

XBRL In The Accounting Curriculum: A Survey Of AIS Faculty

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ABSTRACT

The purpose of this paper is to assess the challenges and opportunities associated with introducing XBRL (eXtensible Business Reporting Language) into the accounting curricula. XBRL is an electronic format for simplifying the flow of financial information between software programs. It is a complex, rapidly changing language that is multi-disciplinary in nature. This poses difficult pedagogical questions. The primary question is whether XBRL should be covered in the curriculum or not. If answered affirmatively, the issues related to which topics should be covered and to what extent become pertinent. The concurrent problems of faculty preparation and availability of instructional materials also need to be investigated. This paper uses a survey methodology to collect information from accounting information systems (AIS) faculty members nationwide regarding these questions. The results indicate that the faculty members are familiar with XBRL and consider it important for accounting students to study. This survey also identifies important topics in XBRL, and the relative importance of XBRL as compared to other popular AIS topics. The identified XBRL topics are not covered in depth in present accounting curricula. The responding faculty members indicated that lack of faculty preparation and lack of instructional materials are the main obstacles to introducing XBRL in the classroom. The paper concludes with the authors' recommendations for improving the current state of XBRL education.

INTRODUCTION

Internet data and information streams have no universal meanings. Therefore, they are not easily understood, analyzed or translated by users. XML (eXtensible Markup Language) has been developed to solve some of these problems associated with a lack of data standardization (Ray, 2001). XML has been hailed as a revolutionary advance in data transfer and information identification on the Internet. It is backed by a majority of software vendors (Brown, 2001) and has applications in such diverse areas as science, art, and business (<http://www.xml.org>). XBRL (eXtensible Business Reporting Language) is “one of a family of XML languages which is becoming a standard means of communicating [business and financial data] between businesses and on the internet” (<http://www.xbrl.org/default.aspx>).

XBRL “tags” every item of information that a company wants to communicate. This is done through a standardized taxonomy of terms. An XBRL tag can be used for both numerical and text information. Many taxonomies currently “exist for specific needs, such as financial statements, management reports, general ledger, tax returns, EDGAR filings, administrative reporting, and assurance service (audit) schedules” (Stimpson 2004, 40). The standardization provided by these taxonomies allows precise meanings to be communicated to the users of the information.

There appear to be many benefits from XBRL. Some of these benefits include: (a) an efficient financial reporting process, (b) data searches independent of different platform and application technology, (c) timely and reliable availability of information, and (d) virtual documents including financial statements in near real-time (Higgins and Harrell, 2003). Further, recent empirical research indicates that using XBRL results in better acquisition and integration of information for individuals (Hodge, Kennedy, and Maines, 2004).

XBRL appears to be much more than just “the current fad” in communicating business information. Rather, the following recent developments indicate that it is the future of financial reporting and other business communications:

- During 2004, Microsoft Corporation released Microsoft Office Tool for XBRL, which will allow the creation of XBRL-compliant Microsoft Office files (Naumann 2004).
- During 2004, the European Commission (EC) signed a \$1.2 million contract with the XBRL European Consortium to assist organizations in development and adoption of XBRL (Hannon 2004b).
- In September 2004, the United States SEC released a proposal to allow registrants to voluntarily file supplemental financial information using XBRL starting with calendar year-end 2004 (U.S. Securities and Exchange Commission 2004).
- The EC will require “all companies to report financial results according to international financial reporting standards (IFRS) by 2005” (Hannon 2004b, 55).
- The Federal Deposit Insurance Corporation (FDIC) will accept XBRL reporting format as of early 2005 (Hannon 2004a).
- The insurance and banking community in the United Kingdom will be required to use XBRL-formatted reports beginning early in 2005 (Hannon 2004a).

The use of XBRL is going to have a significant impact on financial and accounting professionals. They will be able to provide continuous monitoring of transactions and real-time reports for business decision-making. Further, XBRL will have a profound effect on audit processes. Obvious questions arise given such significant changes in the knowledge required of financial and accounting professionals. Is accounting curriculum development keeping up with these changes? What is being done in the classroom to educate accounting and other business majors about XBRL? What do accounting educators think should be done, and what do they think is the future of XBRL?

These questions and others were asked of AIS faculty in this study. The purpose of this paper is to assess the challenges and opportunities associated with introducing XBRL into accounting classrooms. The paper is organized as follows: first, the structure of XBRL is briefly described. This description will aid in understanding the survey instrument. Second, the survey methodology and data collection processes are outlined. Third, the results of the data analysis are presented. Finally, the conclusions and limitations of the study are described.

