting equation methodology. Catanach, Croll, and Grinaker (2000) describe teaching intermediate financial accounting using the business activity model, which emphasizes concepts before rules and should help develop critical-thinking and communication skills, promote

technical competencies, and motivate students. Arya, Fellingham, and Schroeder (2000) explain working backwards from financial statements to journal entries using transactional vectors to teach students the inherent links in aggregated data and help them develop an appreciation for the power and beauty of double-entry bookkeeping.

McMath (2000) describes a "correction constant" methodology for deriving present value measurements. Halsey (2001) describes the residual-income stock price valuation model and its relevance in ratio analyses. Vicknair (2000) provides a formula for computing the effective annual rate on cash discounts. Luoma and Spiller (2002) provide a numerical illustration to use when teaching both financial leverage and accounting rates of return on assets and stockholders' equity in introductory accounting; the purpose is to integrate the discussion of the two concepts to better understand their relationship. Halsey (2001) describes the residual-income stock price valuation model and its relevance in ratio analysis.

3.5.6. Managerial and cost

Buchheit, Collins, and Reitenga (2002b) investigated the effects on student performance ($n = 431$) of two methods of teaching equivalent units: a traditional, step-by-step rules approach and an approach that focuses on timing of physical inventory flows. While the computations are essentially the same, the time-period approach is more conceptual and concentrates on the period in which inventory is produced. Three sections of introductory cost accounting were taught using the traditional step-by-step approach, and one section was taught using the time-based approach. Student performance was measured by four multiple-choice exam questions on weighted-average equivalent units. The difference in the mean proportion of correct weighted-average questions and a multiple regression model that controlled for student ability and instructor quality was used to test whether one method resulted in superior performance. Both analyses indicated that the performance of students in the time-based section was significantly higher than the traditional sections. The study is limited because students in the time-based section had access to both forms of instruction because their textbook included the rules-based method.

3.5.6.1. Descriptive articles. Yahya-Zadeh (2002) suggests a more extensive use of linear programming in the managerial accounting course by expanding its uses to flexible budgeting and determining cost, overhead, and revenue variances; numerical examples are provided. Balakrishnan and Sprinkle (2002) suggest expanding profit variance analysis in managerial accounting to include unplanned changes in inventory and practical capacity to determine overhead rates. Martin (2000) argues for increased coverage of multiple-volume variances in cost and managerial accounting courses. Bremser and White (2000) provide guidelines for using the balanced scorecard (BSC) approach to assist in evaluating real-world strategic objectives and management accounting concepts. Henry, Crawford, and Lipsig (2002) discuss a classroom project using the Monte Carlo simulation technique in a budgeting scenario.

Birnberg (2000) discusses why there is an increased need for behavioral material (e.g., dysfunctional behavior, participation) in managerial accounting and suggests specific areas to expand. Verstegen (2001) uses agency theory to demonstrate nine ways a faculty member in a managerial accounting course could illustrate how decision-makers might apply theory to a managerial accounting problem.

Brewer (2000) discusses benefits derived from alternative approaches to organizing management accounting curricula, such as less redundancy, logical distinctions between topics, and in-depth coverage of specific content areas. Böer (2000) explores the past, present, and future of teaching management accounting techniques, procedures, and policy issues. Amernic, Losell, and Craig (2000) review approaches used to incorporate economic value added model into management accounting curricula. Maher (2000) examines the evolution of management accounting education and teaching approaches over the past 50 years.

3.5.7. Tax

Tan and Chua (2000) studied the inclusion of ethics education in the tax curriculum of New Zealand tertiary institutions. A questionnaire on the teaching of ethics was mailed to 25 tax teachers (20 usable responses, 80% response rate). Frequency analysis based on the number of responses was used to document the results because of the small sample size. A majority of the respondents supported the inclusion of a mandatory business ethics course for all students and an integration of business ethics into the accounting program. Sixty percent of the respondents addressed ethical issues in the undergraduate curriculum, and 89% considered tax ethics at the postgraduate level. An average time of 2 h was devoted to the coverage of ethics per course. Six constraints were cited as impediments for including ethics in the tax curriculum including curriculum constraints (teaching one topic at the expense of another) and lack of subject material on tax ethics. Tan and Chua expressed concern that only a few tax teachers incorporated ethics into their examination questions or assignments and conclude that there is a need to strengthen the ethics component in the taxation curriculum in New Zealand.

Miller and Woods (2000) surveyed accounting educators and employers in the UK to examine whether an expectations gap exists between the knowledge of taxation acquired in a university program and the knowledge that employers expect and prefer graduates to have. Questionnaires were mailed to 409 accounting firms and 85 UK universities that offer degrees in accounting, resulting in usable responses from 64 firms that recruit for tax positions and 45 universities. Universities were separated into old and new groups because new universities are more likely than old universities to offer tax courses that carry exemptions from professional examination stages. Miller and Woods found that (1) the relationship between employer perceptions of graduate tax abilities and course learning outcomes was stronger for old universities than new universities, and (2) the relationship between employer preferences for graduate tax abilities and course learning outcomes was stronger for new universities than for old universities. Miller and Woods conclude that employers appear to understand what the old universities are trying to instill in their graduates, but this is not necessarily what

they want. New universities are trying to provide what they think the employers want, but they do not always succeed.

James (2000) investigated the relative merits of teaching tax principles and policy using either a single textbook or the more traditional UK method of a comprehensive reading list. The same instructor taught two different tax-related courses. The first was a public finance (PF) course with 54 students from varied backgrounds, including accounting, economics with politics, and social policy. The second was a public expenditure and finance (PEF) course taught to 36 honors economics students. A single textbook was used in the PF course while a comprehensive reading list was used in the PEF course. Two competencies were measured to assess the merits of the methods: (1) the students' ability to analyze technical issues, and (2) the students' willingness and ability to use comprehensive reading to enhance competence and understanding of the field. These competencies were measured using tax essays and examination questions; student preferences were assessed using an attitudinal questionnaire. James found that the technical analysis, as measured using essays, was rated stronger for the PF students (a single text) than the for PEF students, but there was no difference on exam questions. The attitudinal questionnaires indicated that students preferred the single textbook approach. The results are limited by the fact that the students in the two courses may not be comparable.

3.5.7.1. Descriptive articles. Kowalczyk (2001) describes the instructional techniques and benefits of using a single current tax case to depict and evaluate the statutory, judicial, and political influences associated with tax law research and development. Juchau and Neale (2001) comment on the rationales for the presence and requirement of taxation courses in Australian undergraduate curricula. Fischer, Rupert, and Wartick (2001) illustrate the impact of hidden taxes on the marginal tax rate system. Hite and Hasseldine (2001) describe key features of effective traditional and alternative approaches to teaching tax in the United States of America.

Campbell, Reider, and Maloney (2002) suggest the implementation of a service-learning model, which may enhance students' accounting skills as well as Alaskan taxpayer compliance. Sawyer, Tomlinson, and Maples (2000) describe the development of case studies in a taxation course that addresses a wide range of learning outcomes. An example case is included, along with questionnaires useful in assessing of student learning related to cases developed for classroom use. Crumbley and Smith (2000) discuss using short stories to incorporate communication-skills development and critical thinking into tax accounting courses.

3.6. Suggestions for research

Wolcott et al. (2002) addresses the lack of empirical evidence about the development of core competencies. Only five empirical studies reviewed in this article investigate developing core competencies, which is a decline from 12 studies in the previous 3-year period 1997–2000. Further, no overall curriculum reform studies were published in the 2000–2002 period.

Curriculum reform and core competency studies should become more important to accounting educators because of impending accreditation standard changes. New Association to Advance Collegiate Schools of Business (AACSB) standards require that accredited programs be mission driven, that the mission be reflected in the curriculum in the form of specific goals, and that meeting the goals should be measured (AACSB 2003a, 2003b). These AACSB requirements should spark curriculum design changes in schools seeking to keep or achieve accreditation, creating fertile ground for education research.

Enumerating specific goals for accreditation offers many research possibilities. For example, how are the goals incorporated into specific courses and the curriculum as a whole; how do the accreditation goals overlap with development of core competencies vs. technical competencies; and how is achievement of these goals measured? As recommended by Apostolou et al. (2001), integration of the curriculum should be studied, both within the accounting curriculum itself and of the accounting curriculum with the business and general education curricula. The new AACSB accreditation standards require that goals be reflected in many aspects of the curriculum, which will force educators, and hopefully education researchers, to examine the entire curriculum, not just the accounting courses alone.

Accounting education researchers have conducted studies about gaps between the skills needed by practitioners and the skills of the new graduates (e.g., Francis & Minchington, 1999; Gammie et al., 2002). The Institute of Internal Auditors (2003) calls for such studies. Researchers should not only identify the gaps, but also plan and design studies that investigate how these gaps are effectively closed.

Other changes outside higher education should be reflected in the accounting classroom. Most prominently perhaps will be changes in accounting practice, particularly in auditing, in light of recent audit failures and the implementation of new auditing standards. The new changes in accounting practice reflect gaps between practice and education. Designing a research program in conjunction with the curriculum changes necessary to fill the gaps offers an opportunity for a longitudinal study that measures outcomes throughout the change process and changes in the skills of graduates under a new curriculum.

In both the previous 3-year review of the accounting education literature (Apostolou et al., 2000) and in this literature review, 118 articles were categorized as curriculum and instruction. However, in the previous review article, 12 empirical studies investigated developing core competencies, and eight investigated overall curriculum issues. In the current review, those numbers are reduced to two and five articles, respectively. Additional research in effective methods of developing core competencies is needed. Researchers interested in conducting these types of studies may want to consider designs that are longer-term (i.e., tracking students through a reformed curriculum) as opposed to tracking students through one course. Such an endeavor would require developing a research design in conjunction with curriculum reform and implementing them both at the same time.

