ADVANCES IN ACCOUNTING EDUCATION

ADVANCES IN ACCOUNTING EDUCATION: TEACHING AND CURRICULUM INNOVATIONS

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ADVANCES IN ACCOUNTING EDUCATION: TEACHING AND CURRICULUM INNOVATIONS VOLUME 27

ADVANCES IN ACCOUNTING EDUCATION: TEACHING AND CURRICULUM INNOVATIONS

EDITED BY

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Submissions are invited for forthcoming volumes of Advances in Accounting Education (AIAE). AIAE publishes a wide variety of articles dealing with accounting education at the college and university level. AIAE encourages readable, relevant, and reliable articles in all areas of accounting education including auditing, financial and managerial accounting, forensic accounting, governmental accounting, taxation, accounting systems, etc. Articles from authors outside the U.S. are encouraged. Papers can focus on:

- Innovations in teaching and learning, including cases with teaching notes and evidence to demonstrate effectiveness.
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AIAE provides a forum for sharing ideas and innovations in teaching and learning ranging from curricula development to content delivery techniques. All articles must include a discussion of implications for teaching, learning and curriculum improvements. Non-empirical papers should be academically rigorous, and specifically discuss the institutional context of a course or program, as well as any relevant tradeoffs or policy issues. Empirical reports should exhibit sound research design and execution, and must develop a thorough motivation and literature review, possibly including references from outside the accounting field.

SUBMISSION PROCESS

Send two MS Word files by email:

(1) a manuscript with an abstract and any research instruments used, with no information to identify authors; and
(2) a cover page with a list of all authors' names, institutional affiliations, mailing addresses, telephone numbers, and email addresses.

Two reviewers assess each manuscript submitted and reviews are completed in a timely manner, usually 60–90 days.

Send manuscripts to Thomas Calderon, editor, aiae@uakron.edu

WRITING GUIDELINES

1. Write your manuscript using active voice. Therefore, you can use the pronouns "we" and "I." Also, please avoid using a series of prepositional phrases. We strongly encourage you to use a grammar and spell checker on manuscripts before you submit to AIAE. Parsimony is a highly desirable trait for manuscripts we publish. Be concise in making your points and arguments.
2. Each paper should include a cover sheet (the title page) with the names, addresses, telephone number, and email address for all authors. The title page also should include an abbreviated title that you should use as a running head (see item 7 below). The running head should be no more than 70 characters, which include all letters, numbers, punctuation and spaces between words.
3. The second page should consist of an abstract of approximately 150 words and up to five key words.
4. You should begin the first page of the manuscript with the manuscript's title. DO NOT use the term "Introduction" or any other term at the beginning of the manuscript. Simply begin your discussion.
5. Use uniform margins of 1.5 inches at the top, bottom, right and left of every page. Do not justify lines; leave the right margins uneven. Type no more than 25 lines of text per page.
6. Double-space all lines of text, including titles, headings and quotations.
7. Place each figure, table and chart on a separate page at the end of the manuscript. Include a marker in the body of the paper to show approximately, where in the final manuscript each figure, table or chart will appear.
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9. Format all citations within your text with the author(s) name and the year of publication. An appropriate citation is Catanach (2004) or Catanach and

Feldmann (2005), or Catanach et a1. (2006) when there are three or more authors. You do not need to cite six or seven references at once, particularly when most recent references cite earlier works. Please try to limit yourself to two or three citations at a time, preferably the most recent ones. Use APA 6.

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11. List at the end of the paper the full bibliographic information (e.g., author, year, title, journal, volume, issue and page numbers) for all references cited in the body of the paper. List references in alphabetical order by the first author's last name.
12. Center, capitalize each word and bold main headings; capitalize the first letter in each word, italicize and bold and center sub-headings; capitalize the first word, italicize and center the next level headings; capitalize the first word, italicize and left justify next level headings.

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SYNOPSIS

Advances in Accounting Education: Teaching and Curriculum Innovations publishes both non-empirical and empirical articles dealing with accounting education. All articles emphasize teaching, learning and curriculum development, and discuss vital matters pertaining to the improvement of accounting programs at colleges and universities. Non-empirical papers are academically rigorous, and specifically discuss the institutional context of a course or program, as well as any relevant tradeoffs or policy issues. Empirical reports exhibit sound research design and execution, and develop a thorough motivation and literature review, including references from outside the accounting field, where appropriate.