STRUCTURE OF XBRL

Figure 1 illustrates some basic facts regarding XBRL. Figure 2 shows the relationship between XML and XBRL. The XBRL Specifications, which provide a technical definition of how XBRL works, are based on the XML specifications. XBRL, like XML, is a markup language. A popular name for markups is “tags,” and this term will be used hereafter.¹ Tags are notations in the document that are not part of the document’s content. The term content refers to information that is presented in the document, for example, financial data, product specifications, news, and catalogs.

XBRL is a computer language that provides tags used describe financial data (e.g. inventory, receivables, and net income). A simple example would be:

```
<unit><measure>ISO4217:USD</measure></unit>
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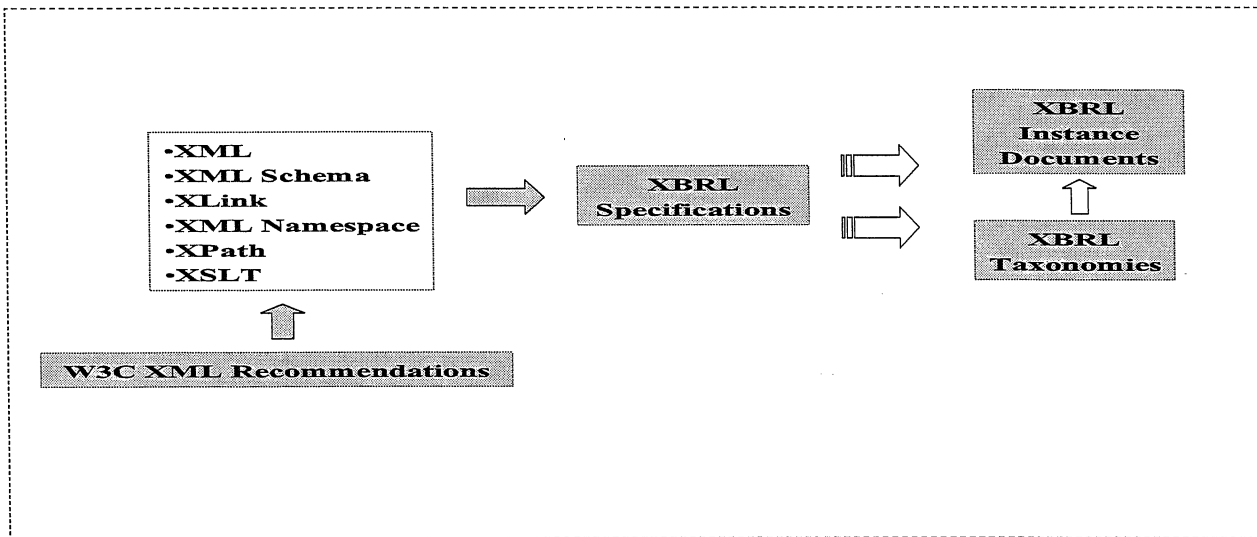
¹ Tags can be procedural or descriptive. Procedural tags such as HTML (Hypertext Markup Language) specify how to process the text and primarily deal with formatting and presentation of the document and not with the content. These are software specific. Descriptive tags such as XML contain information about the logical structure of the text and content in the document. Markup languages specify symbols for tags, meanings of tags, distinction of tags from text, and the type of tag required for a specific purpose.

Figure 1: XBRL

- **XBRL IS:**
 - XML based standard format for financial reporting
 - XBRL facilitates drill down of information
 - XBRL is extensible, users can increase its applicability
 - XBRL can be used transfer a single item of financial data or a financial database
 - XBRL standards are in the public domain
-
- **XBRL IS NOT:**
 - XBRL does not set new accounting standards
 - XBRL does not create a generic chart of accounts
 - XBRL does not translate GAAP
 - XBRL is not a privately owned standard
 - XBRL does not capture data at the transaction level

This tagged line indicates that the unit of measure for the financial statement is US dollars. The financial data elements are also related; for example, current assets can be calculated from cash, accounts receivable, and inventory, among other things. However, there is no standard definition of financial items, nor is there a universally accepted format for financial statements. XBRL specifications provide normative rules to deal with these problems.