4. Educational technology

A substantial increase in the number of published educational technology articles occurred in the 2000–2002 time frame. It is particularly noteworthy that the number of articles including some kind of empirical analysis increased from two to eleven. The empirical articles assess student attitudes, performance, or both, and include topics related to tele-teaching and interactive television, computer-aided learning, computer-based instruction and interactive courseware, computer-based testing, student-generated hyperlinks, student Internet research, personal computer movies, collaborative discovery learning, and online collaboration. The seven descriptive articles include three describing classroom assignments that make use of technology, one describing the structure and delivery of a distance learning module, one discussing record confidentiality as it relates to information technology, and one review of literature regarding the use of technology and delivery of instruction.

Halibi, Tuovinen, and Maxfield (2002) surveyed introductory accounting students enrolled at two campuses of Monash University to determine student attitudes toward tele-teaching (a form of distance learning) and traditional face-to-face lectures. A questionnaire was distributed to 185 students during the final lecture of a course that was taught using tele-teaching. The results are based on 120 responses. The results show that most students preferred the traditional face-to-face lecture approach, with females being more favorable toward tele-teaching than males. Students noted that tele-teaching has the potential to reach large numbers of students and to make them feel that they are being treated fairly.

Lane and Porch (2002a) examined the impact of computer-aided learning (CAL) on the performance of nonspecialist accounting undergraduates. A questionnaire was administered at the beginning and end of a course taught at a single UK university. Regression results show that age and attitude toward accounting influenced student performance, but attitude toward CAL and students' entry qualifications did not. In this study, students were more likely to view CAL as easy to use after completing the course, but students were significantly less likely to view CAL as flexible, helpful, or useful in improving computer literacy. Results show that CAL negatively affected students' perceptions of accounting as a subject. The design of the study is a one-group pre-test post-test that limits the internal validity of the results.

Peterson and Reider (2002) conducted a survey to identify perceptions of computer-based testing. The survey was mailed to (received from) 200 (97) successful and 200 (38) unsuccessful certification in financial management (CFM) candidates, 85 (31) accounting faculty members, and 15 (9) administrators who had participated in preparing the CFM exam. Peterson and Reider found that candidates reported an overall positive experience with the computerized CFM exam. Successful candidates, accounting educators, and CFM administrators indicated that they think computerized testing weakens the perception of the certification. Respondents also indicated that they believe that writing skills and free-form problem solving should be included on certification exams. The study is limited by the inclusion of only the

CFM exam and the small number of unsuccessful candidates who responded to the survey.

Crandall and Phillips (2002) studied the effects of instructor-generated vs. student-generated hyperlinks on student ability to apply concepts in practical case situations. Prior research has shown that instructor-provided hypertext links can enhance student acquisition of conceptual knowledge and that student-generated elaboration of concepts provides greater memory for those concepts than instructor-provided elaboration. The laboratory experiment involved 112 intermediate accounting students randomly assigned to one of three experimental conditions. The first group followed instructor-generated hyperlinks between the instructional materials and the practice cases, while the second group inserted their own hyperlinks. Students in the control (third) group were asked to think about how each case fact related to the instructional material. Results indicated that students with hyperlinks (instructor-inserted or self-inserted) were better able to apply concepts to new cases than the control group. In addition, self-inserted links provided more learning benefits compared with viewing links created by the instructor; however, the greater benefit only occurred when the students had generated a high number of appropriate links. When students generated inappropriate links, their application of concepts to new cases was similar to that of students in the control group. Crandall and Phillips conclude that hypertext linking could be used in accounting classes to enhance case-based instruction.

Bhattacharjee and Shaw (2001) examined the effects of using a project that was designed to concurrently develop students' computer-based skills and improve their perceptions toward technology. Fifty-six students enrolled in two sections of an advanced accounting course at a single university participated in the experiment. Students completed a financial analysis project that required they incorporate timely information from the Internet to provide a more complete analysis of their company, a pre- and post-test regarding their Internet knowledge, and a pre- and post-test that assessed their perceptions toward computer-related tasks. Bhattacharjee and Shaw found that the project enhanced students' Internet knowledge and skills, their perceived ability to use computers, and their computer-based project completion skills. As expected, female students indicated a lower perceived ability to complete technology-related projects before the assignment. However, after completion of the project, females raised their level of perceived ability to the same level as males.

Rudolph, Seay, and Milkman (2000) studied the impact of interactive television on learning in a second intermediate accounting course. Interactive television refers to the two-way, simultaneous delivery of audio and video to both on- and off-campus locations. Descriptive data for 113 students who participated in the interactive television course are provided, along with data for some attitudinal measures. Only 17% of the students reported that they would take another interactive television course if given a choice. Additional research is needed to assess the effectiveness of interactive television relative to competing classroom delivery modalities.

Mahoney and Welch (2002) describe the use of personal computer (PC) movies to deliver course content in an accounting information systems course. The authors

describe creating a PC movie, compare PC movie recorder programs, describe methods of distributing and viewing PC movies, discuss potential uses of PC movies in accounting courses, and report on student reactions to the use of PC movies in an AIS courses. Student attitudes toward the use of PC movies was assessed using a survey completed by 48 of the 96 students who finished the course. Student comments were very positive, with 96% of respondents indicating that PC movies were indispensable or very beneficial. Mahoney and Welch conclude that faculty should consider using PC movies as learning tools.

McCourt, Larres, and Radcliffe (2000) investigated the extent to which computer-based instruction (CBI) is effective in promoting student learning. Eighty-three students in a third-year professionally-accredited tax course provided responses to the following items: (1) the number of hours spent using the CBI software; (2) the perceived effectiveness of three instruction methods (lectures, taught tutorials, and CBI) in achieving the course's learning outcomes; and (3) the extent to which each method was perceived to be interesting and stimulating. A two-way ANOVA failed to show a significant difference in the students' perceptions of effectiveness of the three methods. However, the responses indicated that students felt CBI was more interesting and stimulating than lectures or tutorials. McCourt, Larres, and Radcliffe conclude that the use of CBI encourages students to take some responsibility for their own learning and thereby acquire skills that should equip them for lifelong learning. This study measured student perceptions and did not include any measures of actual performance, and no attempt was made to control for differences in individual learning styles.

Borthick and Jones (2000) describe how online collaborative discovery learning was applied in a master's course in information systems assurance, present student reactions to daily sessions, and compare the mean responses of student evaluations for one course taught using a face-to-face method and three courses taught online. ANCOVA, controlling for student GPA, found no significant difference between the final exam scores of 18 students enrolled in the face-to face course and the scores for the 32 students enrolled in the online sections. Based on a discussion of theories in cognitive and social learning and market forces that flourish in networked communities, Borthick and Jones suggest that collaborative discovery learning online has the potential to make learning more effective, accessible, and affordable, while preparing students for work environments where new problems are the norm and professionals work collaboratively to solve them in virtual spaces.

Lightner and Houston (2001) describe the structure and content of an international accounting course in which students, educators, practitioners, and standard-setters from four countries collaborated online. Students from all four countries evaluated the course and its content and made suggestions for improvement; overall response was favorable. Most notably, students appreciated the opportunity to learn about other cultures along with the countries' accounting standards through interaction.

Green, Reinstein, and McWilliams (2000) compared student performance in two sections of introductory accounting that used interactive courseware to reinforce procedural material ($n = 60$) with two sections that used traditional

lecture/problem solving teaching methods ($n = 79$). The same instructor taught all sections, and the content was identical except for the use of interactive courseware during the first 6 weeks by the test group. Results of t-tests showed that the interactive courseware students performed better on the first examination and unannounced quizzes, but no significant differences were found related to performance on the second exam (which was not procedurally oriented), a comprehensive final exam, or the retention of students in the course. Analysis of student evaluation data indicated that students' interest in accounting increased in a greater proportion for the interactive courseware group compared with the traditional lecture/problem solving group and that students generally found the interactive courseware easy to use.

4.1. Descriptive articles

Murphy and Hoeppner (2002) describe two intermediate accounting projects, one designed to familiarize students with electronic accounting resources and the other to extract and analyze electronic data. Gammie, Gammie, and Duncan (2001) describe the development of material and the structure and delivery of a distance-learning module in auditing and identify positive and negative aspects of implementation and operation. Crawford, Henry, and Dineen (2001) discuss a case study involving the use of Web technology to develop the interpersonal and interview skills of graduate students. Hillison, Pacini, and Williams (2000) discuss the rights of students and the obligations of teachers with regard to information technology and record confidentiality. Bryant and Hunton (2000) review literature on the use of technology in the delivery of instruction. Drake and Nigrini (2000) discuss using digital analysis and Benford's Law in computer-assisted analytical procedures.

4.2. Suggestions for research

Rebele et al. (1998b) and Apostolou et al. (2001) called for more research that addresses whether learning is improved by the use of technology and whether students find courses that make use of technology more interesting or informative. Several articles included in this set of reviews have attempted to research this topic. However, more research is still needed that addresses when the use of technology results in more effective or efficient learning. The hyperlink article by Crandall and Phillips (2002) is an example of a well-controlled study that looks at the effectiveness of technology in assisting student learning. The budgetary constraints that many states are currently facing may lead programs to offer more classes using distance education or Web-based technology. Research that clarifies how to effectively use these techniques would be helpful.

Bryant and Hunton (2000) review publications from behavioral and cognitive theory, educational technology, and accounting technology research. They provide seven learning guidelines for educators who use technology to deliver instruction. As noted by Apostolou et al. (2001), future research should investigate whether the use

of these guidelines enhances learning. Bryant and Hunton suggest the following areas for future technology research: (1) investigation of the congruence of learning styles with educational technology; (2) assessment of student learning using a given medium; and (3) research on newer Web-based distance education technologies. These areas remain important issues for future research.

