Software Applications And Computer Projects: A Comparison Of What AIS Professors And Other Accounting Faculty Are Using In Their Courses

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Abstract

The purpose of this study is to examine the types of software applications currently being used in accounting information systems courses throughout the United States. Specifically, the applications and computer projects utilized by AIS professors are compared with those used by non-AIS professors. This study represents an important step in ensuring that accounting programs provide the type and level of computer training that our students need for successful entry into the accounting profession.

Introduction

Accounting educators are concerned that their accounting graduates have computing skills that will prepare them for the tasks they will face in their future accounting positions. Educators should want their graduates to have not only good spreadsheet and word processing skills, but also, other computer skills, including database skills and the ability to integrate software applications. It may also be necessary for new graduates to have the ability to extract data from databases residing on a mainframe computer, manipulate the data in a desktop spreadsheet or database program, and export the results to several other applications. As we thought about the computer projects we use in class and asked colleagues about theirs, we discovered that while there was considerable variety in our projects, the computer assignments seemed to have two characteristics in common. They were desktop-based and heavily focused on spreadsheets. We became interested in determining where different software applications are being taught in accounting curricula and whether accounting professors require students to integrate applications. We were interested in determining whether the accounting educators providing most of the course work with software applications and computer projects were the accounting information systems professors or other accounting professors who do not teach the systems course. Therefore, the purpose of this research is to discover more about the software applications and computer projects assigned in accounting information system courses and to compare these projects with those assigned by other accounting faculty.

Readers with comments or questions are encouraged to contact the authors via email.

Methodology

We developed the questionnaire provided in the appendix to obtain information about the types of software applications and computer projects accounting faculty assign in their classes. We mailed the surveys to a random sample of 3300 accounting educators who were members of the American Accounting Association (AAA). We eliminated non-educator AAA members based on the survey responses. We asked the educators about the software they currently use in their accounting courses, the types of computer projects they assign to students, and the accounting courses in which particular computer projects are assigned. A total of 588 accounting educators, representing a response rate of 17.8%, participated in the study.

This paper addresses the following research questions regarding the software applications accounting professors use in their computer assignments:

1. Are accounting information system (AIS) faculty more likely than other accounting faculty to focus on spreadsheets in their class assignments?

2. Are AIS faculty more likely than other accounting faculty to focus on databases in their class assignments?

3. Are AIS faculty more likely than other accounting faculty to integrate multiple software applications into their computer projects?

4. Are there other software applications that are more likely to be used by AIS faculty than other accounting faculty?

Demographics

Tables 1 – 4 contain demographic information from the sample. The participants represent a broad cross-section of accounting educators. Table 1 reports the number and percentage of participants with primary teaching areas of financial accounting, managerial accounting, auditing, tax, accounting information systems, and government/not-for-profit. The total percentage in Table 1 is greater than 100 because respondents could indicate multiple primary teaching areas. As displayed in the table, more than 20% of the respondents identified two or more primary teaching areas.

Table 1: Primary Teaching Area
(n = 588)

Teaching Area	Frequency	%
Financial Accounting	310	52.7
Managerial Accounting	150	25.5
Auditing	83	14.1
Tax	74	12.6
Accounting Information Systems	50	8.5
Govt./Not-for-Profit	29	4.9
Other	14	2.4
TOTAL	710	120.7

As shown in Table 1, fifty professors designated AIS as their primary teaching area. An additional 47 respondents indicated that they teach AIS as a secondary teaching area. We combined these educators for a sample size of 97 AIS respondents. The following analyses in this paper compare the responses of the 97 faculty members who teach accounting information systems (AIS Faculty) to the responses of the 491 who do not teach accounting information systems (Non-AIS Faculty).

Table 2 compares the percentages of respondents from each type of college/university setting. While all types of college/university teaching settings are represented in the sample, most of the AIS and non-AIS respondents (64.9.7% and 59.7%, respectively) teach at four-year colleges/universities that offer a masters degree program. Fifteen percent of the AIS re-

spondents and twenty-three percent of the non-AIS respondents teach at a school that offers both masters and Ph.D. programs.