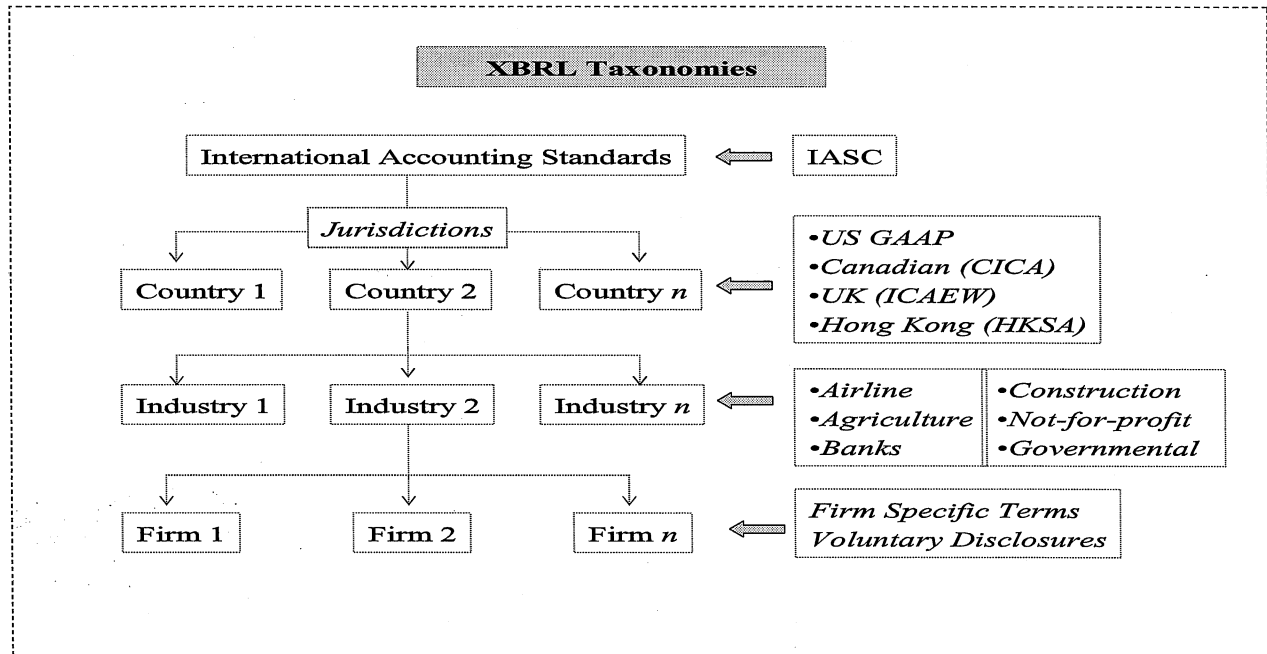
Figure 2: XBRL Taxonomies I



As shown in Figure 2, XBRL specifications are used to develop XBRL instance documents and taxonomies. An instance document is a collection of tagged financial facts. XBRL instance documents describe financial facts; they can refer to a single item, such as *Current Assets*, or can refer to a set of items, such as a complete *Annual Report*. Taxonomy documents, on the other hand, provide meanings, definitions, and interrelationships among those tagged financial facts. For example, if financial statements under US GAAP are being prepared, then US GAAP taxonomy will be required. XBRL can be used to develop tags that are used in the instance document and dictionaries of tags (taxonomies) that explain the meanings of tags.

XBRL.org provides taxonomies that are accepted and approved for preparing tagged financial statements under US GAAP, as well as managerial reports, general ledgers, tax returns, and EDGAR filings. Different users, such as national accounting bodies, industry groups, or even individual companies, may develop taxonomies for financial reporting purposes (XBRL FAQ, 2003). Since XBRL specifications are derived from XML specifications, a deeper understanding of XBRL instance documents and taxonomies require an understanding of various XML concepts such as elements, attributes, namespaces, documents type definitions, and XML schema.

Figure 3: XBRL Taxonomies II



No single taxonomy can cover the world’s diverse needs for financial reporting. As shown in Figure 3, outside of the US, the initial emphasis of XML was on developing the taxonomy for International Accounting Standards (IAS). Not all countries have adopted IAS. Concurrent efforts focused on developing taxonomies for each country, referred to as jurisdictions.² This is an ongoing effort, and different countries are at different stages in developing relevant taxonomies. Almost all major industrial countries have initial taxonomies for country-specific GAAP in place. The next step will be to develop taxonomies for each industry within the country. The requirements and terminology for each industry are different, and taxonomy is needed to cover each industry. The IAS, country-specific GAAP, and industry-specific terminology taxonomies will be in the public domain. Finally, taxonomies to cover firm-specific terminology and voluntary disclosures by individual firms are also needed. A firm may develop taxonomy for internal reporting and/or consolidations, which may not be in the public domain. XBRL is extensible and allows development of new tags which are compatible with the existing framework, as long as the rules of XBRL are followed.