This 27th volume features 11 peer-reviewed papers surrounding three themes: (1) applied professional research and skills building; (2) generative artificial intelligence (AI) and analytics in the accounting curriculum; and (3) innovative practices in cost accounting and other areas.

The first theme contains four articles that explore such topics as emerging skills needed for career success in accounting, approaches to teaching applied professional research in the undergraduate accounting curriculum, blending teaching and assessment to offer an interdisciplinary focus in teaching financial statement analysis, and the efficacy of laptop use in notetaking in an accounting course that employs interactive notes.

Three articles in the second theme look at curriculum issues in using generative AI tools in the accounting curriculum. Coverage includes issues and opportunities related to teaching accounting information systems, financial accounting, and taxation. One article approaches the issues from a design thinking and cybernetics perspective, suggesting a future that will leverage the intelligence inherent in generative AI as well as the natural intelligence of humans which might add nuance and judgment to answers that AI might produce. The two other generative articles in that theme extend that viewpoint to financial reporting and taxation. The financial accounting piece contains two simple illustrative exercises (one from Brazil and the other from the USA) to show examples of what efforts to blend of AI and human intelligence might look like in the accounting classroom. The authors use textual analytics to identify examples of metrics that instructors might use to assess integrity and quality when students have the opportunity to use AI in the classroom. A fourth article in the second theme surveys the integration of analytics in the curriculum at AACSB accredited accounting programs.

In the third theme, faculty members who are seasoned experts in teaching cost accounting present innovations that might enhance the learning experience of students of accounting and business majors. One of the articles discusses a case used by the instructors to assure that students view the cost management course as an integrated whole rather than a series of disjointed topics. A second

piece builds on the integrative theme and presents a novel approach to teaching and learning process costing that emphasizes similarities rather than differences between FIFO and weighted average approaches. Consistent with the idea that an innovation could represent an old idea in a new context, the final article in this theme reports an approach used by a university in the middle east to manage the Covid-19 pandemic.

Faculty and administrators with an interest in accounting education should find all three themes to be highly informative and interesting. Some practitioners and regulators in the accounting profession may also find useful policy-related nuggets in Volume 27.

STATEMENT OF PURPOSE

Advances in Accounting Education: Teaching and Curriculum Innovations is a refereed academic journal whose purpose is to help meet the needs of faculty members and administrators who are interested in ways to improve teaching, learning and curriculum development in the accounting area at the college and university level. We publish thoughtful, well-developed articles that are readable, relevant, and reliable.

Articles may be either empirical or non-empirical and should emphasize innovative approaches that inform faculty and administrators as they seek to advance their classrooms, curricula and programs. All articles should have well-articulated and strong theoretical foundations. Establishing a link to the non-accounting literature is desirable. Further, we expect all manuscripts to address implications for the scholarship of teaching and learning.

Normally, articles that emphasize pedagogy and classroom innovation (e.g., cases, exercises, specific approaches to teaching a topic, etc.) must demonstrate efficacy in a college setting. That is, the authors offer evidence to show that the innovation has been tried and it is effective.

Non-empirical manuscripts should be academically rigorous. They can be theoretical syntheses, conceptual models, position papers, discussions of methodology, comprehensive literature reviews grounded in theory, or historical discussions with implications for efforts to enhance teaching, learning and curriculum development. Reasonable assumptions and logical development are essential.

Sound research design and execution are critical for empirical reports. Reviewers focus on the quality of method, data, results and analysis as well as the implications for teaching, learning and curriculum development.

REVIEW PROCEDURES

Advances in Accounting Education: *Teaching and Curriculum Innovations* provides authors with timely reviewer reports that clearly indicate the status of the manuscript. Each manuscript is reviewed by at least two reviewers. Authors receive initial reviews normally within eight to twelve weeks of manuscript submission.

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THEME 1

APPLIED PROFESSIONAL RESEARCH AND SKILLS BUILDING

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CHAPTER 1

THE MOST IMPORTANT EMERGING SKILLS FOR CAREER SUCCESS: A SURVEY ANALYSIS

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ABSTRACT

Prior research (Harrast, Olsen, & Sun, 2023) analyzes the eight emerging topics to be included in future CPA exams and discusses their importance to career success and appropriate teaching locus in light of survey evidence. They find that the general topic of data analytics is the most important of the eight emerging topics. To further understand the topics most important to career success, this study analyzes subtopics underlying the eight emerging topics. The results show that advanced Excel analysis tools, data visualization, and data extraction, transformation, and loading (ETL) are the most important data analytics subskills for career success according to professionals and that these topics should be both introduced and emphasized in the accounting curriculum. The results provide useful information to educators to prioritize general emerging topics and specific subtopics in the accounting curriculum by taking into account the most pressing needs of the profession.