Comparisons of teaching experience and highest degrees held between AIS faculty and non-AIS faculty are reported in Tables 3 and 4, respectively. The majority of both the AIS and non-AIS participants (88.7% and 95.7%, respectively) have twelve or more years of teaching experience at the college/university level, while 86.6% of AIS faculty and 83.9% of non-AIS faculty hold terminal degrees. Taken together, the data in Tables 3 and 4 suggest that the respondents are senior faculty, likely tenured, and very experienced at and comfortable in teaching their classes.

To verify that both the AIS educators and non-AIS educators responding to the survey were samples of the same population, we applied Chi-square tests to the frequencies reported in Tables 2 - 4. In Table 2, Type of Institution, the null hypothesis of equal probabilities of the observed

Table 2: Type of Institution

	Non-AIS Faculty		AIS Faculty	
Type of Institution	**Frequency**	**%**	**Frequency**	**%**
Two Year College	27	5.5	3	3.1
Four Year College	53	10.8	16	16.5
Four Year with Masters Program	293	59.7	63	64.9
Both Masters and Ph.D. Courses	116	23.6	15	15.5
No Response	2	0.4	0	0
TOTAL	491	100	97	100

Table 3: Teaching Experience

	Non-AIS Faculty		AIS Faculty	
Amount of Experience	**Frequency**	**%**	**Frequency**	**%**
0 - 11 Years	21	4.4	11	11.4
12 or more Years	470	95.7	86	88.7
TOTAL	491	100.1	97	100.1

Table 4: Highest Degree Held

	Non-AIS Faculty		AIS Faculty	
Degree	**Frequency**	**%**	**Frequency**	**%**
Non-Terminal (BA, MBA)	79	16.1	13	13.4
Terminal (PH.D., DBA, JD, LLM)	412	83.9	84	86.6
TOTAL	491	100.0	97	100.0

values between the institutions of AIS educators and the institutions of non-AIS educators could not be rejected at $\alpha = .10$. The data in Table 3, Teaching Experience, could not be analyzed statistically since we could not overcome violations of the Chi square assumptions that fewer than 20% of the cells must have an expected frequency of less than five and no cell can have a frequency less than one. For Table 4, Highest Degree Held, applying the Chi-square test to the frequency of terminal degrees and non-terminal degrees, the null hypothesis of equal frequencies between the AIS educators and non-AIS educators could not be rejected at $\alpha = .10$. The AIS faculty and non-AIS faculty appear similar on type of institution and highest degree held, but may differ in amount of teaching experience.

Results

Internet Assignments and Course Time Devoted to Utilizing Software

Table 5 displays the usage of Internet assignments by AIS faculty and non-AIS faculty. More AIS faculty members (72%) assign Internet (WWW) exercises in their courses than non-AIS faculty members (64%). AIS faculty differed significantly ($\alpha < .10$) from non-AIS faculty in their usage of Internet assignments.

Most of the respondents from both the AIS and non-AIS groups spend less than 30% of class time utilizing software applications in the courses they primarily teach. Table 6 compares AIS and non-AIS faculty based on the percent of course time devoted to any type of software application. Comparing the respondents who devote less than 10%, 10 - 30%, and more than 30% of their total course time to software applications, the Chi-square test indicates that the differences in software utilization between AIS and non-AIS faculty are statistically different at $\alpha < .005$. Because the Chi-square test determines whether the AIS faculty and non-AIS faculty differ on a particular variable but does not indicate the direction of the difference, group means are calculated to understand more about the direction of the difference when the Chi-square tests result in significant differences between the AIS and non-AIS groups. Since the mean for the distribution of AIS faculty usage of software applications is higher than the mean for non-AIS faculty, we can conclude that, on average, AIS faculty members are spending more course time on software applications than non-AIS faculty.

Table 5: Usage of Internet Assignments*

	Non-AIS Faculty n = 491		AIS Faculty n = 97	
Internet Assignment	**Frequency**	**%**	**Frequency**	**%**
Used	314	64.0	70	72.0
Not Used	177	36.0	27	28.0

*The distribution of the AIS faculty differs significantly ($\alpha < .10$) from the distribution of the non-AIS faculty. ($\chi^2 = 2.86$ with 1 d.f.)