XBRL is a markup language, and it needs supplementary tools for viewing, editing, and building instance documents and taxonomies. Programs are also needed to access data in XBRL documents, and to create repositories of tagged financial data. These tools are used to prepare and validate XBRL reports, access financial data tagged with

² Currently, there are 11 formally established jurisdictions (Australia, Canada, Germany, Ireland, Japan, Netherlands, New Zealand, Spain, United Kingdom, United States, and the International Accounting Standards Committee Foundation). Four countries have established provisional jurisdictions (Belgium, Denmark, Korea, and Sweden).

XBRL, and create databases of tagged financial data. Currently, <http://www.edger-online.com/> has an extensive collection of SEC filings in the XBRL format.

XBRL does not create reports in WYSIWYG formats. The XBRL instance documents must have a style sheet that formats an XBRL document properly. XBRL facilitates data transfer, not data formatting. The XBRL files have separate XML style sheet files (.XSL files). They can display documents in the required format, such as a PDF file, HTML file, or Word file. Teams of accountants, programmers, and XML experts continue to develop XBRL and the required tools. Many of these tools are currently available and faculty involvement in these tools will probably be limited to the user side.

Both the complexity and the nature of XBRL raise a number of pedagogical questions. The primary question is: Should XBRL be covered in the accounting curriculum at this time? If yes, then the issues of which topics should be covered and to what extent become pertinent. The concurrent problems of un-prepared faculty and a lack of instructional materials also need to be investigated. This paper provides a summary of accounting faculty members' answers to questions on these topics.

THE SURVEY

The targeted group for the survey was accounting faculty members who teach Accounting Information Systems (AIS).³ The survey was sent to e-mail addresses listed in the faculty directory of the AAA Information Systems section (AAA-IS). Initially, 139 surveys were delivered, and approximately three months later, 108 subjects received a "second request" emailing. The number of responses and response rates are presented in Table 1, below. The numbers of responders to the first and second mailings were 31 and 10, respectively, providing a combined total of 41 responders out of 139 surveys sent (a 30% response rate).

Table 1: Analysis Of Survey Mailings And Responses Rates

	Where?	Number of possible subjects	Responses received	Response Rate
1 st Group	AAA-IS	139	41 (2 mailings)	30%
2 nd Group	AISEA	65 ⁴	13	20%
Total		204	54	27%

AAA-IS: Faculty Directory of American Accounting Association (AAA) IS section

AISEA: 2003 AIS Educator Conference & Training Registration

The 73 individuals that attended the 2003 AIS Educators Conference were identified as a second group of subjects. Email addresses were not available for two of the attendees, and 6 of the subjects were already included in the AAA-IS group. Thus, a total of 65 "new" subjects were identified. The response rate for this group was 20% (13 out of 65). The overall response rate for both groups was approximately 28% (54 out of 204).

The demographic information for the responding faculty members is presented in Table 2. Ninety percent of the respondents are full, associate, or assistant professors, and 76% of the respondents are CPAs. The primary teaching responsibility for 89% of the respondents is "AIS" or "AIS and some other course." Approximately 91% of the business programs and 65% of the accounting programs represented are AACSB accredited. Fifty-three of the 54

³ The survey instrument is shown in Appendix A. This survey was attached to an e-mail as a Word file and the options could be chosen electronically. The survey was collected via return e-mail.

⁴ Although 71 individuals were identified with the AIS Educators' Conference, 6 of these individuals also appeared in the AAA-IS group. There were no double responders.

respondents reported that their institutions awarded undergraduate degrees, 44 awarded masters' degrees, and 14 were also doctoral granting institutions.

Table 2: Demographic Information Of Survey Respondents

Please indicate your rank.	Number
Full Professor	11
Associate Professor	19
Assistant Professor	19
Others. Please specify.	4
NA	1
What are your primary teaching responsibilities?	
a. Accounting Information Systems (AIS)	28
b. Auditing	1
c. Financial Accounting	2
d. Managerial Accounting	0
e. Other	2
f. AIS and Auditing	6
g. AIS and Financial Accounting	7
h. AIS and Managerial Accounting	4
i. AIS and Other	1
j. AIS, Financial and Managerial	1
k. AIS, Managerial and Others	1
l. Audit and Managerial	1
Is your business program AACSB accredited?	
a. Yes	49
b. No	5
Is your accounting program AACSB accredited?	
a. Yes	35
b. No	19
Are you a CPA?	
a. Yes	41
b. No	13
Please check your university location in one of the following regional classifications.	