5. Faculty issues

Accounting educators continue to investigate various aspects of faculty life, with 20 empirical articles in 2000–2002 addressing faculty issues. Most articles deal with ways in which faculty are evaluated, including six papers addressing student evaluations of teaching, five articles related to research productivity, one promotion and tenure paper, and two articles concerning the effect of gender on hiring and salary. Other articles deal with factors important to the lives of accounting educators, such as the state of the job market, accounting accreditation, and behavioral traits of accounting educators. The interest in faculty issues has been consistent throughout the set of accounting education literature reviews over the past three decades, particularly with respect to documenting and analyzing research productivity.

5.1. Research productivity

To improve the quality of applied questionnaire-based accounting research, Duff (2001b) proposes that accounting researchers (1) include information about the measurement properties of the research instrument they use, (2) review current practice and understand problems with questionnaire-based research, and (3) discuss construct validation related to measurement validity and factor analytic methods. The article provides background information to help readers understand the issues discussed by Duff.

Hasselback, Reinstein, and Schwan (2000) provide a comprehensive documentation of research productivity (quantity and quality) for 3878 accounting faculty who graduated between 1971 and 1993. A set of 40 journals was used to measure research productivity of faculty through 1995. Journal quality was assessed using ratings from five previous articles. Four different benchmarks were used: Best 4 journals (*Journal of Accounting Research*, *The Accounting Review*, *Journal of Accounting and Economics*, *Journal of Finance*), Best 12, Best 22, and Best 40. Further, research productivity was partitioned by year of graduation. The data are useful in benchmarking research productivity. For example, 178 students graduated with doctorates in 1982. Of those, 59 (33%) had no publication in the Best 40 journal set through 1995; 18 (10%) had one publication, and 28 (16%) had nine or more publications. Of the total 3858 faculty, 1516 (39%) had no publications at all, 657 (17%) had one publication, and 335 (9%) had nine or more publications. Hasselback, Reinstein, and Schwan also provide data adjusted for coauthorship and for publication quality.

Chow and Harrison (2002) conducted phone interviews with 20 individuals who had previously been identified as influential accounting educators (based upon annual citation counts to the authors' work). Chow and Harrison asked open-ended questions designed to help understand why a specific research topic is meaningful or significant for accounting research. Major reasons cited are that the research: (1) addresses a real world/societal problem; (2) fills a significant gap or advances theory; (3) produces salient, novel/new or unexpected results; and (4) addresses hard-to-solve research issues and introduces new procedures. Chow and Harrison provide specific comments from respondents regarding these four items. Additionally, the respondents noted the importance of working with other colleagues.

Buchheit, Collins, and Reitenga (2002a) examined top-tier publications, defined as publications in the top three journals in the field, during 1997–1999 in four disciplines: accounting, finance, management, and marketing. (Because four journals were used for finance and management, two different lists of top three journals were used in those fields to compute statistics.) Buchheit et al. report that accounting had fewer top-tier publication slots available compared with the other disciplines, with accounting having about 50% fewer top-tier slots than finance, 29% fewer than management, and 18% fewer than marketing. Further, compared to the other disciplines, a higher percentage (about 50%) of top-tier accounting publications was produced by faculty at the top 20 academic institutions compared with finance (38%), management (30%), and marketing (36%).

Marston and Ayub (2000) examined the relationship between research productivity for 23 UK accounting departments from January 1992 through March 1996 and the research rankings given to those universities in 1966 by the Higher Education Funding Council (HECF). The HECF rating is an important criterion in determining the level of government funding provided to institutions. Research productivity was defined as publication in the top three UK-based journals (*The British Accounting Review*, *Accounting and Business Research*, *Journal of Business Finance & Accounting*) and the percentage of the accounting faculty judged to be research active. Marston and Ayub report that the number of articles published in top journals is statistically significantly associated with the HEFC rating.

Christensen, Finger, and Latham (2002) examined research productivity of accounting faculty, specifically the mix of publications in accounting and non-accounting journals. A variety of sources was used to construct a complete publication record through 1994 for accounting faculty members who graduated in 1977/1978 ($n = 316$) and 1987/1988 ($n = 253$). Of the 316 (253) who graduated in 1977/1978 (1987/1988), 108 or 34% (123 or 51%) had not published any articles by 1994. Of the 203 (123) from the 1977/1978 (1987/1988) classes who had published, 66 (31) published only in accounting journals; 40 (24) published only in nonaccounting journals; and 102 (68) published in both accounting and nonaccounting journals. For those who published, the mean number of publications for those who graduated in 1977/1978 (1987/1988) was 1.38 (1.15) articles in accounting journals and 0.57 (0.39) articles in nonaccounting journals. Distributional data about the number of publications are provided, as is an analysis of faculty who were at schools with doctoral programs and those who were not. Christensen et al. document larger

numbers of publications than would be found if a search were limited only to accounting journals, a typical policy in many research studies that seek to document research productivity by accounting faculty.

5.1.1. Descriptive articles

Coppage and Baxendale (2001a) describe their efforts to create synergy between an accounting educator's three primary responsibilities by integrating (1) teaching and research, (2) research and service, and (3) service and research with teaching. Four reviewers comment on this article. Smith (2001a) raises two concerns about Coppage and Baxendale's synergistic approach: (1) research as a 'user' of teaching and service resources and (2) ethical and cultural issues in research. Galassi (2001) agrees with Coppage and Baxendale (2001a) and further argues that teaching and research are strong complements, not substitutes. Siegel (2001) agrees with Coppage and Baxendale about the benefit of synergy but questions how to measure outcomes for service and raises issues related to coauthoring research with students. Brown (2001) argues that Coppage and Baxendale assume that equal emphasis is put on research, teaching, and service at universities and synergy between them is necessarily good without offering evidence. Coppage and Baxendale (2001b) address the criticisms and praise offered by the four commentaries.

Wilson (2002) summarizes the coverage of articles published in the first 10 years (41 issues) of *Accounting Education* with regard to aims of the journal compared with other accounting education journals, sources of articles (country and author), themes of issues, and types and topics of articles. Wilson identifies a gap in topical coverage: the linking of academic accounting and professional accounting.

5.2. Evaluation of faculty performance

5.2.1. Teaching skills

Swain and Stout (2000) surveyed recent doctoral graduates ($n = 109$, 75% response rate) to ascertain perceived readiness in AECC-recommended teaching characteristics. Results show that teaching development tends to be a personal effort in spite of the fact that subjects reported doctoral programs, academic employers, and individuals should equally share the responsibility. One conclusion is that both doctoral programs and academic employers have an obligation to prepare individuals for all aspects of scholarship, including teaching.

Stice and Stocks (2000) surveyed faculty ($n = 87$) who identified 52 factors influencing teacher effectiveness. A separate group of accounting professors ($n = 458$, response rate of 51%) rated the 52 factors as to their relative importance to teacher effectiveness. The five categories of factors are (1) course content, (2) classroom mechanics, (3) teaching techniques, (4) student involvement, and (5) learning atmosphere. Five of the factors rated in the top 10 in importance are within the learning atmosphere category, with "be enthusiastic" rated most important to teacher effectiveness.

Xiao and Dyson (1999) used Kelly's (1955) Personal Construct Theory and conducted research sessions with 31 students at three Chinese universities regarding the

constructs of good teaching. Students considered the qualities of good teaching to be consistent between accounting teachers and nonaccounting teachers. The most important characteristics associated with good teaching are being knowledgeable, adopting effective teaching methods, being responsible, making teaching interesting, encouraging and facilitating independent thinking, and possessing certain personality characteristics (e.g., approachable, modest).

Gribbin, Sobery, and Braswell (2002) surveyed 39 accounting doctoral program directors (a usable 42% response rate) regarding the extent of teaching training in doctoral programs. Descriptive statistics are presented, and the results are compared with a similar survey performed by Edwards, Ingram, and Sanders (1981). A formal course in teaching was required by 28% of the schools; 41% provided individualized assistance in teaching; and 56% made teaching experience a degree requirement. Various reasons were given for not requiring a separate course in teaching in the doctoral program. Program directors place only eight percent of the overall importance in the doctoral program to teaching effectiveness (with 46% placed on research skills, 16% fundamental skills, 18% technical competency in accounting, and 12% in other areas). Gribbin et al. also surveyed 356 accounting department administrators (a usable 45% response rate) regarding the importance of teaching in doctoral programs in personnel decisions: 87.1% reported that too little emphasis was placed on teaching skills; 81.5% reported that training in teaching methods in doctoral programs is inadequate; and 87.6% believed that teaching effectiveness is very important in hiring new faculty. Further, in promotion and tenure decisions, the mean weight placed on teaching effectiveness was 48.3%; these results varied by type of school.

Brown (2002b) examined the meta programmes of accounting educators using the Language and Behaviour (LAB) profile and the Motivation Profile Questionnaire (MPQ). Meta programmes "describe the behavioural traits that a person exhibits when interacting with other people, and may be identified in the language people use and the behaviour they display" (p. 79). Brown wanted to determine whether accounting educators exhibit dominant meta programmes, and was interested in comparing the profile results from the MPQ, which was developed fairly recently, and the LAB, which is much more time-consuming and requires a trained interviewer. The two methods do not measure the same exact set of meta programmes, but do overlap in identifying several meta programmes. Brown compiled the frequency that the meta programmes occurred for the accounting educators. Of the three most frequent meta programmes, two of the three were common between the two methods, and of the top five, three were common. Brown concludes that the two methods are correlated. Thus, the thesis of Brown's work is that MPQ method, which is simpler to administer, would be useful in helping accounting educators understand their own meta programme behavioral traits.

5.2.1.1. Descriptive article. Gaffney and Krishnan (2000) offer anecdotal evidence on the use of peer-review techniques to enhance teaching effectiveness. Six different strategies are described: (1) reflective memos on syllabi, (2) classroom observation, (3) student interviews, (4) teaching portfolios, (5) teaching cases, and (6) assessment

of student learning. The benefits and drawbacks of each strategy, based on the authors' experiences, are identified and discussed.