Table 6: Course Time Devoted toUtilizing Software Applications**

	Non-AIS Faculty		AIS Faculty	
Percent of Course Time	**Frequency**	**%**	**Frequency**	**%**
Less than 10%	234	47.7	22	22.7
10 - 30%	203	41.3	46	47.4
More than 30%	48	9.7	27	27.8
No response	6	1.2	2	2.1
TOTAL	491	99.9	97	100.0

**The distribution of the AIS faculty differs significantly (α < .005) from the distribution of the non-AIS faculty. (χ^2 = 46.29 with 2 d.f.)

Types of Software Applications

Over 90% of both the AIS and non-AIS faculty require their students to use some type of office suite package, which is a grouping of word processing, spreadsheet, presentation graphics, and database software that can easily be integrated. Although AIS educators require the use of multiple office suite packages, they prefer the Microsoft Office package. Over 9% of non-AIS educators, compared to only 3.1% of AIS educators, do not have their students use any office suite package. Table 7 reports the number of educators whose students use various office suite packages grouped by AIS faculty and non-AIS faculty. Results of Chi-square tests indicate that the usage of office suite packages by AIS and non-AIS educators statistically differs at α < .05 with AIS faculty using these packages in course work more often than non-AIS faculty.

Table 8 reports the choice of office suite package by AIS and non-AIS faculty respondents out of the 94 AIS and 444 non-AIS faculty using office suite packages. Nearly 30% of the respondents allow student usage of multiple office suite packages. Although both AIS faculty and non-AIS faculty overwhelmingly use the Microsoft Office Suite, results of the Chi-square test indicate that the AIS educators differ significantly (α = .05) from the non-AIS educators in their choices of office suite packages.

Spreadsheet packages are extremely applicable to the type of work that accounting practitioners do and, therefore, to the course work that

Table 7: Office Suite Package Use**

	Non-AIS Faculty (n = 491)		AIS Faculty (n = 97)	
Office Suite Package	**Frequency**	**%**	**Frequency**	**%**
Used	444	90.4	94	96.9
Not used	47	9.6	3	3.1

**The distribution of the AIS faculty differs significantly (α < .05) from the distribution of the non-AIS faculty. (χ^2 = 4.72 with 1 d.f.)

Table 8: Types of Office Suite Packages Used**

	Non-AIS Faculty (n = 444)		AIS Faculty (n = 94)	
Type	**Frequency**	**%**	**Frequency**	**%**
Corel Office Suite	42	9.5	6	6.4
Lotus Smartsuite	19	4.3	5	5.3
Microsoft Office	343	77.3	88	93.6
No Specification	173	40.0	20	21.3
TOTAL	577	130.0	122	129.8

**The distribution of the AIS faculty differs significantly ($\alpha < .05$) from the distribution of the non-AIS faculty. ($\chi^2 = 11.06$ with 3d.f.)

Table 9: Use of Spreadsheet Packages**

	Non-AIS Faculty N = 491		AIS Faculty N = 97	
Type	**Frequency**	**%**	**Frequency**	**%**
Required	323	65.8	78	80.4
Not required	168	34.2	19	19.6

**The distribution of the AIS faculty differs significantly ($\alpha < .005$) from the distribution of the non-AIS faculty. ($\chi^2 = 9.23$ with 1 d.f.)

Table 10: Type of Spreadsheet Package Required

	Non-AIS Faculty n = 323		AIS Faculty n = 78	
Type	**Frequency**	**%**	**Frequency**	**%**
Microsoft Excel	270	83.6	74	94.9
Lotus 1-2-3	52	16.1	11	14.1
Corel Quattro Pro	19	5.9	7	9.0
TOTAL	341	105.6	92	117.9

educators should require from accounting students. Table 9 reports the number of respondents who require their students to utilize a spreadsheet package in their classes. We found that 66% of non-AIS faculty and 80% of AIS faculty require their students to use some type of spreadsheet package in the classes they teach. The AIS faculty differ significantly ($\alpha < .005$) from the non-AIS faculty in the use of spreadsheet applications in their course assignments.