a. Northeast	9
b. Northwest	3
c. Southeast	14
d. Southwest	9
e. Far West	1
f. Mid West	13
g. Rocky Mountains	3
h. International (Singapore)	1
i. NA	1
How many students do you graduate in accounting per year in each of the following categories?	
a. Undergraduate	53
b. Masters	44
c. Doctoral	14
<i>(Note: The numbers in the right column indicate the number of universities that grant undergraduate, masters, and doctoral degrees. The numbers of graduating students are available from the authors.)</i>	

DATA ANALYSIS AND RESULTS

The responses to the questions in the survey that explore the different aspects of incorporating XBRL into courses are presented in four tables. In Table 3, faculty preparation in XBRL and faculty perceptions concerning the future of XBRL are examined. In Table 4, the current state of XBRL education and the perceived problems associated with introducing XBRL into the classroom are addressed. In Table 5, the importance of different XBRL topics and the coverage of XBRL topics are explored. Finally, in Table 6, the authors look at the perceived importance of various teaching aids for XBRL education.

Faculty Preparation And Perception Regarding XBRL

As indicated in Table 3, all (100%) of the surveyed AIS faculty members are at least familiar with the topic, and 15 of the 54 respondents (27%) consider themselves very knowledgeable regarding XBRL. Approximately 81% of the faculty members responding believe that XBRL has some or enormous potential. This is a significant finding, especially in light of the rise and fall of many revolutionary technologies in the last decade. However, this finding may have occurred because XBRL is the only computer language initiative in the financial reporting area.

Table 3⁵: Faculty Preparation And Perception Regarding XBRL

Indicate your familiarity with XML or XBRL.	Number						
a. Completely unfamiliar with topic	0						
b. Some familiarity with topic	39						
c. Very knowledgeable about topic	15						
What is your opinion of the future prospects for XML/XBRL?							
a. Will not sustain momentum and fade from existence	3						
b. You are uncertain about the future prospects	7						
c. Appears to have some potential	16						
d. Has an enormous potential	27						
e. N/A	1						
Please indicate the extent to which you would agree with the following statements by circling the appropriate responses where 1 = strongly disagree and 5 = strongly agree.	<u>Mean</u>	<u>Std. Dev.</u>	<u>Frequency</u>				
			1	2	3	4	5
a. The current accounting curriculum does not provide sufficient coverage of XML/XBRL.	3.74	0.96	0	6	15	20	13
b. The accounting curriculum should provide XML/XBRL coverage.	4.15	0.89	0	3	8	20	22
c. XML/XBRL experience should be integrated into accounting standards.	3.91	1.01	1	4	11	20	17
d. Coverage of XML/XBRL is not necessary.	1.44	0.67	34	13	5	0	0

Sixty-one percent (33 of 54) of the responding faculty members agree or strongly agree that the present accounting curriculum does not provide sufficient coverage of XBRL (only 11% of respondents disagree). Seventy-nine percent of respondents agree or strongly agree that accounting curricula should provide some XML/XBRL coverage.

⁵ The total number of faculty members in the frequency column does not always add to 54. This is due to some faculty members not answering the question. This observation is also true for Tables 5 and 6. However, the total number is always more than 50.

A significantly larger percentage of the 15 respondents that indicate they are very knowledgeable about XML/XBRL strongly agree with this statement (as compared to the respondents that are only “familiar” with XML/XBRL). That is, 73% (11 of 15) of the very knowledgeable respondents strongly agree that some XML/XBRL coverage should be in accounting curricula, as compared with only 31% (11 of 35) of the “familiar with XML/XBRL” respondents that strongly agree with this statement.⁶

Most respondents perceive that XBRL deserves more coverage in accounting curricula. For example, over 90% of respondents disagree or strongly disagree with the statement “Coverage of XML/XBRL is not necessary.” For the 15 respondents that indicate they are very knowledgeable with XML or XBRL, 100% disagree or strongly disagree with the statement that XML/XBRL coverage is not necessary. XBRL, at this point, is a stand-alone topic and is primarily handled through discussions only. The majority of respondents also believe that XBRL needs to be integrated with accounting standards, that is, that the standards should be tagged and XBRL ready as they are released.

XBRL In The Classroom

Table 4 indicates that most (72%) of the respondents describe their graduating bachelor students as having some familiarity with the topic of XML/XBRL. However, in 26% of the represented institutions, students are not exposed to XBRL and are completely unfamiliar with the topic. Only one respondent believes that the students in his/her institution are well prepared and very knowledgeable in XBRL. Ninety-five percent (41 of 43) of the respondents that integrate XML/XBRL into their curriculum indicate that the coverage is primarily provided in the AIS course. The results indicate that most AIS faculty members are teaching XBRL, and that this coverage will probably expand in the future.