Keywords: Emerging topics; data analytics; advanced Excel analysis; data visualization; data extraction, transformation and loading; CPA Evolution; teaching locus; accounting education; American Institute of Certified Public Accountants

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The American Institute of Certified Public Accountants (AICPA), in coordination with the National Association of State Boards of Accountancy (NASBA), makes periodic changes to the CPA exam in response to changes in the skillset required of new accounting professionals as well as changes in test administration technologies. Through 2003, the CPA exam was administered biannually in paper-and-pencil format. In 2004, administration of the exam became computer based, with several exam cycles distributed throughout the year. As the CPA exam continues to evolve, the exam structure is also changing. In January 2024, the exam will transition from the existing four-part, uniform exam model to a model with a common core of accounting, auditing, and tax, plus one discipline-specific section to be selected by the candidate. The 2024 exam will also expand the emphasis on emerging technologies[1] and is appropriately called the CPA Evolution initiative.

The CPA Evolution initiative proposes eight emerging topics for emphasis on the new CPA exam based on a practice analysis conducted by the AICPA (2020, 2022). The eight emerging topics include data analytics, predictive analytics, systems organization and control (SOC) engagements, digital acumen, cybersecurity, IT audit, IT governance, and IT risk. The new exam will have a greater emphasis on emerging technology and its touchpoints with accounting services. In a recent paper, Harrast et al. (2023) discuss the eight emerging topics to be tested on the new CPA exam and their importance for career success in light of survey evidence collected from accounting professionals. Table 1.1 lists the emerging topics ranked in order of importance to career success:

A discussion of these broad topics, their importance to career success, and where they should be introduced or emphasized, can be found in Harrast et al. (2023).

While a study by Harrast et al. (2023) is useful in determining which emerging topics are most important for career success, it is limited to a discussion of broad topics and lacks an analysis of detailed subtopics. In order to further understand the topics most important to the career success of new CPAs, the current chapter analyzes detailed survey data and examines subtopics underlying the eight emerging topics listed in Table 1.1. This provides useful information for educators in deciding which topics to emphasize and ensures that

Table 1.1. Emerging Topics Sorted by Mean.[a]

Rank	Emerging Topic Category	Mean (Median)
1	Data analytics (DA)	4.681 (5.0)
2	Cybersecurity (CS)	4.143 (4.0)
3	Digital acumen (DAC)	4.132 (4.0)
4	IT risks and controls (ITR)	4.0 (4.0)
5	Predictive analytics (PA)	3.824 (4.0)
6	IT audit (ITA)	3.626 (4.0)
7	IT governance (ITG)	3.473 (3.0)
8	Systems and organization control engagement (SOC)	3.385 (3.0)

Mean (Median) = The mean and median score from the survey question asking respondents to indicate the importance for career success for the subtopic area where 1 = not important; 2 = slightly important; 3 = moderately important; 4 = important; and 5 = very important.

[a]*Source*: Harrast et al. (2023).

curriculum decisions take into account the most pressing needs of the profession. The results provide incremental information regarding the specific, detailed topics that are most important in the professional world. In the remainder of this chapter, we will discuss existing literature followed by a discussion of our research methods, results, and conclusions.

LITERATURE REVIEW

Accounting topics have proliferated, making decisions about curriculum increasingly complex. Recent research may help reduce the complexity by defining both which topics are important and how the topics are being implemented in the curriculum. Harrast et al. (2023) analyzed eight emerging topics developed by the NASBA/AICPA (n.d.) and their importance to career success. Their research found that data analytics is ranked highest for career success and should be a priority for integration into the curriculum. However, the paper was limited in that it only examined eight broad topics and not the underlying subtopics.