The particular spreadsheet applications used by the respondents are reported in Table 10. Out of the AIS educators requiring students to use spreadsheets, most (94.9%) require Excel or a combination of Excel and another package,

Table 11: Usage of Accounting Software**

	Non-AIS Faculty n = 491		AIS Faculty N = 97	
Accounting Software	**Frequency**	%	**Frequency**	%
Use	110	22.4	63	64.9
Do Not Use	338	68.8	31	32.0
No Response	43	8.8	3	3.1

**The distribution of the AIS faculty differs significantly ($\alpha < .005$) from the distribution of the non-AIS faculty. ($\chi^2 = 88.8$ with 1 d.f.)

while 83.6% of non-AIS educators require Excel or a combination of spreadsheet packages including Excel. The percentages of both groups requiring the other two popular spreadsheet applications, Lotus 1-2-3 and Corel QuattroPro are also reported in Table 10. The total is more than 100% because respondents could require more than one type of spreadsheet package. The Chi-square test results indicate that the differences in the types of spreadsheets required by AIS and non-AIS faculty are not statistically different.

Off-the-shelf accounting software packages are frequently used by small and mid-sized businesses for bookkeeping records and for the preparation of financial statements and managerial reports. AIS educators utilize various types of accounting software packages more often in their course work than non-AIS educators, as presented in Table 11. The AIS educators differ significantly ($\alpha < .005$) from non-AIS educators in the usage of accounting software.

The specific brands of accounting software reported in Table 12 can be divided into two types, low-price and mid-price products. Of the low-price accounting software packages, which include Quickbooks, Peachtree, One-Write Plus, and DacEasy, the Peachtree package was the most popular choice of both AIS and non-AIS educators. Only one non-AIS educator reported requiring DacEasy and none reported requiring One-Write Plus. Eight AIS educators required either DacEasy or One-Write Plus. None of the mid-price packages, which include MAS90, Solomon, and SBT, were very popular among educators. Only six AIS educators reported requiring assignments on a mid-priced package and no non-AIS educator required a mid-priced package. This finding is probably a result of the cost of obtaining these mid-price packages. Other accounting software used by educators includes EasyFlow, AccPac Simply, Great Plains, and various tax preparation software.

To statistically test for differences in choices of accounting software between AIS and non-AIS educators without violating assumptions, the software packages One-Write Plus, DacEasy, MAS90, Solomon and SBT were combined with the Other category. According to our Chi-square test, the choice of accounting software between AIS and non-AIS educators is not statistically different.

Table 13 reports the percentages of respondents who require the use of presentation graphics in their computer assignments. Although accountants often need to make formal presentations and use graphics to enhance their presentations, approximately 52% of the non-AIS educators do not require the use of presentation graphics in their courses, while 67% of AIS educators require the use of presentation graphics in their students' course work. The AIS educators differ significantly ($\alpha < .005$) from the non-AIS educators in their requirement of presentation graphics.

Table 12: Types of Accounting Software Used

Type	Non-AIS Faculty n = 110 Frequency	%	AIS Faculty n = 63 Frequency	%
Quickbooks	21	19.1	17	27.0
Peachtree	34	30.9	28	44.4
One-Write Plus	0	0.0	2	3.2
DacEasy	1	0.9	6	9.5
MAS90	0	0.0	3	4.8
Solomon	0	0.0	2	3.2
SBT	0	0.0	1	1.6
Other	54	49.1	22	34.9
TOTAL	110	100.0	81	128.6

Table 13: Usage of Presentation Graphics**

Presentation Graphics	Non-AIS Faculty n = 491 Frequency	%	AIS Faculty n = 97 Frequency	%
Required	229	46.6	65	67.0
Not Required	254	51.7	32	33.0
No Response	8	1.6	0	0.0

**The distribution of the AIS faculty differs significantly ($\alpha < .005$) from the distribution of the non-AIS faculty. ($\chi^2 = 14.93$ with 1 d.f.)

Table 14 reports information about the particular presentation graphics applications used by the respondents who require their use in assignments. Of those requiring the use of presentation graphics, Microsoft PowerPoint is the application of choice for both AIS and non-AIS faculty. The differences between the types of presentation graphics used by AIS and non-AIS educators are not statistically different at $\alpha = .10$.