Table 4: XBRL in the Classroom

Please describe the familiarity of your graduating bachelor students with XML/XBRL.	Number
a. Completely unfamiliar with topic	14
b. Some familiarity with topic	39
c. Very knowledgeable about topic	1
How do you integrate XML/XBRL education into your curriculum?	
a. Do not cover XML/XBRL at all	10
b. Include in an accounting information systems course	41
c. Offer a separate entire course	0
d. Include in more general systems/computer class	2
e. N/A	1
If you do not currently offer XML/XBRL coverage, what are your institution's plans to offer coverage? Please skip if your institution already offers coverage.	
a. Within a year	2
b. Within two years	3
c. Within five years	4
d. Do not plan to offer such coverage	6
e. NA	39 ⁷

⁶ The responses from the subjects that are “very knowledgeable” regarding XML/XBRL will be discussed whenever they are significantly different ($\alpha < 0.05$) from the subjects’ responses that are only “familiar” with the topic.

⁷ The earlier panel indicates that there are 43 faculty members who integrate XBRL in their curriculum. However, in this panel only 39 faculty members indicate that they are covering XBRL. It appears that four faculty members are planning to introduce XBRL in the near future.

Table 5: Faculty Perceptions Regarding XBRL Content

The following is a list of topics in XML/XBRL. Please rank the importance of each item. (1 = not important, 5 = very important) <i>Ranked according to importance (largest mean):</i>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Frequency</u>				
			1	2	3	4	5
a. Strategic uses of XBRL	4.42	0.85	0	2	6	12	32
b. Concept of markups and tags	4.13	0.95	1	1	11	16	23
c. Preparing and validating XBRL reports	3.65	0.93	0	6	16	20	10
d. XBRL components	3.65	0.90	0	6	15	22	9
e. XML/XBRL Software	3.48	1.02	0	11	14	18	9
f. XML Schema	3.46	1.13	2	8	18	12	12
g. Elements, attributes, and namespaces in XML	3.39	1.10	1	10	19	10	11
h. Document type definitions	3.06	1.09	5	9	21	12	5
i. XSL (eXtensible style sheets)	2.88	1.10	6	11	23	7	5
The following is a list of topics in XML/XBRL. Please rank the coverage of each item in your curriculum. (1 = not covered, 5 = covered in depth)	<u>Mean</u>	<u>Std. Dev.</u>	<u>Frequency</u>				
			1	2	3	4	5
a. Strategic uses of XBRL	2.85	1.43	13	10	9	12	8
b. Concept of markups and tags	2.60	1.38	15	13	9	10	6
c. XBRL components	1.98	1.20	27	10	7	8	1
d. Elements, attributes, and namespaces in XML	1.87	1.18	29	11	6	5	2
e. XML/XBRL Software	1.83	1.16	30	10	7	4	2
f. XML Schema	1.77	0.99	28	14	6	5	0
g. Preparing and validating XBRL reports	1.66	0.98	32	11	7	2	1
h. Document type definitions	1.62	0.88	31	14	5	3	0
i. XSL (eXtensible style sheets)	1.40	0.72	38	10	4	1	0
Please indicate the importance of covering the following topics in accounting information systems course or modules integrated into an auditing course by circling the appropriate number where 1 = least important and 5 = most important. <i>Ranked according to importance (largest mean):</i>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Frequency</u>				
			1	2	3	4	5
a. Database software	4.00	0.93	2	2	5	30	15
b. Data extraction and manipulation	3.94	0.94	0	5	10	22	17
c. XML/XBRL	3.39	1.17	2	13	12	16	11
d. General ledger software	3.15	1.32	7	12	11	14	10
e. Advanced Excel techniques	3.13	1.30	8	10	11	17	8
f. ACL/IDEA	3.04	1.37	11	8	11	16	8
g. SQL	2.98	1.39	11	10	11	13	9
h. Flowcharting software	2.70	1.21	8	19	14	7	6
i. Working trial balance software	1.85	0.92	25	14	13	2	0
j. Other topics. Please specify.							
