Journal of Accounting Education xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Journal of Accounting Education

journal homepage: www.elsevier.com/locate/jaccedu

Analysis of trends in the accounting education literature (1997–2016)

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ARTICLE INFO

Article history:
Received 11 September 2017
Received in revised form 17 September 2017
Accepted 17 September 2017
Available online xxxx

Keywords:
Accounting education
Assessment
Curriculum
Faculty
Literature review
Pedagogy
Students

ABSTRACT

We analyzed publication trends in six accounting education journals published during the 20-year period 1997–2016: (1) *Accounting Education*, (2) *Advances in Accounting Education*, (3) *Global Perspectives on Accounting Education*, (4) *Issues in Accounting Education*, (5) *Journal of Accounting Education*, and (6) *The Accounting Educators' Journal*. Our objective is to inform academicians about the overall development of accounting education research, empirical article topical trends, the extant knowledge base, and directions for future accounting education scholarship. Our analysis shows that the number of articles per year has increased over time and that the proportion of articles in four categories (empirical, descriptive, instructional resources, and cases) has changed over the 20-year period. The body of literature we analyzed shows the beginnings of a knowledge base that can be used as the foundation for future accounting education research.

1. Introduction

We examined topics addressed in publications over the past 20 years in six accounting education journals. Stout and Rebele (1996) recommended the development of a knowledge base in accounting, and our analysis documents trends in the literature and the state of development of a knowledge base in accounting education. The quantity of published accounting education articles has increased dramatically over the four decades since the *Journal of Accounting Education* was first published in 1983, with a wide range of outlets available for publishing accounting education manuscripts.[1]

The goal of accounting education research is to improve the theory and practice of accounting education. Accounting education journals provide a vehicle for sharing valuable information and experiences on, for example, innovative teaching approaches, use of instructional resources, and results of empirical studies that improve curriculum and pedagogy. Stout and Rebele (1996), both experienced editors, stated that accounting education journals exist, in part, to report on changes that have been made by individual faculty and educational institutions.

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[1] We intentionally limit our analysis to journals that have a primary accounting education orientation. However, we acknowledge that accounting education scholarship may appear in journals not included in our review (Marriott, Stoner, Fogarty, & Sangster, 2014). Bernardi, Zamojcin, and Delande (2016) examined accounting education publications in 13 accounting journals.

https://doi.org/10.1016/j.jaccedu.2017.09.003
0748-5751/

Please cite this article in press as: Apostolou, B., et al. Analysis of trends in the accounting education literature (1997–2016). *Journal of Accounting Education* (2017), https://doi.org/10.1016/j.jaccedu.2017.09.003

The publication of research that addresses important accounting educational issues with the potential to improve the quality of accounting education are important goals for accounting education journals. For example, the *Journal of Accounting Education* identified "improving the quality of accounting education worldwide" as one objective for the journal. *Accounting Education's* Aims and Scopes stated that the journal is "devoted to publishing research-based papers on *key aspects* (emphasis added) of accounting education." *Issues in Accounting Education's* stated mission is to publish articles that "address important issues in accounting education."

Academicians, including those previously serving as editors for the premier accounting education journals, have identified (1) addressing important issues and (2) improving educational quality as principal goals for accounting education scholarship. For example, both Wilson (2002) and Rebele (2002) stated that accounting education research should be conducted to expand our knowledge about how to improve student and educational outcomes. From their perspectives as editors and authors, St. Pierre, Wilson, Ravenscroft, and Rebele (2009) noted that ideas emerging from accounting education research should improve teaching, learning, and scholarship. Publishing articles on topics that can help improve the quality of education has, therefore, long been recognized as a central goal for the accounting education literature.

The accounting profession has a tradition of discussing change in educational processes to address how to best prepare students for careers as professional accountants. Black (2012) described the historical context of the variety of formal initiatives that led to the present day work of the Pathways Commission to develop a dynamic strategy to "sustain the vitality of accounting education and practice" (Behn et al., 2012, 596). The Bedford Committee Report (Bedford et al., 1986), the work of the Accounting Education Change Commission (AECC, 1990; Bolt-Lee & Foster, 2003), the cautionary tale of the report presented by Albrecht and Sack (2000), and the Pathways Commission (AAA, 2017) all had the same basic message: *accounting education must undergo significant change to remain relevant to accounting practice*. The American Institute of CPAs (AICPA) also contributed to this discussion by identifying desired core competencies for accounting program graduates, which have been widely discussed and integrated into the work of these various groups and in accounting curricula and courses. Position statements and commission reports are useful for identifying relevant and important areas where research can improve accounting education quality. As one example, the focus on developing core competencies, such as critical thinking and written communication, came from evidence that technical competence was no longer sufficient for success in the accounting profession.

Stout and Rebele (1996) noted that changes in accounting education should be guided by a *knowledge base* developed from generalizable research findings. Observing that the accounting education literature at that time largely consisted of isolated studies that failed to establish a knowledge base for accounting education, the authors offered guidance for researchers and editors. One of their recommendations was that accounting education journals should publish studies that find unexpected results, failed to find significance, along with those that confirm and validate the findings of prior research.

The increased volume of published articles in accounting education journals from an international community of scholars combined with an expanded list of topics from the past two decades indicates that the information-sharing goal of accounting education journals is being met. An unanswered question, though, is whether articles published by accounting education journals have addressed important issues or topics and have contributed to developing a knowledge base that can help guide changes in accounting education.