Database software packages are powerful accounting tools that accounting practitioners should choose over spreadsheet applications in certain situations [4]. A dynamic data structure, a high level of data sharing, and the necessity for a high level of data control are three situations in which a database can outperform a spreadsheet application [2]. However, non-AIS accounting educators have not yet embraced the use of database software, as Table 15 reports. Less than 10% of non-AIS educators report using any type of database package in their courses, while 60% of AIS educators require one or more database packages. The AIS educators differ significantly ($\alpha < .005$) from the non-AIS educators in the usage of database software.

Table 16 reports the types of database packages used by AIS and non-AIS faculty. Of the AIS educators who use database applications, Microsoft Access is overwhelmingly the preferred package. The AIS educators differ signifi-

Table 14: Types of Presentation Graphics

	Non-AIS Faculty N = 229		AIS Faculty n = 65	
Type	**Frequency**	**%**	**Frequency**	**%**
Freelance	1	0.4	2	3.1
PowerPoint	224	97.8	62	95.4
Other	4	1.7	2	3.1

Table 15: Usage of Database Software

	Non-AIS Faculty n = 491		AIS Faculty n = 97	
Database Software	**Frequency**	**%**	**Frequency**	**%**
Used	48	9.8	58	59.8
Not Used	422	85.9	39	40.2
No Response	21	4.3	0	0.0

**The distribution of the AIS faculty differs significantly (α < .005) from the distribution of the non-AIS faculty. (χ^2 = 260.3 with 1 d.f.)

Table 16: Types of Database Packages Used**

	Non-AIS Faculty n = 48		AIS Faculty n = 58	
Type	**Frequency**	**%**	**Frequency**	**%**
Access	28	58.3	53	91.4
Dbase	10	20.8	2	3.4
Paradox	2	4.2	1	1.7
Other	14	29.2	5	8.6

**The distribution of the AIS faculty differs significantly (α < .005) from the distribution of the non-AIS faculty. (χ^2 = 29.93 with 3 d.f.)

cantly (α < .005) from the non-AIS educators in the type of database package used.

Enterprise resource planning systems (ERPs) are software packages that use relational database technology to integrate the various elements of an organization's information system. An ERP system allows a company to produce and access information in real-time, share common data across the enterprise, and both automate and integrate most of the organization's business processes [1]. An ERP application also allows a company that has grown through mergers and acquisitions avoid the costs of main-

Table 17: Use of ERP Software**

Use of ERP Software	Non-AIS Faculty n = 491 Frequency	%	AIS Faculty n = 97 Frequency	%
Yes	9	1.8	9	9.3
No	410	83.5	68	70.1
Considering Installation	72	14.7	16	16.5
No Response	0	0.0	4	4.1
TOTAL	491	100.0	97	100.0

**The distribution of the AIS faculty differs significantly (α < .005) from the distribution of the non-AIS faculty. (χ^2 = 32.58 with 2 d.f.)

Table 18: Requiring Submission of Electronic Assignments**

Electronic Assignments	Non-AIS Faculty n = 491 Frequency	%	AIS Faculty n = 97 Frequency	%
Required	201	40.9	58	59.8
Not Required	290	59.1	39	40.2

**The distribution of the AIS faculty differs significantly (α < .005) from the distribution of the non-AIS faculty. (χ^2 = 14.2 with 1 d.f.)

taining many separate legacy systems and the problems associated with interfacing these systems [3]. The five predominant ERP packages used currently by businesses include Baan, Oracle, PeopleSoft, JD Edwards, and SAP. Several of these companies offer their software to schools under university alliance programs in which the software is given free to schools who agree to provide the adequate hardware necessary to support the software application and, among other conditions, agree to across-the-curriculum usage of the software.

Several years ago implementation of an ERP system was prohibitive to companies other than Fortune 500 companies because of the high cost of implementation. Currently, implementation costs for mid-sized companies are decreasing to an affordable level. With large and mid-sized companies making conversions to ERPs, it is becoming evident to educators that providing some training in ERP software at the college level will greatly benefit our students entering the marketplace.