			Web Services, Enterprise Systems, REA Modeling				

The problems with expanding the coverage of XBRL are also revealed in Table 4. The primary problem in integrating XBRL coverage into accounting curricula is a “lack of faculty preparation in XBRL” (mean of 4.30 on a scale of 1 to 5, where 5 = very severe obstacle).⁸ This is understandable, since any faculty member who is keeping current with XBRL can attest to the extensive continuing education requirements. The second most challenging obstacle to integrating XML/XBRL coverage into accounting curricula involves the lack of instructional materials (mean of 3.80). Instructional materials which can be used in the classroom (projects, questions, cases, etc.) to support presenting XBRL are sparse. The lack of materials also contributes to the lack of faculty preparation. There are also

⁸ All scaled responses are measured on a 1 to 5 point basis.

concerns in the minds of some faculty members regarding the lack of job opportunities related to the consequent lack of student interest in the topic. One faculty member also expressed concerns regarding the availability of class time to add this topic. As the coverage of XBRL expands, this may become a problem for a large number of faculty members. Such concerns reflect the uncertainty regarding the accountants' role in developing and implementing XBRL.

Faculty Perceptions Regarding XBRL Content

Table 5 presents responses that address the importance and coverage of XBRL topics in accounting curricula. The importance of a topic is closely related to that coverage of the topic. The strategic uses of XBRL (mean = 4.42) is considered to be the most important topic for coverage. Approximately 85% (44 of 52) of the faculty members responding believe that this is an important or very important topic. This is not a surprising finding since accounting students must be aware of the coming changes in the profession due to the application of XBRL. However, 44% (23 of 52) of the respondents provide little or no coverage of this important topic.

“Concepts of Markups and Tags” is the next important topic identified by the respondents. Seventy-five percent (39 of 52) of the faculty respondents rank this topic as important or very important (mean = 4.13). However, a majority (53%) of the faculty members provide little or no coverage of this topic. XBRL is a “markup language” and cannot be taught unless concepts of markups and tags are discussed. Although the coverage of the two most important XML/XBRL topics is low, it is higher than the coverage of the remaining XML/XBRL topics.

The majority of the responding faculty members do not cover any of the remaining XML/XBRL topics. Additionally, if the topics are covered, they are covered superficially. Two or less of the 54 respondents provide in-depth coverage of these topics. This gap between perceived importance and coverage can be attributed to two factors. First, there is a lack of both instructional materials and knowledge on the part of the faculty, as illustrated in Table 4. Second, the authors believe that the gap exists because XBRL is just being introduced in the accounting curricula, but will close in a few years.

A comparison of the responses of the 15 responding faculty that are very knowledgeable regarding XML/XBRL to the responses of the other respondents finds some significant differences. Most of these differences related to the question regarding the coverage of each topic in the curriculum. The following topics are covered significantly more in the curricula of the faculty that are very knowledgeable: (1) XBRL components (2.60 for very knowledgeable faculty vs. 1.74 for faculty that have some familiarity with XBRL); (2) Elements, attributes, and namespaces in XML (2.60 vs. 1.62); (3) XML schema (2.47 vs. 1.56); (4) Preparing and validating XBRL reports (2.13 vs. 1.49); and (5) XSL (eXtensible style sheets) (1.80 vs. 1.23). There are no topics listed that are covered less by the very knowledgeable faculty as compared to the “some familiarity” faculty. It would appear that faculty that are knowledgeable about the topics related to XBRL are more likely to introduce them into the curricula.

The third and last part of Table 5 deals with the relative importance of XBRL compared to other AIS topics. These topics compete for valuable class time in the scheduling of the topics covered in an AIS course. XBRL is ranked third (mean = 3.39) in importance of coverage in an AIS course of the nine topics identified. The only two topics ranked ahead of XBRL are: Database software (mean = 4.00) and Data extraction and manipulation (mean = 3.94). The other topics are ranked in the following order: General ledger software, Advanced Excel techniques, ACL/IDEA, SQL, Flowcharting software, and Working Trial Balance software. These findings are very important since they underline the significance attached to XBRL by AIS faculty.

In the third part of Table 5, the only significant difference between the 15 “XML/XBRL-knowledgeable” faculty members and the “XML/XBRL-familiar” respondents relates to importance of covering the topic of XML/XBRL. The knowledgeable faculty members rank this topic as the second most important of the nine listed topics (mean = 4.07). The familiar respondents rank the topic as the fourth most important (mean = 3.18). Again, it appears logical that the faculty that are very knowledgeable about the topic of XML/XBRL would think that it is more important to include in the curricula than those faculty that are not as knowledgeable.

The third part of Table 5 contains the only two items (out of approximately 50 items) where a significant difference exists between the AAA-IS section respondents and the AIS educators’ conference respondents. Specifically, the AAA-IS section respondents (as compared to the AIS educators’ conference respondents) believe it is significantly less important to cover general ledge software (2.86 vs. 4.08; $p < .004$) and significantly more important to cover SQL (3.22 vs. 2.23; $p < .03$).