We extend prior work that analyzed trends and composition in accounting education scholarship. Lehman and Street (1990, 64) conducted a content analysis of the first six issues of the *Journal of Accounting Education* to assess whether the journal was meeting one of its stated objectives of "promoting excellence in teaching and stimulating research in accounting education." Their results showed that authors of articles published in the *Journal of Accounting Education* used a variety of research methods to examine different topics relevant to accounting education, confirming that the goal was being met. Wilson (2002) reflected upon the first decade of publications in *Accounting Education* under his editorship. A notable observation was that the research should address the gap between professional and academic training to enhance the transfer of knowledge to students. Accounting education research ultimately should be conducted to improve our understanding of factors associated with student outcomes and professional orientation. Paisey and Paisey (2004) analyzed the research published in *Accounting Education* for the period 1992–2001 and identified opportunities to enhance the quality of future research: (1) expand references to the broader educational literature, (2) devote more attention to the study of graduate and professional education, (3) broaden research beyond a single classroom or institution, and (4) employ a wider range of available research methods.

The remainder of this paper is organized as follows. Section 2 describes our method of analysis with specific attention to empirical article production. Section 3 addresses the overarching issue of research rigor in empirical publications in accounting education. In Section 4 we analyze journal issues having special themes. Finally, we discuss the knowledge base that has evolved from the research to date along with some specific examples and broad suggestions for research in Section 5.

2. Analysis

We analyzed publications in six accounting education journals[2] during the period 1997–2016: (1) *Accounting Education*, (2) *Advances in Accounting Education*, (3) *Global Perspectives on Accounting Education*, (4) *Issues in Accounting Education*, (5) *Journal of*

[2] Refer to Apostolou, Dorminey, Hassell, and Rebele (2017, 2) for a summary of prior accounting education literature reviews.

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Accounting Education, and (6) *The Accounting Educators' Journal*.[3] Refer to Table 1 for a tabulation of the six journals included in the analysis. Our starting point was the article count that appeared in each of the eight accounting education literature review articles (Table 2) because each published literature review provides annual details by empirical article, descriptive article, instructional resource, and case study. These article counts were then reconciled to the tables of contents of each issue for all six journals published during the period 1997–2016 for completeness.

2.1. Analysis of article type (1997–2016)

For the 20-year period ended in 2016, we tabulated 2023 articles published in 299 issues of the six accounting education journals. We classified each published article as empirical, descriptive, an instructional resource, or case as presented in Table 3.[4] An empirical article (n = 695, 34%) is one in which conclusions were derived from an analysis of data. Articles that discussed conclusions from logic or anecdotal experiences were classified as descriptive (n = 698, 35%). An instructional resource (n = 142, 7%) described a specific strategy that can facilitate both teaching and learning of content. Cases (n = 488, 24%) provided an actual or hypothetical set of information followed by a task or assignment that was intended to help students understand complex topics.[5]

To determine whether the quantity of articles in the six journals changed over time, we regressed the number of total articles on time and documented a positive trend (p = 0.02), which indicates an increasing total number of articles over time. We then split the data into two ten-year periods for further analysis: (1) 1996–2006, and (2) 2007–2016. The average total number of items in the second 10-year period (n = 115.0) was higher than the first 10-year period (n = 87.3), with $p < 0.01$, for both the t-test and Wilcoxon signed-rank test. Casual observation suggests that the proportion of article type varies each year. For example, the percentages of empirical, descriptive, instructional resource, and case categories were 33%, 38%, 6%, and 23% for the first 10 years (1997–2006), but shifted to 36%, 32%, 7%, and 25% in the second 10 years (2007–2016). The proportions are different for the first and second 10-year periods ($p < 0.001$, chi-square test). In summary, the number of articles per year in the six journals has increased over time, and the composition of article type varies across years.

An observable trend is that the geographic location of samples used in empirical articles is now being reported by most authors. The accounting education literature reviews (Table 2) began reporting geographic information for articles published in 2010–2012 (few authors reporting geographic location prior to that time limited the ability to tabulate). We observed that 76% of the authors of empirical articles reported geographic location during 2010–2012, 92% during 2013–2014, and 100% in both 2015 and 2016 (results not tabulated). Most of the reported geographic data for empirical articles during 2010–2016 were from US and Canada (65%) followed by Australia and New Zealand (14%). Over the same period, Europe, Asia and Africa, and multinational settings represented 10%, 6%, and 4%, respectively. Geographic information, along with the corresponding cultural implications, is important in the discussion of research results in determining the generalizability of findings or for use as control variables.[6] Accordingly, the trend toward greater reporting of these context variables is a meaningful development toward establishing a knowledge base in accounting education.

2.2. Empirical article trends by topical area

Empirical articles were classified in five ways: (1) curricular issues, (2) instructional content, (3) educational technology, (4) students, and (5) faculty. Over the 20-year period under analysis, students (n = 216, 31%) and curricular issues (n = 196, 28%) were the most frequently explored categories. When comparing the total number of empirical articles in Table 4 and regressing the number of articles in each category and in total, a positive trend was documented for the total number of empirical articles ($p < 0.001$) as well as the number of articles in the subtopics of educational technology ($p < 0.001$) and students (p = 0.02). When comparing the total number of articles for the two 10-year periods, the number of empirical articles in the second 10-year period is greater than the first 10-year period (p = 0.005, t-test; p = 0.011, Wilcoxon signed-rank test). Additionally, the proportion of articles across the five areas was different for the first and second 10-year periods ($p < 0.001$, chi-square test). At this level of inspection, the persistent concentration of empirical work in areas of students and curricular issues indicates that researchers find that topics dealing with how students learn and how material is structured and delivered are the most important aspects furthering the accounting education discipline.

We explored the empirical articles within curricular issues by subtopic as reported in Table 5 (n = 196). Instructional approaches (n = 73, 37%) and core competencies (n = 39, 20%) were the most frequently examined topics. Only 54 articles (28%) in 20 years addressed curricular issues (n = 27) and assessment (n = 27). The proportion of articles across the five curricular issues was different for the first and second 10-year periods (p = 0.024, chi-square test). We separately parsed articles that studied how to teach specific content areas, which we label as instructional content in Table 6. Six content areas (n = 97) were reflected in this subset of articles. The most frequently studied topics include financial accounting (n = 29, 30%) and

[3] Our analysis approach permits comparisons to accounting education literature reviews published in the *Journal of Accounting Education*.