Table 17 displays the frequency of usage of ERP software by AIS and non-AIS faculty. Less than 2% of the non-AIS educators currently use an ERP system, but an additional 15% are either in process of or are considering implementing an ERP. Over 9% of AIS educators utilize ERP software in their courses, and an additional 16.5% are in process of, or considering, implementation. Although the majority of accounting educators are not yet using ERP software, the difference in the usage of ERPs by AIS and non-AIS educators is statistically significant at α < .005.

Submitting Assignments Electronically

More and more, businesses are retrieving and exchanging information via e-mail, the company's intranet, or the Internet. We wanted to gain an understanding of how much exposure students have to these types of information exchange and retrieval in accounting educational settings. One question on the survey asks the educators if they require their students to submit assignments electronically. Their responses are reported in Table 18. About 40% of non-AIS accounting educators require electronic assignment submission, while about 60% of AIS educators require that students submit some assignments electronically. AIS educators differ significantly ($\alpha < .005$) from non-AIS educators in their requirements of electronic submission of assignments.

Table 19 reports the types of electronic submission required by AIS and non-AIS educators. Respondents could give multiple responses identifying any format that they use. The preferred method of submission for both AIS and non-AIS educators is via e-mail. AIS educators differ significantly ($\alpha < .10$) from non-AIS educators in the type of electronic submission required.

Finally, we were especially interested in projects that involved integrating different types of software. Table 20 reports our findings. AIS educators differ significantly ($\alpha < .005$) from non-AIS educators in three areas. On average, more non-AIS courses require students to extract data from the Internet (e.g. SEC filing) and import the data into a spreadsheet for analysis. This task is assigned most often in the auditing course. Very little is being done, however, in retrieving data from the Internet to use in a database program for analysis by either AIS educators or non-AIS educators. Although AIS educators significantly differ ($\alpha < .005$) from non-AIS educators in requiring students to extract data from a database and import it into a spreadsheet for analysis, only 24% of AIS courses and less than 12% of other accounting courses have this requirement. Students are preparing schedules and charts in a spreadsheet and linking them to a presentation package or word processor in about 25% of the courses surveyed with no statistical difference between AIS course and non-AIS courses. AIS courses are using more computerized cases, practice sets and projects than are non-AIS courses. Table 20 can be used by both AIS and non-AIS faculty to compare the computer projects they are using for assignments in their courses with other faculty nationwide.

Summary

The purpose of this research was to examine the types of software applications and class assignments currently being used by accounting information systems faculty in their courses relative to the applications and assignments being used by faculty who do not teach accounting in-

Table 19: Submitting Assignments Electronically*

Type	Non-AIS Faculty n = 201		AIS Faculty n = 58	
	Frequency	%	Frequency	%
E-Mail	192	95.5	55	94.8
Campus Network	35	17.4	16	27.6
Internet	39	19.4	18	31.0

*The distribution of the AIS faculty differs significantly ($\alpha < .10$) from the distribution of the non-AIS faculty. ($\chi^2 = 4.8$ with 2 d.f.)

Table 20: Course Areas Where Computer Projects Are Assigned

Project Descriptions	AIS Course (n=97) Frequency %	Non-AIS Course (n=844) Frequency %	❶2	Level of Significance
Students extract data from the Internet (e.g. SEC filing), and import into a spreadsheet for analysis.	16 16.50%	255 30.21%	8.32	☙< .005
Students extract data from the Internet and import into a database program for analysis.	12 12.40%	64 7.58%	2.61	Not Significant
Students extract data from a database into a spreadsheet for analysis.	23 23.70%	82 9.70%	21.8	☙< .005
Students prepare schedules and charts in a spreadsheet and link them to a presentation package or word processor for presentation.	27 27.80%	218 25.80%	0.21	Not Significant
Students complete a computerized case, computerized practice set, or other type of computerized project (e.g. spreadsheet templates, simulation, etc.)	43 44.30%	251 29.74%	9.96	☙< .005

formation systems. Specifically, the study sought to determine whether accounting information system (AIS) educators are more likely than other accounting educators to require the use of spreadsheet and database applications in their class assignments and whether AIS educators are more likely than other accounting educators to integrate multiple software applications into their computer projects. A secondary objective was to identify other differences (e.g., in the use of ERP software or in the way computer assignments are submitted for evaluation) in the practices of AIS faculty relative to other accounting faculty.