Recent calls for improvements in accounting curricula tend to emphasize emerging technology (AICPA, 2021a, 2021b; Vien, 2021). While the spreadsheet has been and continues to be a standard tool of accounting (Harrast, Strong, & Bromley, 2010), there are many more technologies to consider today than when the spreadsheet became popular during the 1980s. As a result, there is a significant academic literature analyzing how to implement various emerging technologies into the accounting curriculum (Andiola, Masters, & Norman, 2020; Calderon, Hesford, & Turner, 2022; Polimeni & Burke, 2021; Qasim, Issa, El Refae, & Sannella, 2020; Showalter & Krawczyk, 2022; Sledgianowski, Gomaa, & Tan, 2017; Tschakert, Kokina, Kozlowski, & Vasarhelyi, 2017). Specifically, this research has examined directly how accounting programs have implemented technology changes into the curriculum, including analytics technologies such as Excel, Tableau, ACL/Idea, and others (Andiola et al., 2020; Polimeni & Burke, 2021). While these suggestions for integrating technologies are useful, their emphasis is on integration rather than on which technologies are most important. Calderon et al. (2022), perhaps an exception, offer both an integration framework and a tool for implementation of their framework, but their suggestions are normative and do not represent current curricular practices in accounting programs.

The CPA Evolution initiative, a joint project by the NASBA and the AICPA, has increased the urgency and relevance of teaching the appropriate emerging topics in the accounting curriculum (NASBA/AICPA, n.d.). Through the Evolution initiative, a new CPA exam model will be established including core disciplines that will put greater emphasis on technology (NASBA/AICPA, n.d.). According to the NASBA and the AICPA, the core exam, taken by all candidates, will include three sections: (1) Accounting and *data analytics*, (2) Auditing and AIS, and (3) Tax (Dustin, Mayes, & Taylor-Morris, 2020, emphasis added). Beyond the core disciplines, each candidate will select one additional area of specialization. Each area of specialization will test *advanced analytics*, which will comprise between 5 and 10% of the content of the selected specialization (Dustin et al., 2020, emphasis

added) and one area of specialization focused on business analytics and reporting (BAR). The newly "evolved" CPA exam is scheduled to roll out in January 2024.

This chapter will enhance current and future accounting curriculum research by providing information on the importance of the detailed subtopics underlying the most current topics in accounting, particularly at the intersection of accounting and information technology. This will assist educators in knowing which topics to emphasize or which topics may only need to be introduced. This research also offers evidence which confirms that certain subtopics, such as Excel spreadsheet tools, continue to be fundamentally important tools of the profession. Some may experiment with and find great usefulness in more sophisticated tools, but there is evidence that while new tools are available to the profession, more traditional skills may still be important for career success.

METHOD

Data for this project were collected during the summer of 2021 using an IRB-approved online survey.[2] The data collected include both high-level, summary data in addition to low-level, detailed data. The low-level, detailed data will be used in this paper to analyze the importance of the subtopics underlying the eight NASBA/AICPA (n.d.) emerging topics. The response method included a five-point Likert scale ranging from not important to very important.[3] One hundred thirty-five subjects "completed" the survey (clicked through), and 91 surveys were found to be usable (complete and valid answers). Sections of the survey were presented in random order to reduce order effects. The survey results used in the current study originate from the same sample and are a subset of the survey data collected by Harrast et al. (2023).[4] Table 1.2 is adapted from Harrast et al. (2023) and presents the characteristics of the professionals sampled, along with panels showing current employment by industry, accounting professional certifications, work experience, and highest degrees obtained.

Survey subjects represent public accounting (42%) and private industry (35%) as well as a significant number from education/non-profit/governmental employment and others. Most of the subjects in the survey (64%) hold a CPA certificate. Almost 53% have more than 10 years of experience in information disciplines, which skews the sample toward more mature professionals. Because traditional accounting firms are hiring from more disciplines than strictly accounting, we broadly refer to those disciplines as information disciplines in panels C and D, which includes accounting, finance, and information systems. In spite of this distinction, the survey would tend to be weighted toward accounting majors as the original alumni mailing list was composed of accounting graduates who may have minors or second majors in other disciplines.