[4] We exclude tributes, obituaries, rebuttals, rejoinders, and commentaries from the analysis without impact to the reported findings.

[5] The University of Notre Dame hosts a database of accounting cases, for both undergraduate and graduate accounting courses, separated into 16 topic areas: http://www.cases.ndacct.com/. This resource documents the body of knowledge in accounting education cases (Meyer & Meyer, 2014).

[6] Omitted variables, when correlated with other variables included in the model, will yield inflated standard errors and biased coefficients. The failure to include an important variable challenges the use of the results in hypothesis testing.

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Table 1
Accounting education journals included in the analysis (1997–2016).

Journal	Volumes analyzed	Number of issues
Accounting Education	6–25	96
Advances in Accounting Education	1–19	19
Global Perspectives on Accounting Education	1–13	13
Issues in Accounting Education	12–31	78
Journal of Accounting Education	15–37	73
The Accounting Educators' Journal	9–26	20
Total		299

Table 2
Accounting education literature review series (1997–2016).

Time period covered	Reference
1997–1999	Apostolou, Watson, Hassell, and Webber (2001)
2000–2002	Watson, Apostolou, Hassell, and Webber (2003)
2003–2005	Watson, Apostolou, Hassell, and Webber (2007)
2006–2009	Apostolou, Hassell, Rebele, and Watson (2010)
2010–2012	Apostolou, Dorminey, Hassell, and Watson (2013)
2013–2014	Apostolou, Dorminey, Hassell, and Rebele (2015)
2015	Apostolou, Dorminey, Hassell, and Rebele (2016)
2016	Apostolou, Dorminey, Hassell, and Rebele (2017)

Table 3
Article type by annual count and percent of total (1997–2016).

	Count					Percent of total			
Year	Empirical	Descriptive	Instructional resource	Case	Total	Empirical	Descriptive	Instructional resource	Case
1997	28	27	2	17	74	38%	36%	3%	23%
1998	36	63	6	28	133	29%	46%	4%	21%
1999	22	22	6	19	69	30%	33%	9%	28%
2000	25	46	5	14	90	27%	52%	5%	16%
2001	14	20	4	18	56	26%	35%	7%	32%
2002	29	27	7	20	83	33%	33%	9%	25%
2003	27	41	8	23	99	27%	42%	8%	23%
2004	40	24	10	31	105	38%	23%	9%	30%
2005	36	28	3	17	84	43%	33%	4%	20%
2006	34	29	4	13	80	43%	36%	5%	16%
2007	27	41	3	31	102	27%	40%	3%	30%
2008	36	44	2	28	110	33%	40%	2%	25%
2009	48	32	6	17	103	47%	31%	6%	16%
2010	38	36	6	28	108	35%	33%	6%	26%
2011	30	52	10	37	129	23%	40%	8%	29%
2012	46	38	14	39	137	34%	28%	10%	28%
2013	45	56	15	36	152	29%	37%	10%	24%
2014	37	25	12	30	104	36%	24%	11%	29%
2015	49	19	9	20	97	50%	20%	9%	21%
2016	48	28	10	22	108	45%	26%	9%	20%
Total	695	698	142	488	2023[a]	34%	35%	7%	24%
10-year period averages[b]									
1997–2006	29.1	32.7	5.5	20.0	87.3	33%	38%	6%	23%
2007–2016	40.4	37.1	8.7	28.8	115.0[c]	36%	32%	7%	25%

[a] A regression of the total number of articles on time documented a positive trend ($p = 0.020$).
[b] The proportions of article type are different for the first and second 10-year periods ($p < 0.001$, chi-square test).
[c] The total number of articles in the two 10-year periods is different ($p = 0.007$, t-test; $p = 0.005$, Wilcoxon signed-rank test).

ethics ($n = 25$, 26%). Topics specific to auditing ($n = 16$), taxation ($n = 11$), managerial ($n = 11$), and accounting information systems (AIS) ($n = 5$) constituted 17%, 11%, 11%, and 5%, respectively. Although the numbers were small over 20 years (averaging fewer than five total articles per year), the proportion of articles across the categories within instructional content was different for the first and second 10-year periods ($p < 0.001$, chi-square test).

The empirical articles dealing with student topics ($n = 216$) were classified into four subcategories as summarized in Table 7. Skills and characteristics ($n = 85$, 39%), academic major and career issues ($n = 63$, 29%), and approaches to learning

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Table 4
Empirical articles by annual count and percent of total (1997–2016).

Year	Curricular issues	Instructional content	Educational technology	Students	Faculty	Total
1997	10	2	0	12	4	28
1998	14	5	0	9	8	36
1999	7	6	0	7	2	22
2000	4	5	2	5	9	25
2001	6	1	1	6	0	14
2002	7	3	4	7	8	29
2003	11	2	5	8	1	27
2004	13	3	2	13	9	40
2005	11	7	1	12	5	36
2006	9	6	5	12	2	34
2007	8	3	4	5	7	27
2008	12	7	3	12	2	36
2009	12	10	3	16	7	48
2010	13	1	7	9	8	38
2011	8	7	7	4	4	30
2012	10	8	2	17	9	46
2013	11	3	9	14	8	45
2014	7	9	3	11	7	37
2015	10	5	5	17	12	49
2016	13	4	6	20	5	48
Total	196	97	69[a]	216[b]	117	695[a]
% of total	*28%*	*14%*	*10%*	*31%*	*17%*	*100%*
10-year period averages[c]						
1997–2006	9.2	4.0	2.0	9.1	4.8	29.1
2007–2016	10.4	5.7	4.9	12.5	6.9	40.4[d]
% change	*13%*	*43%*	*145%*	*37%*	*44%*	*39%*

[a] A regression of the total number of articles on time documented a positive trend ($p < 0.001$).
[b] A regression of the total number of articles on time documented a positive trend ($p = 0.020$).
[c] The proportion of articles in the five areas in the two 10-year periods is different ($p < 0.001$, chi-square test).
[d] The total number of articles in the two 10-year periods is different ($p = 0.005$, t-test; $p = 0.011$, Wilcoxon signed-rank test).