5.2.2. Student evaluations of teaching

Bailey, Gupta, and Schrader (2000) investigated factors that influence a student's evaluation of teaching (SET) by analyzing 4677 SET instruments from 20 accounting instructors at one institution for the 6-year period 1985–1990. The SETs used 24 questions to measure six factors: (1) instructor interaction, (2) course organization, (3) student interest, (4) course demands, (5) instructor involvement, and (6) perceived student achievement. Factor analysis was used to obtain a score for each factor. The global SET evaluation, a summative measure, was the dependent variable, and it was regressed on the factor scores. Bailey, Gupta, and Schrader report that the regression models are significantly different for (1) lower-level accounting courses vs. higher-level accounting courses, (2) cost/managerial vs. financial courses, and (3) some significant differences between pairs of instructors teaching the same course. Bailey, Gupta, and Schrader's results document the existence of different SET factor weights based upon various contexts (course level, subject matter, and instructor).

Green, Calderon, and Harkness (2002) asked 246 students (mostly accounting majors) to respond (dis/agree on a five-point scale) to statements about (1) the credibility and usefulness of SETs in assessing effective teaching; (2) whether SET ratings are influenced by (a) student characteristics (e.g., expected GPA), (b) class characteristics, or (c) instructor characteristics; and (3) whether students believe that SET ratings reflect how much students learn. Analysis of the responses indicated that students believe that they can answer most, but not all, SET questions based upon their experience. Although 83% of students agree that they can evaluate effective teaching objectively, 45% indicate some degree of doubt that SET ratings are good measures of effective teaching. Most students (60%) are neutral or disagree with the statement "overall, student evaluations are good measures of how much I learned." With respect to specific student characteristics, most students believed that they are not biased, but that other students are (e.g., over 90% indicate their age or gender did not affect their evaluation, but 25% believe that this trait biases the evaluations of other students). Most students do not believe that instructor characteristics affect their ratings, but that they do affect other students' ratings. With respect to class characteristics, 74% (53%) of students believe that class size (class rigor) does not affect their ratings, but 33% (52%) believe that class size (class rigor) affects other students' ratings. Finally, based upon open-ended questions, Green et al. report that students do not believe that their SETs are used and that students tend to base their SETs ratings relative to recent experiences with other teachers.

5.2.2.1. Descriptive article. Hand and Rowe (2001) discuss the processes, instruments, timing, and depth of course evaluations provided via student feedback.

5.2.3. Promotion and tenure

Rhoades-Catanach and Stout (2000) surveyed 35 institutions (a 30% usable response rate) about how external reviews are used in the promotion and tenure process. The institutions surveyed were subjectively assessed as those most likely to use external reviewers in the promotion and tenure process. While about 26% of respondents provided no benchmark against which to assess the candidate's record, 51.4% reported that the benchmark to be used was "others at the same level with which the reviewer is familiar" (p. 177), and 17.1% used the benchmark "would the candidate receive promotion/tenure at the reviewer's school" (p. 177). Regarding research evaluation criteria, the most frequently cited criteria were contribution of research to the literature, quality of publications, and potential for future research productivity. No research criteria were used by 11.4% of schools, while 61.5 and 62.5% of schools provided no evaluation criteria for teaching and service, respectively. Most schools (85.7%) included the candidate's vita in materials sent to the external reviewers and 82.9% included published research papers, but 60% provided no materials related to service. Finally, only 17.1% indicated that the reviewers' responses would be given complete confidentiality.

5.3. Other faculty issues

Other faculty issues relate to accreditation (one article) and to the job market (five articles). Apostolou et al. (2001) reviewed only one article dealing with the job market.

5.3.1. Accreditation

Sinning and Dykxhoorn (2001) surveyed 68 accounting administrators (a usable response rate of 51%) at schools that had received AACSB accounting accreditation by February 1999, of which 30 had achieved accreditation before the AACSB change to a mission-linked process. The purpose of the article is to present a large amount of descriptive information about the institutions and how they prepared for accreditation. Schools who are contemplating accounting accreditation should find the article useful.

5.3.2. Job market

Eaton and Hunt (2002) surveyed newly minted PhD's and faculty who recently relocated to new institutions about 32 factors important in the job acceptance decision and satisfaction with their job decision. Group 1 included 117 (a 49.5% usable response rate) assistant professors in accounting who recently accepted first-time positions during 1996–1998, and Group 2 included 116 (a 31.9%)usable response rate) relocating accounting faculty who recently changed jobs during preceding year. Eaton and Hunt report that reasons to select a current school differ with respect to type of school (doctoral-granting or nondoctoral-granting) and whether the individual was a new faculty member or a relocating faculty member. For relocators, factors associated with the likelihood of obtaining tenure and teaching assignments were more important. For faculty at doctoral-granting schools, resources for

research, including the presence of a doctoral program, were more important. The only major difference in responses based upon gender was that females place a much higher priority on job opportunities for spouse than did males. Eaton and Hunt also report on how faculty conducted the job search.

Sayre, Holmes, Hasselback, Strawser, and Rowe (2000) modeled salary as a function of gender, years worked, rank, quality of individual's doctoral granting institution, quality of individual's current institution, and productivity (quality and quantity of journal articles). Budgeted salary data for 126 institutions for 1994–1995 were used, with the final faculty sample including 738 males and 172 females. Gender was the primary variable of interest, with the other variables serving as control variables. While females, on average, were paid 9.7% less than males, after controlling for other factors, Sayre et al. report that the difference is not statistically significant. In the final regression, quality of the candidate's graduate program, quality of current institution (based on the Carnegie Foundation classification), and rank were significantly associated with salary.

Collins, Reitenga, Collins, and Lane (2000) investigated the association of gender and the likelihood of obtaining initial employment at an institution with an accounting doctoral program. Individuals who accepted initial employment during 1991–1997 were the surveyed, with 39.2% of the pool being female. Collins et al. report a weak association between gender and the likelihood of initial employment at a doctoral-granting institution. When using various extant surveys to rate the quality of the individual's doctoral program as top-, middle-, or bottom-tier, Collins et al. report that female students from top tier and bottom tier doctoral programs are not less likely than males to receive initial employment at doctoral-granting institutions, but females from middle-tier doctoral programs are less likely to receive initial employment at doctoral-granting institutions. Further, for individuals from top-tier doctoral programs who obtained initial positions at high prestige doctoral programs, no significant association with gender is reported.

Strawser, Flagg, and Holmes (2000) surveyed 221 (a 53.4% usable response rate) tenure-track accounting faculty about job-related need-fulfillment. Demographic data on race, gender, rank, and academic institution were obtained, as well as subsequent turnover in 1995 and 1996. Responses were compared with those of a similar survey reported in 1971. Compared with 1971, the level of job-related satisfaction declined, particularly for assistant professors, but dissonance (difference between expectations and perceived actual) was about the same. No difference in dissonance was found based upon gender or race. Compared with 1971, security was more important, while job-related needs such as esteem and autonomy were less important. Assistant professors who subsequently left their institutions had greater dissonance.

Stammerjohan and Hall (2002) evaluated 80 US doctoral-granting institutions that had at least five accounting doctoral graduates during 1980–1997 to rank order them based on student placement upon graduation. Rankings are based on publicly available institutional rankings and the work by Hasselback and Reinstein (1995) that measured research productivity of accounting departments. Four alternative rank orders are based upon four different placement measures. This descriptive

study provides informative data for accounting departments offering doctoral degrees.

5.3.2.1. Descriptive articles. Craig and Amernic (2002a) discuss (1) the role of a university and its accounting educators as contributors to developing intellect (i.e., not practical knowledge) in society and (2) how to fulfill that role as changing and emerging issues compel change and alter the accounting educator's accountability. Five educators provide comments. Brown (2002a) points out that the idea of a university—to provide broader intellect as opposed to technical skills—does not imply that changing issues should not affect a university's accounting curriculum. Dodds (2002) addresses broad issues facing universities and posits that universities may face mediocrity or failure if they fail to change. Patten (2002) agrees with Craig and Amernic and examines, from a university administrator's perspective, how and why the accountability of a university and its educators came to change. Platt (2002) relates his experience as an administrator as the department, college, and university responsibility changed and advocates coordination with practitioners so that the transformation of practice is through theory. Sikka and Wilmott (2002) agree with Craig and Amneric's distaste with the accountabilities of modern (accounting) educators but point out that any reform should be planned with consideration of the modern entities with which the university is intertwined. Craig and Amernic (2002b) address the reviewers' comments.

5.4. Suggestions for research

Accounting educators will no doubt continue to be interested in faculty issues, particularly related to how faculty are evaluated and compensated. Over the years many articles have dealt with student evaluations of teaching, and in this review that area has the largest number of articles. Articles are beginning to use multi-year and multi-institutional data, although using many different ways of assessing teaching quality makes it difficult to conduct investigations across institutions. The use of different evaluation instruments is the largest impediment to conducting multi-institutional research.

A series of articles over the years has provided a fairly good understanding of accounting faculty research productivity in accounting journals (with information about co-authorship and journal quality). During 2000–2002, researchers began to investigate publications in nonaccounting journals and to compare accounting researchers' productivity with those of other disciplines. This added information helps accounting faculty understand how their research productivity compares with that of other disciplines. Other business disciplines seem to use citation counts to assess research productivity more than do accounting researchers. This is due, in part, to the fact that the Web of Science does not cover many accounting journals in which accounting researchers publish.

A critical issue affecting accounting faculty is the impending retirement during the next decade of so many educators who built accounting programs in the 1970s and

1980s. How will the wave of retirements affect research, teaching, and curriculum? Further, given the severe state budget pressures during the past few years and the declining state support for higher education, the mix of faculty has changed at many institutions as more non-tenure, non-PhD faculty are used in the classroom, either as adjuncts or full-time lecturers. What does the changing faculty mix and changing economics of higher education mean for accounting education; for accounting scholarship? As PhD programs have downsized over the past decade, fewer PhD students are being produced; what does this portend for accounting education? Finally, an increasing number of accounting faculty at US institutions come from other countries, and many of these faculty have no experience with the accounting profession in the US. What implications does this demographic change have for accounting education?