We employed a chi-square goodness-of-fit test to determine whether significant differences exist between the practices of the two respondent groups. In general, our findings were as follows:

1. Both respondent groups routinely require the use of spreadsheet assignments and overall prefer Microsoft Excel over the other spreadsheet applications;

2. AIS faculty are more likely than non-AIS accounting faculty to require the use of a database application (preferably Microsoft Access) in their classes;

3. Neither respondent group is doing much in terms of integrating multiple applications in their class computer projects;

4. Non-AIS faculty are more likely than AIS faculty to require students to extract data

from the Internet and import the data into a spreadsheet for analysis; and

5. AIS faculty are more likely than non-AIS accounting faculty to a) require that students submit their computer assignments electronically; b) utilize accounting (general ledger) software applications in their classes; and c) consider introducing their students to ERP systems.

We also found that AIS faculty devote more of their class time to utilizing computer software than do non-AIS accounting faculty and that they are more likely to require their students to utilize a presentation graphics application such as Microsoft PowerPoint in their assignments.

Implications

This research is important in several ways. First, practitioners should find the study useful since it provides detailed information regarding the computer skills and computer applications currently being emphasized in accounting programs around the country. Second, the study allows an institution to compare the computer training offered in its accounting program to other institutions. For example, an institution might decide that it needs to distribute more equally its computer training across its accounting curriculum or that it needs to offer additional training in certain classes or in certain computer applications. It may even decide that it should change which applications are taught within a particular category (e.g., changing from Corel Office to Microsoft Office).

Finally, individual instructors should find the study useful as either confirmation that they are teaching the software taught in similar courses at other institutions or as an indication that some changes may be in order. For example, instructors might decide to add Internet assignments to their course requirements or they might decide to de-emphasize spreadsheet software and focus more on other applications. All accounting educators should begin to implement computer assignments that integrate various software applications.

Conclusions

Several major conclusions may be drawn from the research findings. First, AIS faculty are doing a relatively good job in incorporating all four basic computer application skills (word processing, spreadsheet, database, and presentation) in their courses. Second, neither respondent group is adequately preparing their students to perform all the tasks required in their future accounting positions. To help our students prepare for the world they will enter as accounting graduates, we, as educators, need to embellish our computer assignments with more integrative applications. We believe it is extremely important for students to be exposed to a wide variety of software applications and tasks via their class computer projects for several reasons.

It has been our experience that there is always some carry-over from learning a particular software package to learning a new one. Therefore, we believe our students will be better prepared for their future career if they participate in learning software applications and computer projects first in their college courses. Second, we believe it is important to use software and computer projects in the classroom so that our students will benefit from learning *how to learn* software and will recognize the application of concepts in the software packages, rather than merely learning what keystrokes to use in what order.

Finally, our analysis of the research findings led us to the conclusion that accounting faculty should take a more proactive approach to incorporating computer applications and capabilities within the overall accounting curriculum. Rather than assuming that the AIS course will provide students with whatever computer technology skills (beyond word processing and spreadsheets) are needed, accounting faculty should integrate

specified applications and task requirements throughout the curriculum. This approach would minimize the likelihood of over-emphasizing some skills (e.g., spreadsheet) while under-emphasizing other skills (e.g., database). Just as importantly, it would minimize the likelihood of not teaching at all some of the specific skills sought by employers (e.g., extracting data from a mainframe computer for analysis in a desktop application). Students would also appreciate the opportunity to practice their non-spreadsheet/non-word processing skills by having assignments that reinforce a particular application (e.g., a database application) in more than a single class.

In summary, accounting information systems faculty are doing overall a good job in incorporating multiple computer applications in their courses although they could improve their computer assignments by integrating the applications. Non-AIS faculty may be depending too heavily on the AIS faculty to provide students with the advanced computer skills that more and more employers are expecting of their new hires. Institutions should work closely with employers to identify the specific computer skills needed and should incorporate assignments throughout the accounting curriculum (not just in the AIS course) to develop those skills.

Implications for Future Research

This study represents the first in a series of studies planned to examine issues related to the computer skills taught in accounting classes. For example, research needs to be conducted to determine what computer skills practitioners want to find in their new accounting hires. Such information will enable us to address the question of whether we are teaching the computer skills to our students that will prepare them for successful entry into their workplace environments. Future studies should also examine differences along the line of gender, type of accounting program, and type of accounting job.