Table 5
Empirical articles on curricular issues by annual count and percent of total (1997–2016).

Year	Curriculum	Assessment	Core competencies	Instructional approaches	Other	Total
1997	5	2	1	0	2	10
1998	2	7	3	0	2	14
1999	1	1	4	0	1	7
2000	0	1	1	2	0	4
2001	0	0	0	5	1	6
2002	1	2	1	2	1	7
2003	2	4	0	3	2	11
2004	0	0	3	7	3	13
2005	1	0	3	7	0	11
2006	3	0	0	3	3	9
2007	0	0	0	7	1	8
2008	1	1	1	7	2	12
2009	1	0	3	5	3	12
2010	4	0	2	6	1	13
2011	0	2	2	2	2	8
2012	1	1	1	4	3	10
2013	2	2	3	2	2	11
2014	1	1	4	1	0	7
2015	1	2	2	4	1	10
2016	1	1	5	6	0	13
Total	27	27	39	73	30	196
% of total	*14%*	*14%*	*20%*	*37%*	*15%*	*100%*
10-year period averages[a]						
1997–2006	1.5	1.7	1.6	2.9	1.5	9.2
2007–2016	1.2	1.0	2.3	4.4	1.5	10.4
% change	*−20%*	*−41%*	*444%*	*52%*	*0%*	*13%*

[a] The proportion of articles in the five areas in the two 10-year periods is different ($p = 0.024$, chi-square test).

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Table 6
Empirical articles on instructional content area by annual count and percent of total (1997–2016).

Year	AIS	Auditing	Ethics	Financial	Managerial	Taxation	Total
1997	0	1	0	0	1	0	2
1998	1	0	0	3	1	0	5
1999	0	1	0	3	0	2	6
2000	0	0	1	1	0	3	5
2001	0	0	0	1	0	0	1
2002	0	1	0	1	1	0	3
2003	0	2	0	0	0	0	2
2004	0	3	0	0	0	0	3
2005	1	2	1	1	2	0	7
2006	1	1	2	1	1	0	6
2007	0	1	1	0	0	1	3
2008	0	0	4	1	0	2	7
2009	0	1	3	4	2	0	10
2010	0	0	0	1	0	0	1
2011	0	2	2	3	0	0	7
2012	1	1	5	1	0	0	8
2013	0	0	0	1	1	1	3
2014	1	0	2	4	2	0	9
2015	0	0	2	3	0	0	5
2016	0	0	2	0	0	2	4
Total	5	16	25	29	11	11	97
% of total	*5%*	*17%*	*26%*	*30%*	*11%*	*11%*	*100%*
10-year period averages[a]							
1997–2006	0.3	1.1	0.4	1.1	0.6	0.5	4.0
2007–2016	0.2	0.5	2.1	1.8	0.5	0.6	5.7
% change	*−33%*	*−55%*	*425%*	*64%*	*−17%*	*20%*	*43%*

[a] The proportion of articles in the six areas in the two 10-year periods is different ($p < 0.001$, chi-square test).

Table 7
Empirical articles on students by annual count and percent of total (1997–2016).

Year	Major and career issues	Skills and characteristics	Approaches to learning	Academic dishonesty	Total
1997	6	5	1	0	12
1998	1	8	0	0	9
1999	1	5	1	0	7
2000	1	2	2	0	5
2001	0	4	2	0	6
2002	1	3	3	0	7
2003	3	5	0	0	8
2004	2	2	9	0	13
2005	5	4	3	0	12
2006	6	3	3	0	12
2007	1	2	2	0	5
2008	3	4	5	0	12
2009	8	4	4	0	16
2010	1	5	2	1	9
2011	2	2	0	0	4
2012	2	7	3	5	17
2013	4	4	6	0	14
2014	1	5	5	0	11
2015	8	4	5	0	17
2016	7	7	6	0	20
Total	63	85	62	6	216
% of total	*29%*	*39%*	*29%*	*3%*	*100%*
10-year period averages[a]					
1997–2006	2.6	4.1	2.4	0.0	9.1
2007–2016	3.7	4.4	3.8	0.6	12.5
% change	*42%*	*7%*	*58%*	*na*	*37%*

[a] The proportion of articles in the four areas in the two 10-year periods is different ($p < 0.001$, chi-square test).

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(n = 62, 29%) were the most researched areas. Academic dishonesty (n = 6, 3%) has started to receive attention in the recent decade.[7] The proportion of articles across the categories within the student topics was different for the first and second 10-year periods (p < 0.001, chi-square test). Tabulation of the faculty-oriented empirical work (n = 117) is reported in Table 8. Topics were distributed across research (n = 48, 41%), teaching (n = 34, 29%), job market (n = 20, 17%), and administrative issues (n = 15, 13%). The proportion of articles across the categories within faculty issues was not discernibly different between the first and second 10-year periods.

3. Research rigor

Rebele and St. Pierre (2015) discussed the stagnation of accounting education research, which refers to the study of a limited range of topics without an underlying theory and without research rigor, such as the overuse of surveys and few experiments. Generally, over time in a maturing body of research, researchers should place less reliance on descriptive analysis and more on empirical testing of hypotheses posited from results via descriptive approaches or qualitative methods. To explore the potential of such a trend, we separately regressed the proportion of empirical articles and descriptive articles on time and found a positive trend (p = 0.024) for empirical articles and a negative trend (p = 0.024) for descriptive articles.[8,9] Accordingly, some evidence exists for the anticipated migration away from descriptive toward empirical work. However, even as the research moves toward more rigorous empirical designs, a general lack of theoretical grounding persists. Accounting education researchers have been motivated to adopt and test the effectiveness of a pedagogical practice; however, those designs generally have not been based upon theory (Fogarty, 2014).