6. Students

This section reviews articles that address student issues, such as choice of major and career, learning styles and approaches, and skills and characteristics. Generally, the 31 articles (25 empirical, 6 descriptive) reviewed in this section measure student attributes of interest (e.g., study habits, learning style) and attempt to identify associations with existing variables (e.g., demographics) or effect on dependent variables such as student performance. A few articles measure the effect of an experimental manipulation, such as curriculum changes designed to alter opinions about accounting. Core competencies are addressed in this section (also in Section 3.1.2. in curriculum and instruction). Articles in both sections measure student core competencies, but those presented in this section do not involve curriculum changes that attempt to develop competencies. Instead, these studies identify factors outside of the curriculum that affect core competencies and other skills. The articles in this section are organized using the following categories: (1) choice of major and career, (2) student skills and characteristics, (3) learning styles and approaches, and (4) recruitment and career opportunities.

6.1. Choice of major and career

The decision of students to major in accounting or to choose accounting as a career is of interest to accounting educators, and consequently accounting researchers, because it affects the enrollment in accounting programs. In addition, these decisions are often the result of how accounting educators depict accounting and how students perceive accounting. Empirical articles in this subsection investigate the associations between choice of major and career and other variables, some controllable by accounting educators (e.g., presentation method) and some not controllable (e.g., demographics). Descriptive articles offer evidence about student choices based on observations, surveys, and opinions.

6.1.1. Major

Gracia and Jenkins (2002) interviewed 42 students to explore aspects of academic performance. Of the students interviewed, half passed all courses in the previous year at the first sitting while the other half failed at least one course. The interviews revealed differences between the groups with respect to why they were at the university and why they were majoring in accounting. For example, students who had passed their course cited some kind of encouragement by family and friends to attend the university and major in accounting. Students who failed a course had less clear reasons for their choices. Other differences between the successful students and those with a failed course with respect to how they participate in class, expectations from instructors, and other aspects are also included in the paper.

Geiger and Ogilby (2000) investigated how students perceived the first accounting course and whether that perception affected a student's decision to major in accounting. Students enrolled in the introductory financial accounting course at two mid-sized public universities were surveyed at the beginning and end of the semester. The self-report questionnaire contained 10 statements about perceptions of the course, the instructor, and the course's impact on their career. Demographic data, including college GPA and SAT scores, were also collected. On the preliminary questionnaire, accounting and nonaccounting majors both had positive perceptions about the course, instructor, and other dimensions, though perceptions were slightly higher for accounting majors. Both majors had diminished perceptions at the end of the semester, most significantly in boredom with the class and perceptions of individual instructors. After controlling for initial major (major reported at the beginning of the semester), instructor, and course performance, Geiger and Ogilby found that perceptual positions were not related to intended major (major at the end of the semester).

Mladenovic (2002) investigated negative perceptions of accounting held by introductory accounting students, and presented results of a method for facilitating perception change. At the beginning of a semester, the perceptions about the field of accounting of 945 introductory accounting students were measured. Using a five-point Likert-type scale, half of the students indicated agreement (disagreement) with five statements about the nature of accounting (e.g., requires creative judgment, controversial); while the other half indicated the affinity between accounting and 10 disciplines (e.g., law, literature, math). Perceptions were compared between students and teachers, and there was a significant difference on 11 of the 15 questions. The course content, which was designed to develop realistic perceptions about accounting, included social and historical perspectives, cases (some non-numerical), current events, professional literature, and two discussions about changing perceptions related to course content. Twelve weeks into the semester, perceptions were re-measured using the same method; 576 students responded. Analysis indicated that 14 of the 15 perceptions significantly changed toward teachers' perceptions. The one exception was that students' perceptions about whether accountants need to be good communicators did not change toward teachers' perceptions and remained significantly different. Perceptions about whether accounting is primarily about numbers and whether accounting is objective rather than subjective remained significantly different between students and teachers.

6.1.2. Career

Chan and Ho (2000) surveyed 167 final-year accounting students in Hong Kong to identify attributes of public accounting firms that affected job selection. The survey was given just before job offers were made to these students, most of whom had applied to public accounting firms. Respondents identified the most important and least important firm attributes from a list of 30. Factor analysis revealed seven categories of attributes: (1) training and exam assistance, (2) staff impressiveness and friendliness, (3) firm reputation and profile, (4) salary and fringe benefits, (5) job prospects, (6) opportunity for travel and transfer, and (7) work environment. Chan and Ho used the factors to determine if gender and GPA affect the importance assigned by the respondents. The analysis revealed that students with higher GPAs were more concerned with firm reputation and students with higher GPAs were less concerned with working environment.

6.1.2.1. Descriptive article. Weisenfeld and Robinson-Backmon (2001) investigated perceptions about discrimination (race, gender, age, and other), career development curtailment, benefits of mentoring, and what educational institutions can do to prepare students. The results of a survey completed by 425 African-American accountants are reported.

6.2. Student skills and characteristics

Designing an accounting curriculum requires not only providing students with the necessary technical knowledge, but increasing requires the development of other personal skills such as the ability to solve problems, manage time, communicate, and work in groups. This subsection pertains to the skills and characteristics of students. These empirical articles seek correlations between these skills and variables out of the control of accounting educators (e.g., demographics). These articles do not include techniques to incorporate skills into the curriculum or to develop these skills (see Section 3.1.2. in curriculum and instruction for curriculum change articles related to student skills.)

6.2.1. General skills

Arquero Montaño, Donoso Anes, Hassall, and Joyce (2001) examined the importance that employers of management accountants put on skills (e.g., communication, working in groups, problem solving, pressure and time management, information technology) and the level of these skills exhibited by students. A survey was sent to 950 employers in the UK, and 214 usable responses were received (22.5% response rate). Respondents indicated on an 11-point, Likert-type scale the importance of and their experience with the level of 22 skills exhibited by recent graduates and newly qualified accountants. The results were mapped by importance and level exhibited. Skills deemed important but underdeveloped included written and verbal communication, organization and delegation, use of multidisciplinary knowledge to solve problems, and organizing workloads to meet conflicting and unexpected requirements. In a second part of the survey, employers generally agreed

with statements that the university should take workplace requirements into consideration when developing curriculum and course content.

6.2.1.1. Descriptive articles. Wheeler (2001) discussed personality theories, indicators, and characteristics as they apply to accounting research and education. Zaid (2000) discussed the mandatory appointment qualifications, roles, and responsibilities of Muslim accountants.

6.2.2. Problem-solving skills

Davidson, Slotnick, and Waldman (2000) studied relationships between linguistic and problem-solving performance in accounting education. Using 90 undergraduate accounting students in a large, public university, the task consisted of a computerized case analysis in which problem-solving skills were rated by expert evaluators. Measures of linguistic performance included idea density and grammatical complexity. The results show that idea density is related only to unstructured problem solving while grammatical complexity appears unrelated to either structured or unstructured problem solving. Thus, the evidence suggests that teaching students to solve structured problems may not help them learn to solve unstructured problems.

Normand and Baker (2002) propose a method of assessing problem-solving skills of accounting majors and provide evidence obtained from an assessment. The method, which was developed from education psychology and accounting behavioral research, focuses on the problem-defining phase of the problem-solving process. A packet containing two revenue-recognition cases with different difficulty levels, two identical questionnaires, and a personal-information questionnaire was given to 46 volunteer, undergraduate accounting students nearing graduation. After reading each case, students were asked to define the problem and list the factors they used to identify the problem. Responses were compared to a benchmark answer (written by five instructors) and scored as to how well they matched. Students scored between zero and two (out of four) on case one and between zero and four (out of six) on case two, the more difficult case. Data were analyzed using MANOVA with two case scores as dependent variables and accounting work experience, GPA, gender, and age as independent variables. The results indicated that student scores were not biased for any demographic group.

Phillips (2001) investigated the relationships among unstructured problem-solving ability (performance on a final exam question), students' beliefs about the complexity of knowledge, study strategies, and GPA. Two weeks before the final exam, 112 students in introductory accounting completed the research instrument used to measure students' beliefs about the complexity of knowledge and study strategies. To assess beliefs about knowledge, students used a seven-point scale to agree or disagree with statements about knowledge in four categories, one of which was complexity of knowledge. The variable study skills was measured by students' agreement or disagreement on a five-point scale with statements that address information processing, self-testing, and studying. Phillips found an association between self-testing and the belief that knowledge is complex, and that whether the association is positive is related to GPA. In addition, the ability to solve unstructured

problems was significantly (marginally) associated with the belief that knowledge is complex and GPA (self-testing).

Sweeney, Wolk, Summers, and Kurtenbach (2000) studied the relationship between a student's problem-solving style and performance in accounting courses (accounting GPA). Problem-solving style was assessed using the Kirton (1976) Adaption-Innovation Inventory (KAI), on which respondents indicate how hard or easy (on a five-point scale) it would be to maintain 32 behaviors. Students enrolled in the auditing, AIS, and intermediate accounting courses at two universities completed the KAI (a sample of 222 juniors, seniors, and graduate-level accounting and nonaccounting students). A majority of the accounting majors were classified as adaptors. In a regression analysis, age, nonaccounting GPA (control variables), and high efficiency, an adaptor trait, predicted performance in accounting courses. Being a senior (a control variable) and low conformity, an innovator trait, had a negative effect on success. This finding was contrary to the expectation that adhering to rules would improve accounting grades. The results indicate that accounting curricula are not geared towards one type of problem solver.