To reiterate, this chapter is a follow-up to Harrast et al. (2023), who studied the general topics considered critical by the AICPA/NASBA (n.d.-a) study. In the current chapter, we analyze the subskills underlying each of the eight emerging topics (data analytics, predictive analytics, SOC engagements, digital acumen, cybersecurity, IT audit, IT governance, and IT risks and controls). The subskills provide important

Table 1.2. Sample Characteristics of 91 Subjects.[a]

	Freq.	%
Panel A: Current Employment by Industry		
Public accounting (Big four/national/regional/single-office accounting firm)	38	41.76
Industry (public or private company)	32	35.17
Education/Not-for-profit/Governmental entity	12	13.19
Self-employed	2	2.20
Retired	4	4.40
Other	3	3.30
Panel B: Accounting Professional Certifications		
CPA only	51	56.04
CPA and other accounting professional certification(s)	7	7.69
CMA only	1	1.10
CIA and other accounting professional certification(s)	1	1.10
Hold additional accounting professional certification(s) not listed	2	2.20
No accounting professional certifications	29	31.87
Panel C: Work Experience in Information Disciplines (Accounting/Finance/Information Systems)		
No work experience in information disciplines	3	3.30
≤2 Years of work experience in information disciplines	13	14.29
3–5 Years of work experience in information disciplines	17	18.68
6–10 Years of work experience in information disciplines	10	10.99
>10 Years of work experience in information disciplines	48	52.75
Panel D: Highest Degree Obtained in Information Disciplines (Accounting/Finance/Information Systems)		
Undergraduate degree (no master's) in information disciplines	59	64.84
Master's degree in information disciplines	12	13.19
Master's in Business Administration (MBA)	16	17.58
PhD in information disciplines	1	1.10
College degree (undergraduate or graduate) not listed above	3	3.30

[a] Harrast et al. (2023).

information about the detailed skills practitioners view as important to career success. The list of subskills and justification for their inclusion can be found in Table 1.A1.

RESULTS

The survey data were tabulated, and mean values were calculated for each of the emerging topic subskills.[5] Each of the tables that follow contains the subtopic mean that represents the mean score from the survey question asking respondents to indicate the importance of that subtopic for career success where 1 = not important, 2 = slightly important, 3 = moderately important, 4 = important, and 5 = very important. The ANOVA procedure was used to obtain a Tukey's Studentized Range Test to assess differences in professionals' assessment of mean importance across each of the subtopics for a given emerging topic. Under the column heading "Tukey Results," shared letters (A, B, C, etc.) indicate that the

mean importance for the subtopics represented in the respective columns and rows exhibit no significant difference in mean importance at alpha <0.05 using a two-tailed test.

The emerging topics and their respective subtopics/subskills are discussed in order of professionals' ranking of the emerging topics' relative importance based on Harrast et al. (2023), with data analytics being the most important topic for career success. We also offer a brief discussion of the teaching locus favored by professionals. The tabulated teaching locus results may be found in Table 1.A2.

Data Analytics

Table 1.3 shows the data analytics subskills, their means, and a Tukey test of means to assess whether significant differences in means exist. The Tukey test reveals that there is no significant difference in means between the first three topics (those sharing the letter "A"): advanced excel analysis tools; data visualization; and data extraction, transformation, and loading (ETL). However, the mean for these topics is significantly greater than the mean for database query, which stands alone and is assigned the letter "B." Tables 1.3–1.10 are constructed in a similar fashion, and for the sake of parsimony no further reference to the letter assignment is made.

According to the ratings of data analytics subskills, advanced Excel data analysis tools are the most important data analytics subskill for career success, followed by data visualization and ETL skills. In our opinion, advanced Excel data analysis tools would include a high level of fluency in the capabilities of Excel, including formula and function building, data extraction, cleaning and loading capabilities using queries, pivot tables (cross tabulations) for summarizing data, some macro writing experience, keyboard shortcuts, and other software features (including add-ins) that make data analysis more efficient, such as the Analysis ToolPak and Fuzzy Lookup add-ins for Excel. The Analysis ToolPak has a number of statistical tools including univariate and multiple regressions;

Table 1.3. Data Analytics Subtopic Areas and Tukey Results.

Subtopic areas for Data Analytics			Tukey Results					
Mean	Component		1	2	3	4	5	6
4.67	Advanced excel analysis tools	1	A	A	A			
4.48	Data visualization	2	A	A	A			
4.46	Data extraction, transformation, and loading	3	A	A	A			
3.80	Database query	4				B		
3.30	Statistical concepts	5					C	C
3.02	Analytical programming	6					C	C

For a given row and column, shaded areas represent items for which the ANOVA Procedure provides a Tukey's Studentized Range Test for the emerging topics showing no significant difference in means at alpha < 0.05, using a two-tailed test.

Mean = The mean score from the survey question asking respondents to indicate the importance for career success for the designated emerging topic where 1 = not important; 2 = slightly important; 3 = moderately important; 4 = important; and 5 = very important.