Given 20 years of development, we would have expected accounting education research to observe a migration from data collection (survey) toward data isolation (experimentation), and a move away from univariate summarization toward multivariate tests of statistical inference.[10] To the extent that the classroom is the laboratory in which educational treatments are applied, the advancement of accounting education must include the application of coherent and cohesive theories that can be measured with some level of precision and then empirically tested with sufficient rigor. Undoubtedly, the extensive controls, randomization, and manipulations necessary for a strict experimental approach may be untenable. In such cases, we recommend that researchers consider the rigor available through a proper implementation of a quasi-experiment. While not as pure as an experimental approach, the quasi-experimental design offers many of the same benefits.

We observed that research rigor has improved over the 20 years with better statistical analysis. Notably, editors and referees now explicitly consider research design and analysis in publication recommendations. However, accounting education research must continue to be conducted in a way that builds upon the knowledge accrued to date. It is incumbent upon researchers, editors, and editorial boards to continue to emphasize research design and analytical rigor in addition to the theoretical motivation for the questions addressed in the study.

One salient example of improvement in research design is the effect of classroom interventions on student performance. Over the last 20 years, the body of accounting education research has identified a number of control variables that are now routinely used in empirical research. For example, if performance is the dependent variable (e.g., course or exam grade), then researchers will generally control for variables such as overall GPA, GPA in previous course, SAT score, section time, instructor, score on some type of personality scale or learning style, institution (if multi-institution), and year/term (if data collected over time). Additionally, regression, ANOVA, and path analysis are now more commonly used in accounting education research than ten or 20 years ago.

The accounting education literature reviews (Table 2) serve as a resource for identifying relevant prior work to ensure that a planned research project contributes to the accounting education literature. While research rigor has improved in the two decades analyzed, the importance of rigor lies not in making research more difficult to undertake, but in (1) establishing a tenable claim that the phenomenon of interest has been assessed appropriately, and (2) that the results are generalizable to broader contexts.

4. Journal issues with special themes

Editors of accounting education journals have increasingly emphasized special theme issues to organize and concentrate research in a particular area/topic. For the period 1997–2016, we identified 56 special themes in five of the six accounting education journals.[11] A breakdown of the number of special themes by journal and year of publication is presented in Table 9. *Accounting Education* (n = 33, 59%) and *Issues in Accounting Education* (n = 10, 18%) are the two journals with the most special theme issues. Referring to Table 10, the 56 issues represent 19% of the total number of issues (n = 299) published during the

[7] Of the six articles dealing with academic dishonesty, five appeared in a single themed issue of *Accounting Education* (Table 11).

[8] In this comparison, we tested if the sample of empirical and descriptive articles in the first 10-year period (1997–2006) and the second 10-year period (2007–2016) were from the same population. We rejected the null hypothesis and concluded that the two samples were from different populations, indicating that the proportions have changed.

[9] Because the proportions for this test were based only on the collection of empirical and descriptive articles, the trends in the proportion of empirical and descriptive articles are inversely related and have identical significance.

[10] Apostolou et al. (2017) discussed the trends in data collection and analytic rigor observed since 2010.

[11] *Global Perspectives on Accounting Education* is the only one of the six journals that did not identify special themes.

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Table 8
Empirical articles on faculty issues by annual count and percent of total (1997–2016).

Year	Research	Teaching	Job market	Administrative issues	Total
1997	1	2	0	1	4
1998	3	2	1	2	8
1999	1	1	0	0	2
2000	2	3	3	1	9
2001	0	0	0	0	0
2002	3	3	2	0	8
2003	0	1	0	0	1
2004	4	2	0	3	9
2005	3	2	0	0	5
2006	2	0	0	0	2
2007	2	2	0	3	7
2008	2	0	0	0	2
2009	3	2	2	0	7
2010	4	2	2	0	8
2011	0	1	2	1	4
2012	3	4	2	0	9
2013	4	2	1	1	8
2014	4	1	2	0	7
2015	6	1	2	3	12
2016	1	3	1	0	5
Total	48	34	20	15	117
% of total	*41%*	*29%*	*17%*	*13%*	*100%*
10-year period averages[a]					
1997–2006	1.9	1.6	0.6	0.7	4.8
2007–2016	2.9	1.8	1.4	0.8	6.9
% change	*53%*	*13%*	*133%*	*14%*	*44%*

[a] The proportion of articles in the four categories within faculty issues is not discernibly different between the first and second 10-year periods (chi-square test).

Table 9
Number of special-themed issues by year (1997–2016).

Year	*Accounting Education*	*Advances in Accounting Education*	*Issues in Accounting Education*	*Journal of Accounting Education*	*The Accounting Educators' Journal*	Total
1997	1	0	0	0	0	1
1998	2	2	0	0	0	4
1999	0	0	0	0	0	0
2000	1	0	0	0	0	1
2001	0	0	0	0	0	0
2002	1	0	0	0	0	1
2003	1	0	0	0	0	1
2004	4	0	0	0	0	4
2005	1	0	0	0	0	1
2006	2	0	0	1	0	3
2007	2	0	1	0	0	3
2008	2	0	1	0	0	3
2009	1	0	0	0	0	1
2010	2	0	1	0	0	3
2011	1	0	1	0	0	2
2012	4	1	2	2	0	9
2013	4	1	2	1	0	8
2014	1	1	0	1	0	3
2015	2	1	0	0	0	3
2016	1	1	2	0	1	5
Total	33	7	10	5	1	56
% of total	59%	12%	18%	9%	2%	100%
10-year period averages[a]						
1997–2006	1.3	0.2	0.0	0.1	0.0	1.6
2007–2016	2.0	0.5	1.0	0.4	0.1	4.0
% change	*54%*	*150%*	*na*	*300%*	*na*	*150%*

[a] The total number of special-themed issues in the second 10-year period ($n = 40$) is different from the first 10-year period ($n = 16$) ($p = 0.023$, t-test; $p = 0.003$, z-test).