6.2.3. Communication

Ameen, Guffey, and Jackson (2002) investigated communication apprehension in accounting majors. Students from three universities participating in the study were either enrolled in the introductory accounting course ($n = 434$) or a senior-level course ($n = 265$). The research instrument contained demographic questions, a question about the number of formal presentations made in college, and 24 statements (with which respondents agreed or disagreed on a five-point scale) about comfort levels in four communications settings: public speaking, meetings, group discussions, and talking to another person. A comparison between accounting and nonaccounting majors revealed that both senior-level and introductory accounting students have higher overall apprehension scores than the nonaccounting majors. In addition, there was no significant difference in overall apprehension between introductory and senior accounting students. Because seniors reported having given more formal presentations, practice does not appear to decrease apprehension. Ameen et al. suggest that the perception of poor communication skills in accounting graduates may be attributable in part to apprehension.

Smythe and Nikolai (2002) employed a grounded theory thematic analysis to explore oral communication in accounting curricula. The research is based on the communications concerns model (discussed in Smythe & Nikolai, 1996), which recognizes three oral communication concerns: concerns about self, concerns about task, and concerns about impact. The current study explored the concerns of undergraduate students ($n = 62$), graduate students ($n = 43$), and accounting professionals ($n = 61$). Results suggest that accounting curricula should incorporate more oral communication opportunities, and specific suggestions are offered.

6.2.3.1. Descriptive article. Rosner (2000) recalls a student's fear of oral presentations while exemplifying the need for empathy, flexibility, and open-mindedness in nurturing and challenging students.

6.2.4. Characteristics

Bay and Greenberg (2001) replicate a study by Ponemon (1993), which suggests that there is a quadratic relationship between behavior and ethical development as scored on Rest's (1979) Defining Issues Test (DIT); that is, high and low DIT scores are associated with unethical behavior. Ponemon's results are contrary to the monotonic relationship upon which the DIT is based—as DIT scores increase, behavior is more ethical. To measure ethical behavior, 57 undergraduate business students participated in an experiment in which they were randomly assigned as sellers (of four cards, some worth $1 and some worth $5) or buyers (interested in buying only $1 or only $5 cards). The color of one card per seller was only known to the seller. In two rounds, the buyer acquired as many cards of assigned color as possible, and sellers earned as much money as possible. Success was rewarded with incentives of up to $20 cash. Sellers could be unethical by selling their hidden card for $5 when it was only worth $1. In rounds three and four were played with buyer/seller roles reversed. The participants also took the DIT test (45 usable responses). Bay and Greenberg found a quadratic relationship existed between ethical behavior and the DIT score. After splitting the sample by gender, the relationship was quadratic for males and monotonic for females.

Nelson, Vendrzyk, Quirin, and Allen (2002) report the results of a longitudinal study that examines characteristics of senior and master's-level accounting students and how they change over time, in this case from 1995 to 2000. Though 40 and 39 schools participated in 1995 and 2000, results presented are based on the responses from 22 schools participating both years (1352 and 1475 students in 1995 and 2000, respectively). Responses are divided into five categories: demographic; student quality; academic major decision; extracurricular involvement; and education, certification, and career plans. Some changes from 1995 to 2000 are a shift in the gender mix (more females) at the graduate level, an increase (decrease) in the number of older students at the undergraduate (graduate) level, an increase in student quality as measured by GPA and entrance exams, an increase in number of students completing internships, and a decrease in the number of students planning to take certifying exams other than the CPA.

Thorne (2001) investigated the extent to which accounting students use cognitive moral capability (CMC), an individual's potential to incorporate higher order principles in moral reasoning, when faced with moral decisions. Thorne hypothesized that accounting students use a more sophisticated level of moral development to resolve hypothetical dilemmas vs. accounting-specific dilemmas and in prescriptive reasoning (determining an ideal resolution) as compared with deliberative reasoning (determining a resolution considering moral and nonmoral possibilities). Rest's (1979) Defining Issues Test (DIT), which contains three hypothetical moral dilemmas, was given to 130 accounting students in a cooperative education program to measure CMC. Four accounting-specific moral dilemmas were added to measure either prescriptive reasoning (asks for ideal resolution) or deliberative reasoning (asks for resolution). Analysis of the 110 usable responses supported both hypotheses indicating that accounting students do not use their full cognitive moral capability to solve accounting dilemmas, and students use more of that capability to describe an ideal resolution than an actual resolution.

6.3. Learning styles and approaches

Articles in this subsection of student-related research examine how students learn including their inherent learning styles (defined by the researcher or by standardized instruments) and how they study and approach learning. Some researchers investigate the validity of existing learning styles inventories while others examine associations with learning styles and other external variables. The student study habits are also investigated with respect to course performance and time spent studying.

6.3.1. Learning styles

Adler, Milne, and Stringer (2000) surveyed accounting educators and administrators in New Zealand to identify barriers to the adoption of learner-centered pedagogy. The research method consisted of 20 personal interviews and a mail survey ($n = 104$, 26% response rate). The obstacles are identified within three categories: lack of student readiness, inadequate educator support mechanisms, and nonreflective education practices. One conclusion offered is that little systematic change in accounting education has occurred in spite of the many calls for reform.

Ramsay, Hanlon, and Smith (2000) studied the effect of a student's cognitive style (acquiring, storing, and using knowledge) on his/her preference for cooperative-learning techniques. Cognitive style was measured using the four dimensions of the Myers–Briggs Type Indicator (MBTI): extroversion/introversion, sensing/intuition, thinking/feeling, and judging/perceiving. One hundred and forty-one students in the second semester of introductory accounting were arbitrarily divided into groups of about six that worked together to solve and present one multipart accounting problem during the semester. At the end of the semester, students used a seven-point Likert scale to respond to five statements about their preference for cooperative learning. Regression analysis (preference as a function of the four MBTI dimensions) indicated that extroverts (as opposed to introverts) and feelers (as opposed to thinkers) prefer cooperative learning. No association with cooperative-learning was found for the other two dimensions of the MBTI. Additional analysis indicated that students with lower scores on university entrance exams prefer cooperative-learning.

Christensen, Fogarty, and Wallace (2002) examined the association between a student's ability to assess his/her mid-year course performance (self efficacy) and the student's exam and final course grades. After the second mid-semester exam (but before grades were returned) in a cost accounting course, 214 students from two universities were asked to estimate the number of points out of 100 they earned on exam two and their final exam grade for the course. Two self-efficacy scores were calculated by subtracting estimates from actual grades, and direction on each difference was labeled as optimistic or pessimistic. Additional variables were included to control for skill and ability (e.g., accounting GPA) as well as job- and school-related extracurricular activities. Using correlations and path analysis, Christensen et al. conclude that students with more conservative grade estimates (i.e., more pessimistic or less optimistic) perform better on exams and overall. The skill and ability control variables were positively associated with the self-efficacy measure and actual performance, while extracurricular activities had a negative association with self-efficacy.

Marriott (2002) investigated the learning-style preferences of students over their 3-year accounting curriculum at two UK universities. Each student's learning-style preference was measured using Kolb's Learning Style Inventory (1976), which evaluates preference for concrete experiences vs. abstract concepts and preference for experimentation in new situations vs. observation and reflection. The inventory was administered to 206 first-year accounting students at a traditional university and a polytechnic university, and 125 usable responses were obtained (for a 64.8% usable response rate). The materials were administered at the same schools at the end of a 3-year period, yielding 127 usable responses. Accommodators accounted for 45.6, 40.2, and 40.9% in the first-year, full, and third-year samples. Using matched data ($n = 54$ matched first- and third-year responses), shifts toward a preference for experimentation were observed, significantly for students at the new university on the second dimension. The study is limited by the small sample of matched pairs, particularly at the new university ($n = 6$).

Duff (2001a) examined the utility of Honey and Mumford's (1992) Learning Styles Questionnaire for accounting educators. Learning Styles Questionnaire respondents agree or disagree with 80 items to arrive at a score for four learning styles: activist, reflector, theorist, and pragmatist. Duff gave the Learning Styles Questionnaire to 127 undergraduate students (freshmen, sophomores, and juniors). An analysis of the responses revealed modest internal consistency, and a four-factor (four learning styles) model accounted for only about 25% of the variability in the data. In addition, the 80 items did not fall clearly into one factor, and accordingly, the four factors did not clearly represent the four learning styles, limiting construct validity. Duff acknowledges the relatively small sample on which the conclusions are based, but finds that the Learning Styles Questionnaire model is not sophisticated enough to describe learning styles in accounting education.

Eide, Geiger, and Schwartz (2001) investigated the Canfield (1988) Learning Style Inventory (CLSI) as an assessment tool for accounting educators. The CLSI assesses three aspects of how students prefer to learn: environment (e.g., teamwork, competition), areas of interest (working with numbers, words, things, or people), and modes of interest (hearing, reading, interpreting, or hands on). CLSI scores, called learner type, have two dimensions: social vs. independent and applied vs. conceptual. To evaluate the CLSI, the instrument was given to 531 upper-level accounting majors at eight universities. The same students responded to the same instrument 5 weeks later, and scores were matched. An analysis of both sets of scores and their correlation revealed only moderate internal consistency and a significant number of changes in learner type. In addition, the two-factor model used by the CLSI accounted for about one-third of the variability in scores. A three-factor model and rotations of both were also examined, none of which made remarkable improvements. Eide et al. find little support for using the CLSI to assess learning styles in accounting education.

6.3.2. Studying and learning approaches

Booth, Luckett, and Mladenovic (1999) extended the literature on approaches to learning by studying learning outcomes of accounting students at two Australian

universities. The sample consisted of 374 students, which was a 70.6% response rate. The two-part survey included Biggs' (1987) Study Process Questionnaire and a post-test questionnaire that elicited student-specific information. The results show that accounting students have higher surface-learning scores than their liberal arts and sciences counterparts. Surface learners tend to be rote learners, which is not harmonious with the educational initiatives to develop a wide range of competencies in accounting students. Educators should focus on creating deep learners, who make connections and understand the content better than rote learners.