Of particular interest is why some educators have not yet incorporated computer applications in their classes. Perhaps they believe that rapid changes in technology will make whatever software package they teach obsolete by the time their students graduate. However, this may be an excuse for educators who are simply uncomfortable with using software in the classroom. Although this survey did not collect information about instructors' comfort levels in using software in their accounting courses, this would be an interesting extension of the current research.

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Appendix

Accounting Educators' Survey of Software Used

Please circle your response.

1) In which accounting area is your primary teaching responsibility?
   a) Financial Accounting
   b) Managerial Accounting
   c) Auditing
   d) Tax
   e) Accounting Information Systems
   f) Governmental/Not-for-Profit
   g) Other _____

2) At what type of college/university do you teach?
   a) Two year college
   b) Four year college (No graduate program)
   c) Four year college with either an MBA or Masters of Accounting program
   d) A college/university that offers both masters and Ph.D. courses

3) How many years of teaching experience do you have in the field of accounting at the college level?
   a) 0 – 2 years b) 3 – 5 years c) 6 – 8 years d) 9 – 11 years e) 12 or more

4) What is the highest degree that you hold?
   a) BA b) MBA c) Ph.D.

5) Are you male or female?
   a) Male b) Female

6) For the courses you primarily teach, what percent of the time, on average, do students utilize software applications out of the total time spent in your course?
   a) Less than 10%
   b) 10 – 30%
   c) 31 – 50%
   d) 51 – 70%
   e) 71 – 90%
   f) More than 90%

7) Do you use any WWW assignments in your courses?
   a) Yes b) No

8) Does your college/university have a student computer lab available?
   a) Yes b) No

9) Do you believe you are provided with adequate training on new software applications?
   a) Yes b) No

10) Which office suite package (a grouping of word processing, spreadsheets, presentation, and database software) do your students use for course assignments? Circle all that apply.
   a) Corel Office Suite (Word Perfect, Quattro Pro, Presentations, Paradox)
   b) Lotus Smartsuite (Word Pro, 1-2-3, Freelance Graphics, Approach)
   c) Microsoft Office (Word, Excel, PowerPoint, Access)

d) I give assignments that require this type of software, but I do not specify which particular system must be used for the assignment.
e) I have no assignments that require the use of this type of software.

11) Do you require the use of any of the following spreadsheet packages in course assignments?
a) Excel b) Lotus c) Quattro Pro d) I do not require the use of spreadsheets.

12) Do you use any of the following accounting software applications in your courses? Circle all that apply.
a) Quickbooks d) DacEasy g) SBT
b) Peachtree e) MAS90 h) Other _____
c) One-Write Plus f) Solomon i) I do not use accounting software in my courses.

13) Do you have your students use any of the following presentation graphics applications?
a) Freelance c) Other_____
b) PowerPoint d) I do not require the use of presentation graphics.

14) Do you have students submit assignments electronically? Circle all that apply
a) e-mail b) campus network c) Internet d) Students do not submit electronically.

15) Do you use any of the following database packages in your course?
a) Access d) Other _____
b) DBase e) I do not use database applications in my course.
c) Paradox

16) Do you use an application of enterprise resource planning (ERP) in your course?
a) Yes – What type? _____
b) No
c) Not presently, but my school is considering installing an ERP application.

Please tell us about your computer projects. A variety of computer projects are described below. For each description, please **check** any course areas where the computer project you assigned in the course was similar to the description provided. Feel free to add your own description(s).

	Project Descriptions	**Financial**	**Managerial**	**Systems**	**Auditing**
17)	Students extract data from the Internet (e.g., an SEC filing), into a spreadsheet for analysis.				
18)	Students extract data from the Internet into a database program for analysis.				
19)	Students extract data from a database into a spreadsheet for analysis.				
20)	Students prepare schedules and charts in a spreadsheet and link them to a presentation package or word processor for presentation.				
21)	Students complete a computerized case, computerized practice set, or other type of computerized project (e.g., spreadsheet templates, simulation, etc.)				