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Table 10
Journal issues with special themes (1997–2016).

Journal	Issues published	Special themes (% of total)
Accounting Education	96	33 (34%)
Advances in Accounting Education	19	7 (4%)
Issues in Accounting Education	78	10 (13%)
Journal of Accounting Education	73	5 (7%)
The Accounting Educators' Journal	20	1 (1%)
Total	299	56 (19%)

Table 11
Special themes on curriculum, faculty, and students (1997–2016).[a]

Theme	Year	*Accounting Education*	*Advances in Accounting Education*	*Issues in Accounting Education*	*Journal of Accounting Education*	*The Accounting Educators' Journal*
Academic dishonesty	2012	*21*(3)				*26*
Assessment	2007	*16*(2)				
	2013		*14*			
	2016			*31*(1)		
Conference papers	2002	*11*(1)				
	2003	*12*(2)				
	2004	*13*(supp.)				
	2005	*14*(4)				
	2006	*15*(3)				
	2006	*15*(4)				
	2008	*17*(supp.)				
	2012	*21*(4)				
	2012	*21*(6)				
	2013	*22*(3)				
	2013	*21*(5)				
	2013	*22*(6)				
	2015	*24*(6)				
	2016	*25*(4)				
Curriculum	2004	*13*(3)				
	2006				*24*(2 –3)	
	2010	*19*(1–2, 4)				
	2012			*27*(3)		
	2013			*28*(3)		
	2014	*23*(2)	*15*			
	2016		*18*	*31*(2)		
Faculty issues	1998	*7*(supp.)				
	2004	*13*(2)				
	2007	*16*(4)				
	2015	*24*(3)				
Teaching strategies	1997	*6(3)*				
	1998	*7*(supp.)				
	2004	*13(4)*				
	2008	*17*(4)				
	2009	*18*(2)				

[a] Listing is by journal volume and issue.

period 1997–2016. The trend toward more special themes was significant, with only 16 special themes in the first decade of our analysis (1997–2006) and 40 in the second decade, which is a 260% increase ($p = 0.027$, *t*-test). Editors are likely using special theme issues to motivate inquiry on important topics that have not been extensively examined by accounting education researchers.

The breakdown of special themes is presented in Tables 11 and 12. Special theme issues identified in Table 11 include academic dishonesty, assessment, conference papers, curriculum, faculty issues, and teaching strategies by year and journal. Table 12 itemizes special themes that addressed course content, including accounting information systems, auditing, ethics, financial accounting, first accounting course, government and nonprofit, sustainability accounting, and taxation. Financial accounting (including IFRS) dominates the list with four special theme issues in three journals. Beginning in 2002, *Accounting Education* began publishing papers from the annual conference of the British Accounting Association Special Interest Group on Accounting Education (BAA-SIG), and then followed by publishing papers from a variety of other groups.

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Table 12
Special themes on instructional content (1997–2016).[a]

Theme	Year	*Accounting Education*	*Advances in Accounting Education*	*Issues in Accounting Education*	*Journal of Accounting Education*
AIS	2010			*25*(3)	
	2014				*32*(2)
Auditing	2008			23(4)	
	2012	*21*(2)			*30*(2)
Ethics	1998		*1*		
Financial accounting	2007			*22*(4)	
	2011	20(4)			
	2012		*13*		
	2013			*28*(2)	
	2015		*17*		
First accounting course	2011			*26*(4)	
	2012			*27*(1)	
GNP	2013				*31*(3)
Sustainability	2013	*22*(4)			
Taxation	2000	*9*(3)	*1*		
	2012	*30*(1)			

[a] Listing is by journal volume and issue.

Editors have significant influence on the direction of accounting education research. The use of guest editors with niche expertise to attract scholarship on specific areas that inform how we educate future accounting professionals is an important vehicle to support our understanding of, for example, some of the pillars of the Pathways Commission (AAA, 2017) and how students' core competencies can effectively be developed.

5. Accounting education knowledge base and suggestions for research

5.1. Discussion and overview

The trend analysis documents an increase in the number of articles over the 20-year period. The proportion of articles across classifications was different for the two 10-year periods analyzed, and observation of the proportions each year reflects great variation. Variation is not a problem, however, as we would expect accounting researchers to engage in a range of topics. Ultimately, we should observe increased rigor in the empirical work to properly isolate variables of interest to inform what accounting education should include and how that education is delivered. At the current stage of accounting education research, we would expect to see improving measurement precision, through proper isolation of the phenomenon of interest, in conjunction with robust empirics to yield the necessary rigor required to imply generalizable results and an expansion of the accounting education knowledge base.[12]

Replication is important to developing a knowledge base in accounting education, but studies that simply administer the same survey to a different sample, without any consideration as to why the sample and results might differ, are not very helpful for developing a knowledge base. Papers describing best practices are welcome additions to the literature, but only if they consider and augment prior work in the context of professional initiatives to improve educational practices. Each of the eight articles in the series of published accounting education literature reviews (Table 2) included specific suggestions for research along the lines of curriculum and instruction, content areas (e.g., audit, taxation), educational technology, students, and faculty. Many of those suggestions remain relevant today.

5.2. Knowledge base in accounting education

The eight literature reviews covering the last 20 years of publications in six accounting education journals are useful in understanding the accounting education knowledge base. One notable contribution to the accounting education literature was the publication of *The Routledge Companion to Accounting Education* (Wilson, 2014, xxi):

> Of impressive scope and depth, this anthology comprises 30 chapters written by 67 scholars from 24 countries. It addresses seven critical 'considerations', including those deemed to be 'cornerstone', 'contextual', and 'institutional' to the field; and those pertaining to students, curriculum, pedagogy, and assessment.