Byrne, Flood, and Willis (2002) investigated the relationship between a first-year accounting student's learning approach and the student's learning outcome, measured by course grade in the management accounting module at an Irish university. Learning approach was measured using a 52-item instrument on which student dis/agreed on a five-point scale. An individual's responses provided scores for 13 subscales, each a part of one of three main scales: deep approach characterized by an interest in ideas and meaning, strategic approach focused on organization and achieving, and instrumental approach related to relying on memory rather than understanding. For female students, the results indicate that deep and strategic learning approaches were positively associated with high grades, while the instrumental approach was associated with low grades. The same relationship was not found for males. Byrne et al. acknowledge that the self-report instrument used to measure learning approach is a limitation of the study, and male students may not have accurately reported their learning approach.

Davidson (2002) considered the relationship between study approach and performance on different types of exam questions. Out of 305 students in two sections of introductory accounting, 211 agreed to participate and provided usable responses. Biggs' (1987) Study Process Questionnaire was given at the beginning of the semester to measure study approach as surface or deep study. For the two exams given during the semester, questions were rated as high or low complexity. Dependent variables for three regression models were overall exam scores, scores on low-complexity questions, and scores on high complexity questions. Independent variables used in the regression models were two study-approach scores, gender, GPA, and motivation (intent to seek an accounting job). GPA and motivation were significant in all three models. Using the deep study approach was significantly associated with better performance only on complex-questions. The surface study approach was not significant in any model, indicating that it did not significantly affect performance on any question type.

Sanborn, Schwartz, and Walden (2000) asked senior and junior students at five southeastern universities how many hours they studied for a particular course in the previous 7-day week and how many hours they believe their instructor expected them to study. Student demographic information including GPA, course load, and weekly employment hours was also collected. Instructors were surveyed to determine how many hours they expect their students to study, how many hours they believe their students study, and demographic information. Analysis of student and instructor responses yielded the following conclusions: (1) students study more than instructors think they do; (2) students believe they should study more than instruc-

tors expect them to; (3) both students and instructors believe they should study more than they actually do; and (4) instructors with high expected study time have students who believe they should and report studying more than instructors with low expectations. No significant differences were found between the universities, but differences are identified for gender, age, ethnicity, and other demographic characteristics.

6.3.2.1. Descriptive articles. Lucas (2001) identified the characteristics and contextual issues revealed during a phenomenographic study pertaining to deep and surface approaches used by students learning introductory accounting. Smith (2001b) discussed the attributes, skills, concepts, and implications associated with self-regulation of learning by accounting researchers and educators.

6.4. Recruitment and career opportunities

Senarath Yapa (2000) describes the accounting education process in Sri Lanka and the university–profession partnership, and analyzes the effect on the supply of accounting professionals in Sri Lanka. Information about the Institute of Chartered Accountants in Sri Lanka (ICASL) and pass rates on the ICASL examination is included.

6.5. Suggestions for research

Research related to core competencies has proceeded in two ways. Some studies measure competencies of students with no attempt to change it, while some (reviewed in the Curriculum and Instruction section) investigate the ability of a technique or course to improve student skills. While both types of research provide a necessary foundation, the bigger, more important question is can the accounting curriculum as a whole develop core competencies? That research question can only be answered through a longitudinal study that evaluates students at the introduction to and graduation from a curriculum designed to teach more than technical skills. Studies that just measure students' skill levels or measure skill development within only one course fall short of investigating the long-term ability of educators to build core competences.

Rebele et al. (1998b) suggest that research be conducted into whether the skill sets of students that major in accounting are the skills necessary to succeed in accounting. Six years later, this question remains unanswered. Of course, this question has many facets. Do students who are not motivated to major in accounting possess the skills needed to be successful in accounting? Do those non-accounting majors possess higher levels of the desired skills than those motivated to major in accounting? What characteristics (perceived or real) of accounting keep those non-accounting majors away? And, does accounting fail to attract the *right* kind of students? Although Geiger and Ogilby (2000) investigate students' decision to major in accounting and Mladenovic (2000) investigates perceptions of accounting, in both studies the subject group is students already enrolled in introductory accounting. To

address these suggested research questions, accounting education research must study non-accounting majors and non-business majors (those that never even take introductory accounting) to determine what is keeping them away.

Learning styles also continues to be investigated by accounting researchers. Two studies (Duff, 2001a, 2001b; Eide et al., 2001) examined the learning style instruments themselves, with both finding little evidence that the instruments are useful in accounting education. Marriott (2002) investigated shifts in learning style over time. These three studies cast doubt on the usefulness of learning style measurements for accounting educators. Because learning styles are widely accepted by education in general, accounting education researchers should continue their investigation. The measurement of student learning styles should be made in conjunction with teaching techniques designed to exploit various learning styles. Specifically, can understanding learning styles lead to course and curriculum designs that are more effective?

7. Conclusion

This literature review identifies and summarizes contributions made to the body of accounting education research during the years 2000, 2001, and 2002. The 206 articles reviewed represent contributions of new ideas and reinvestigations in the traditional areas of assessment, curriculum and instruction, educational technology, faculty issues, and students. Over 350 authors contributed to articles reviewed in this paper. Suggestions for research are presented at the end of each major section of the literature review.

The accounting profession is under scrutiny as never before. New layers of regulation (i.e., Sarbanes-Oxley Act of 2002) have been added to protect the public from dishonest company managers and auditors. Problems in accounting practice make it imperative that academicians re-examine all aspects of how students are recruited, educated, and mentored. This process is inextricably linked to doctoral education and faculty development. Issues confronting accounting education in the post-Enron world are nontrivial and require extensive thought and research.

A review of recent tables of contents of the major accounting education journals shows an emphasis on cases as opposed to pioneering empirical research. Cases serve an important role in helping faculty to add examples and context to the classroom experience. However, what is needed most in the accounting literature is empirical evidence about how to improve the educational setting. For example, quite a few papers have been published over the years on measuring learning styles of accounting students. What is missing, however, is empirical study of the appropriate pedagogical response when learning styles are known. Empirical research is needed on how to integrate technology into accounting education so as to enhance student learning.

Accounting education research should be perceived as having a broad agenda that examines issues that will improve faculty and institutional inputs, processes, and

student learning. Tremendous pressure is being applied by accreditation bodies to conduct assessment. However, research must be conducted to demonstrate which assessment measures provide the highest quality feedback to improve the curriculum. Accounting faculties have debated whether to teach a user- or preparer-approach in accounting courses. Yet, although some empirical accounting research has addressed this issue, a broad-based study of which approach best serves the profession and investing public is needed. In the same vein, questions about the best way to teach (learn) have not been answered with longitudinal studies. It would be interesting to know if, for example, active vs. passive learning environments made a difference in the long-term (e.g., professional exam pass rates, career performance). If there is no difference, then perhaps the research should examine whether students learn better when the teaching style is in harmony with the instructor's own learning/teaching style. Research to date tends to focus on small samples within one semester with one instructor, which does not provide a strong basis on which to design a curriculum.

The oft-cited woe of the educational system is an apparent failure to integrate ethics education into the accounting curriculum. There is a wide range of choices that educators may make to develop an ethics component, including the requirement of ethics courses taught by philosophy faculty to the inclusion of ethics topics within each major course. A research agenda that includes how to incorporate ethics education in a meaningful way is imperative.

Ultimately it is up to the academy to anticipate and be proactive about the future of accounting education. Discussions with colleagues and professionals about what constitutes an educated accountant will help generate ideas for research agendas that prepare educators to tackle issues before they become problems. Debate is great, but what is sorely needed is evidence derived from well-designed studies of issues that drive the debate.

Appendix

The articles reviewed in this paper appear primarily in the main section of the four journals, *Journal of Accounting Education*, *Accounting Education*, *Advances in Accounting Education*, and *Issues in Accounting Education*; however, many additional articles are published in sections devoted to teaching notes, forums, and educational resources. The articles reviewed in this paper are of an empirical or descriptive nature, and articles devoted to educational resources, specifically cases for use in the classroom, are excluded from the review. So that the reader may gain an understanding of the breadth of material published in the four journals, the appendix lists these teaching-oriented materials.

An additional 53 articles are categorized as cases. These articles contain a case suitable for assigning to a class along with teaching notes and a solution. Tables A1 through A6 presented in this appendix list references for cases designed by accounting educators to be used in the classroom. The 53 cases are organized by the courses for which they are most suited: Accounting Inform-

ation Systems (Table A1), Auditing or Internal Auditing (Table A2), Cost or Managerial (Table A3), Financial Accounting at several levels (Table A4), Nonprofit (Table A5), and Tax (Table A6). Compared with prior literature reviews, there has been a noticeable increase in the number of cases specifically designed for internal auditing. In addition, nine of the 21 financial accounting cases are devoted to the topics of earnings management and earnings quality, which are separated in a panel of that table. The articles listed in this appendix do not appear in the References.

Table A1 Instruction cases for accounting information systems

Knapp, M. C., & Knapp, C. A. (2000). Perry Drug Stores, Inc.: accounting and control issues for inventory in a retail environment. *Issues in Accounting Education*, *15*(2), 237–255.