[12] Apostolou et al. (2017, 20) detected an increase in the analytical rigor of accounting education research during 2010–2016.

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Wilson (2014) assembled the author teams based upon published work in accounting education, editorship, and expertise in the field; no accounting education research is complete without consulting the relevant sections of this volume.[13]

We next offer examples in which a knowledge base in accounting education has emerged to stimulate similar analysis by future researchers in the variety of accounting education topical areas. The three specific areas selected as examples of knowledge base development are follow: (1) assessment and assurance of learning (2) faculty research productivity, and (3) student approaches to learning.

5.2.1. Assessment and assurance of learning

Pressure for accountability for educational outcomes in accounting emerged as a topic in the 1990s, which was originally termed *outcomes assessment* (Apostolou, 1999). As accreditation bodies began to require faculty and programs to measure learning outcomes, the terminology shifted to *assurance of learning* and also focused on classroom assessment techniques (Harwood & Cohen, 1999). Thus, the literature for the 20-year period includes articles on both assessment and assurance of learning. The knowledge base developed by the 27 empirical articles (Table 5) published on these topics tended to be focused on classroom assessment or specific metrics associated with assuring that learning objectives have been met. Ingram and Howard (1998) found that even if learning objectives were stated for a course, exams were not measuring achievement of those objectives. Several articles studied whether test question format (multiple choice or free response) made a difference in measuring learning. The convergence of results suggests that different formats are effective at measuring learning, but the free response questions measure a higher cognitive level. Research in recent years has extended this work to show that formative assessment improves learning outcomes (e.g., Curtis, 2011; Perera, Nguyen, & Watty, 2014).

Accounting professional exams reflect much of the established knowledge base on assessment or assurance of learning as they now incorporate a variety of question formats designed to measure both technical and higher-level cognitive skills. Koh (2014) synthesized the empirical literature on student performance in accounting programs and suggested that (1) future work include a theoretical model, (2) variable measures be clearly explained, and (3) the study context be discussed to appreciate geographical and institutional differences. However, empirical work on assurance of learning programs in accounting has not appeared in the literature to date. A knowledge base is being established for both outcomes assessment (Kidwell & Lowensohn, 2014) and the evaluation of accounting programs (Calderon, 2014), which should serve as a launch point for the design of empirical studies on assessment and assurance of learning.

5.2.2. Faculty research productivity

Numerous articles published over the past 20 years have addressed accounting faculty research productivity.[14] The research productivity articles differ with respect to population (e.g., all accounting faculty, faculty at US doctoral-granting institutions), journals (e.g., top 3, top 6, top 11, top 13, top 24, top 40), and research productivity metrics used in the analysis.[15] Rankings can differ significantly depending upon how variables included in the analysis are defined.

Two online databases have emerged to document faculty research productivity. The Brigham Young University (BYU) database tracks articles in the primarily US-based top 12 accounting academic journals and in two premier accounting education journals.[16] Productivity rankings are provided for individuals and for schools. The database is an excellent resource that could be used for promotion and tenure and benchmarking purposes by individual faculty and schools. The University of Texas Dallas (UTD)[17] database also is publicly available, which tracks research in the top three accounting journals. The knowledge base on faculty research productivity is light regarding research productivity outside of the top 40 journals and for schools that have primary teaching missions and heavy teaching assignments.

The knowledge base regarding research productivity in academic journals is extensive and fairly broad. In recent years, several articles addressed the issue of using "journal lists" to assess research productivity. In 2015, *Accounting Education*[18] devoted a special issue to the ongoing debate about journal rankings and the implications for faculty promotion and tenure. Reinstein and Apostolou (2017) extended this general line of inquiry by reporting the results of a survey (n = 38 AACSB accredited accounting programs) of how different institutions developed journal ranking lists, with a tabulation of how 359 journals are ranked.

5.2.3. Student approaches to learning

A total of 62 empirical papers published over the past 20 years have addressed student approaches to learning (not tabulated). Articles published near the beginning of our review period focused on the identification and measurement of the approaches to learning employed by students (Adler, Whiting, & Wynn-Williams, 2004; Duff, 1997). Initially, investigations

[13] *The Routledge Companion to Accounting Education* consists of seven major sections: (1) cornerstone considerations, (2) student-related considerations, (3) curriculum considerations, (4) pedagogic considerations, (5) assessment considerations, (6) contextual considerations, and (7) institutional considerations (Wilson, 2014, xi-xiv).

[14] The Hasselback (2017) *Accounting Faculty Directories* have been invaluable in identifying accounting programs and accounting faculty.

[15] For example, a benchmark article categorized the frequency of publications in top 40 accounting journals by accounting faculty graduating from 1971 to 1993 (Hasselback, Reinstein, & Schwan, 2000).

[16] http://www.byuaccounting.net/rankings/univrank/rankings.php. For accounting education research, the database includes *Issues in Accounting Education* and *Journal of Accounting Education*.

[17] http://jindal.utdallas.edu/the-utd-top-100-business-school-research-rankings/.

[18] Volume *24*(3), 2015.

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were oriented toward differences in learning styles and student characteristics such as professional qualifications, gender, age, and academic level (Duff, 1999). Several authors studied the association between approaches to learning and student performance (Davidson, 2002; Jackling, 2005; Paver & Gammie, 2005).