Table A2 Instruction cases for auditing/internal auditing

Ballou, B., & Knechel, W. R. (2002). Ceskoslovenská Obchodní Banka, a.s.: applying business risk audit techniques in an emerging market economy. *Issues in Accounting Education*, *17*(3), 289–313.
Ballou, B., Godwin, N. H., & Tilbury, V. (2000). Riverfest: Managing risk and measuring performance at Little Rock's annual music and arts festival. *Issues in Accounting Education*, *15*(3), 483–512.
Boockholdt, J. L. (2000). Comptronix, Inc.: an audit case involving fraud. *Issues in Accounting Education*, *15*(1), 105–128.
Drake, J. (1999). Instructional case: the audit of Award Rosette Manufacturers Ltd. *Accounting Education*, *8*(4), 363–375.
Gelinas, Jr., U. J., Levy, E. S., & Thibodeau, J. C. (2001). Norwood Office Supplies, Inc.: A teaching case to integrate computer-assisted auditing techniques into the auditing course. *Issues in Accounting Education*, *16*(4), 603–636.
Higgs, J. L., & Reisch, J. T. (2002). Testing NCAA compliance at Southeastern State University: a case study. *Issues in Accounting Education*, *17*(1), 95–100.
Houston, R. W., & Howard, T. P. (2000). The UniCast Company: a case illustrating internal auditor involvement in consulting. *Issues in Accounting Education*, *15*(4), 635–655.
Ivancevich, S. H., & Joseph, G. W. (2001). Zacha Technology Corporation: internal control assurance service reporting issues in an e-commerce environment. *Issues in Accounting Education*, *16*(3), 473–507.
Johnstone, K. M., & Mazatko, S. R. (2002). Resolving difficult accounting issues: a case study in client–auditor interaction. *Issues in Accounting Education*, *17*(1), 27–39.

Lovata, L. M., Reed, B. J., & Costigan, M. L. (2000). Revenue and expense recognition cases developed from the accounting and auditing enforcement releases. *Journal of Accounting Education*, *18*(3), 283–300.
Strand, C. A., Welch, S. T., Holmes, S. A., & Judd, S. L. (2002). Developing student abilities to recognize risk factors: a series of scenarios. *Issues in Accounting Education*, *17*(1), 57-67.
Walker, P. L., Shenkir, W. G., & Hunn, C. S. (2001). Developing risk skills: an investigation of business risks and controls at Prudential Insurance Company of America. *Issues in Accounting Education*, *16*(2), 291–313.

Table A3 Instruction cases for cost/managerial

Bamber, L. S., & Hughes II, K. E. (2001). Activity-based costing in the service sector: the Buckeye National Bank. *Issues in Accounting Education*, *16*(3), 381–408.
Brewer, P. C., Campbell, R. J., & McClure, R. H. (2000). Wilson Electronics (A) and (B): an ABC capstone experience. *Issues in Accounting Education*, *15*(3), 413–458.
Crawford, D., & Henry, E. G. (2000). Budgeting and performance evaluation at the Berkshire Toy Company. *Issues in Accounting Education*, *15*(2), 283–309.
Drake, A., Haka, S. F., & Ravenscroft, S. P. (2001). An ABC simulation focusing on incentives and innovation. *Issues in Accounting Education*, *16*(3), 443–471.
Gosman, M. L., & Kelly, T. (2002). Big customers and their suppliers: a case examining changes in business relationships and their financial effects. *Issues in Accounting Education*, *17*(1), 41–56.
Hertenstein, J. H. (2000). Component Technologies, Inc.: adding FlexConnex Capacity. *Issues in Accounting Education*, *15*(2), 257–282.
Kovar, S. E., & Evans, K. (2001). The Bakery: a cross-functional case study for introductory managerial accounting. *Journal of Accounting Education*, *19*(4), 283–303.
Luther, R., & Robson, N. (2001). Overhead allocation: a cautionary tale! *Accounting Education*, *10*(4), 413–419.
Moore, C., Rowe, B. J., & Widener, S. K. (2001). HCS: Designing a balanced scorecard in a knowledge-based firm. *Issues in Accounting Education*, *16*(4), 569–601.
Platt, D. E., & Towry, K. L. (2001). Pecos products: a project introducing complexity into the study of activity-based costing. *Issues in Accounting Education*, *16*(1), 99–124.
Smith, M. (2001). Deane-Draper stores: employee empowerment in a retail environment. *Accounting Education*, *10*(2), 199–206.
Smith, M. (2002). Derrick's Ice-Cream Company: applying the BCG matrix in customer profitability analysis. *Accounting Education*, *11*(4), 365–375.
Togo, D. F. (2001). A curvilinear approach to teaching learning effects for cost estimation. *Journal of Accounting Education*, *19*(3), 211–223.

Table A4 Instruction cases for financial accounting

Panel A: Cases involving earnings quality and earnings manipulation

Clikeman, P. M. (2002). The quality of earnings in the information age. *Issues in Accounting Education*, *17*(4), 411–417.

Cohen, J. R., Pant, L. W., & Sharp, D. J. (2000). Project earnings management: an ethics case based on agency theory. *Issues in Accounting Education*, *15*(1), 89–104.

Duncan, J. R. (2002). Quality of earnings and accounting estimates: a case of decisions. *Issues in Accounting Education*, *17*(4), 401–409.

Godwin, N. H., Key, K. G., & Sawyer, R. S. (2000). Financial accounting choice and earnings management. *Journal of Accounting Education*, *18*(4), 369–376.

Kamp, B. (2002). Earnings quality assessment by a sell-side financial analyst. *Issues in Accounting Education*, *17*(4), 361–368.

Kreuze, J. G., & Ruhl, J. M. (2002). Grey Paints: Using earnings quality concepts to clarify the earnings measurement process. *Issues in Accounting Education*, *17*(4), 431–445.

Martin, J. W. (2002). Zar, Inc.: a case in earnings quality. *Issues in Accounting Education*, *17*(4), 419–429.

Sack, R. J. (2002). Interstate Transport, Inc.: a case study in earnings management. *Issues in Accounting Education*, *17*(4), 369–388.

Swain, M. R., Allen, R. D., Cottrell, D. M., & Pexton, K. (2002). TechMall.com: revenue recognition in the Internet economy. *Issues in Accounting Education*, *17*(4), 389–400.

Panel B: Cases involving other financial topics

Blacconiere, W. G., & Hopkins, P. E. (2002). General Electric: investment accounting and consolidations. *Issues in Accounting Education*, *17*(3), 315–329.

D'Souza, J., Jacob, J., & Soderstrom, N. S. (2000). Trident Utility: Accounting for nuclear decommissioning costs. *Journal of Accounting Education*, *18*(2), 157–169.

Hogan, T. J., Bierstaker, J. L., & Seltz, W. E. (2001). Laborers Local 829 Health and Welfare Plan: testing investments and receivables. *Issues in Accounting Education*, *16*(4), 637–662.

Hwang, A. L. J. (2002). Comparative analysis of accounting treatments for derivatives. *Journal of Accounting Education*, *20*(3), 205–233.

Larkins, E. R. (2002). Expanding the global market: a case study for evaluating alternatives. *Advances in Accounting Education*, *4*, 59–85.

Moyer, S. E., & Weihrich, S. G. (2000). Espresso, Inc.: analyzing the impact of employee stock options. *Issues in Accounting Education*, *15*(3), 513–534.

Peters, M. F., Shaw, K. W., & Thompson, R. B. (2002). ShoppingWithoutDropping.com, Inc. *Issues in Accounting Education*, *17*(2), 197–209.

Phillips, F., Morris, K., & Zvinakis, K. (2000). Baywatch International: a case linking financial-reporting, business, and user decisions. *Issues in Accounting Education*, *15*(4), 605–633.

Quinn, J. D., & Smith, K. J. (2000). The Ridgely House Venture: triple net commercial lease/purchase case. *Issues in Accounting Education*, *15*(3), 459–481.
Rouse, P., & Houghton, L. (2002). Instructional case: floating investments. *Journal of Accounting Education*, *20*(3), 235–247.
Schwartz, K. B. (2001). Going going gone: anatomy of a corporate liquidation. *Journal of Accounting Education*, *19*(2), 129–143.
Smith, M. (2002). Benjamin Greygoose & Sons: survival in the death industry. *Accounting Education*, *11*(3), 283–293.
Taylor, G. K., Samson, W. D., & Gup, B. (2001). Questrom vs. Federated Department Stores, Inc.: a question of equity value. *Issues in Accounting Education*, *16*(2), 223–256.
Vogel, T. J. (2001). Cendant Corp.: a case study examining the compensation and accounting issues involved in a stock-option repricing program. *Issues in Accounting Education*, *16*(3), 409–441.
Welsh, C., Kyj, L. S., & Nouri, H. (2002). First Delta Bank. *Journal of Accounting Education*, *20*(3), 249–264.

Table A5 Instruction cases for nonprofit

Bain, C. E., Blankley, A. I., & Forgione, D. A. (2001). The Methodist Hospital System: tax exemption and charitable responsibilities of not-for-profit hospitals. *Issues in Accounting Education*, *16*(1), 67–97.
Bremser, W. G. (2001). Accountants for the Public Interest: strategy implementation and performance measurement for a nonprofit organization. *Journal of Accounting Education*, *19*(1), 75–86.

Table A6 Instruction cases for tax

Reid, M. E. (2001). Helga Havalot: a case in corporate tax planning. *Issues in Accounting Education*, *16*(2), 273–289.

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Ackert, L. F., Church, B. K., & Turner, D. H. (2001). Experimental market behavior and accounting students' knowledge of permanent earnings. *Issues in Accounting Education*, *16*(1), 1–19.
Adler, R. W., Milne, M. J., & Stringer, C. P. (2000). Identifying and overcoming obstacles to learner-centered approaches in tertiary accounting education: a field study and survey of accounting educators' perceptions. *Accounting Education*, *9*(2), 113–134.
Ainsworth, P. (2001). Changes in accounting curricula: discussion and design. *Accounting Education*, *10*(3), 279–297.

Ameen, E. C., Guffey, D. M., & Jackson, C. M. (2000). Silence is not golden: Further evidence of oral communication apprehension in accounting majors. *Advances in Accounting Education*, *3*, 85–105.

Amernic, J. H., Losell, D. L., & Craig, R. J. (2000). 'Economic value added' as ideology through a critical lens: towards a pedagogy for management fashion? *Accounting Education*, *9*(4), 343–367.

Apostolou, B. A., Watson, S. F., Hassell, J. M., & Webber, S. A. (2001). Accounting education literature review (1997–1999). *Journal of Accounting Education*, *19*(1), 1–61.

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