The literature demonstrates the effect of alternative delivery approaches (e.g., case based, media presentation, traditional lecture) on learning. Jones and Wright (2012) and Honn and Ugrin (2012) provided evidence that cognitive style and cognitive compatibility have an important role in student outcomes. Others have demonstrated the importance of reasoning styles and personality classifications (e.g., Myers-Briggs type indicator) on learning. Teaching quality, student expectations, student motivations, and vocational interests have all been shown to be associated with student outcomes (McDowall, Jackling, & Natoli, 2015; Teixeira, Gomes, & Borges, 2015; Wong, Cooper, & Dellaportas, 2015). The literature also provides an analysis of contextual and environmental factors influencing student learning. For example, Stout and Wygal (2010) augmented the literature about student learning by discussing those behaviors that impede student learning from the perspective of award-winning educators.

A consolidation of the existing knowledge base for learning styles and approaches was provided by Duff (2014), who reviewed the literature and identified a forward path for research. Duff and McKinstry (2007) summarized the literature regarding approaches to learning and offered recommendations for research. Of interest is the developing literature that explores the joint significance of learning approaches and styles, content delivery, and other student characteristics and their association with student outcomes. For example, Sugahara and Boland (2010) showed an association between culture and preferred learning style. Additionally, prior learning experiences were found to be related to current learning approaches and styles (Abhayawansa, Tempone, & Pillay, 2012). The extant literature provides a robust launch point for expanding the empirical exploration of the interrelationships between learning styles, cognitive processes, content delivery, student characteristics, and culture in producing desired learning outcomes.

5.3. Suggestions for a research agenda in accounting education

Stout and Rebele (1996) presented a strategy for developing a research agenda that will produce a knowledge base for accounting education. Although published two decades ago, their suggestions remain relevant today. For example, the need for replication studies on important accounting education issues still exists if we are to develop generalizable results that could form the basis for change in accounting education. The series of eight accounting education literature reviews (Table 2) is a useful resource for identifying areas of interest and research work in these areas. We urge accounting education researchers to conduct empirical studies that incorporate the extant knowledge base and augment what has been learned. Decades of published work exist to inform the development of accounting education, but it is imperative that future work extend and improve upon published findings. Sufficient work in many topical areas exists for meta-analysis to summarize major lines of research. Khlif and Chalmers (2015) reviewed 27 accounting research studies published during 1985–2014; the only one that dealt with an accounting education topic was Thornton (1994), who studied the Canadian Accounting Association education project.

Two areas are ready for the process of merging findings and summarizing the knowledge base and path forward: (1) students and (2) curricular issues. Referring to Table 4, issues involving students were the most-researched topics in the recent 20 years, with 31% of the total empirical articles or an average of 11 articles per year (refer to Table 7 for a breakdown within the category of students). Curricular issues accounted for 28% of empirical articles published in the past 20 years or an average of ten articles per year across the six journals. Curriculum is arguably the most important aspect of accounting education, yet only 27 empirical articles have been published in 20 years on the accounting curriculum; additionally, only 27 articles have been published on assessment or assurance of learning.

Empirical articles across content areas are not abundant (Table 6). Financial accounting topics (including IFRS) were the most studied (30%), followed by ethics (26%), and auditing (17%). Other areas received scant attention, with 12 or fewer articles over 20 years. With all the emphasis and concern about audit quality, only 16 empirical papers were published on teaching auditing, with none since 2012. Clearly, a demand exists by the accounting profession for how to better prepare students to perform quality audits, yet the accounting education literature provides almost no guidance in this area. The topic of teaching AIS content has received little attention from accounting education researchers, with only five empirical articles published in 20 years.[19]

One example of how the emphasis on developing core competencies has impacted education scholarship is that 24 of the 25 articles on ethics were published since 2005, when the accounting profession reacted to concerns over the events that led to the Sarbanes-Oxley Act of 2002. Faculty issues have always been of interest in the accounting education literature, with research and teaching receiving the most attention (Table 8). Many of the empirical articles on faculty issues rank journals or author productivity. The category of teaching includes student evaluations of teaching (SET), a topic that definitely requires study as we shift the way we teach from traditional classrooms to blended or online environments.

The messages from the beginning and middle of our 20-year analysis period remain relevant today. Street (1998) discussed an infrastructure within which to engage in accounting education research. She noted that education research should

[19] Education research in AIS published in the six journals was analyzed and reviewed in Apostolou, Dorminey, Hassell, and Rebele (2014), which covered the 30-year period of 1983–2013.

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extend prior work, address substantive topics, incorporate literature in other disciplines, and be of the quality expected by premier accounting research journals. We assert the same recommendations; notably, more empirical work is needed, especially research that isolates variables of interest in a controlled setting. Street (1998, S150) identified two important questions that should be asked by any accounting education researcher: (1) how will our research benefit students of accountancy, and (2) why will other accounting educators be interested?

Rebele (2002) described the dynamic conditions affecting accounting as a discipline and identified implications for accounting education research. From his position as both editor and author, he observed that research should contribute to the improvement of educational outcomes. Suggestions included research on best practices, changing environmental conditions, emphasis on curriculum and pedagogy, core competency development (including lifelong learning and communication), technology, and assurance of learning. Faculty considering research projects should consider how their work extends our understanding in these areas and leads to improvements in the quality of accounting education.

In conclusion, contributions to accounting education research in the recent two decades have created a knowledge base on which to build future research. The number of articles published has increased over time, and research rigor has improved. Continued maturity of the body of research should focus on high-quality research designs, development of theory (or application of theory developed in other disciplines), and validation across multiple populations.

Acknowledgement

We are grateful to Editor-in-Chief Natalie T. Churyk for her excellent guidance.

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Please cite this article in press as: Apostolou, B., et al. Analysis of trends in the accounting education literature (1997–2016). *Journal of Accounting Education* (2017), https://doi.org/10.1016/j.jaccedu.2017.09.003

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Please cite this article in press as: Apostolou, B., et al. Analysis of trends in the accounting education literature (1997–2016). *Journal of Accounting Education* (2017), https://doi.org/10.1016/j.jaccedu.2017.09.003