Teaching XBRL

Table 6 explores the teaching materials required for introducing XBRL in the classroom. The most important teaching material identified by respondents is tutorials (mean = 3.52). XBRL is a markup language and requires hands-on tutorials for thorough understanding. The second most important instructional material is case materials (mean = 3.42). Case materials, apart from hands-on exercises, can be useful for helping students to learn about the strategic use of XBRL. There were no significant differences in the importance of the various presentation methods between the 15 very knowledgeable respondents and the other respondents. In addition to the five choices of presentation methods provided in the survey, the respondents also mentioned demonstrations, projects, PowerPoint presentations, and journal articles as possible sources of instructional materials.

Table 6: Teaching XBRL

Please indicate the importance of the following presentation methods for covering XML/XBRL by circling the appropriate number where 1 = least important and 5 = most important.	Mean	Std. Dev.	Frequency				
			1	2	3	4	5
a. Tutorials	3.52	1.34	6	7	7	18	14
b. Case materials	3.42	1.12	4	7	12	23	7
c. Textbooks	3.35	1.25	4	11	11	15	11
d. Supplementary text books	3.08	1.33	10	6	13	16	7
e. Videos	2.29	1.19	19	9	16	06	2
f. Others. Please specify.			Demonstrations, Projects, PowerPoint presentations, Journal Articles				

SUMMARY AND CONCLUDING COMMENTS

Summary

This paper explores the perceptions of accounting faculty regarding the integration of XBRL into the classroom. The responding faculty members are all familiar with XBRL. In general, the faculty members indicate that they perceive that XBRL is an important topic which should be covered in accounting curricula. The majority of the faculty members currently cover the topic, primarily in AIS courses. The respondents indicate that the main problems in introducing XBRL into courses are the lack of faculty preparation and lack of instructional materials.

XBRL ranks relatively high in importance as an AIS topic. It follows the topics of Database software and Data extraction and manipulation. The Strategic Uses of XBRL is the XML/XBRL topic that is considered most important by respondents and is covered by the majority of the faculty members. Other topics, such as Concept of Markups and Tags, preparing and validating XBRL reports, XBRL components, and XBRL software, are also considered important. However, the current coverage of topics is not in proportion with the perceived importance of these topics. Many of the topics considered most important receive little to no coverage in the accounting curricula. The authors believe that the lack of faculty knowledge and lack of instructional materials are the primary factors responsible for these discrepancies.

A general consensus among the responding faculty members was that there was a severe lack of instructional materials on the XBRL topic. The most important teaching aids needed are XBRL tutorials, Case Materials, and coverage in textbooks. XBRL is evolving and changing at a rapid pace, and instructional materials that deal with the foundations are urgently needed. Since this area is complex, it is necessary that educational requirements of the educators are also adequately met. There have been a number of seminars and sessions offered to faculty members at various conferences. Apparently, these are not enough and more efforts are needed in this area.

Based on the survey results and discussions with various AIS faculty, the following suggestions are offered for improving XBRL education: First, organizations such as XBRL.org and the AICPA should sponsor tutorial and case development in this area. The primary focus of such materials should be on the strategic uses of XBRL. The Information Systems section of AAA can be used to create an online repository of such materials. Second, XBRL needs to be integrated into AIS, auditing, and other accounting textbooks. Currently, most textbooks mention XBRL in a cursory fashion. Third, faculty should use available tools to illustrate strategic and tactical uses of XBRL, for example, Microsoft Office Tool for XBRL™ Prototype available at <http://www.nasdaq.com/xbrl/>, XBRL resources at Bryant College located at <http://web.bryant.edu/~xbrl/>, and the University of Kansas website <http://www.fraank.eycarat.ukans.edu/>. FRx, a reporting software available from Microsoft, has manuals that contain some excellent XBRL assignments. Finally, there is a need for pedagogical research in this area. The extent of XBRL coverage in undergraduate and graduate curricula, methods of teaching and testing, appropriate materials, and the place of XBRL in accounting curricula are all uncertain at this time.

Limitations

This study suffers from the usual limitations of survey research and Likert type scales in collecting information. One concern involves the potential self-selection bias possible because subjects that are more aware and knowledgeable about XBRL were more likely to complete the survey. This and other factors could produce a non-response bias.⁹

This survey is also limited to the AIS faculty though XBRL is a relevant topic across the accounting curriculum. However, the authors suggest that XBRL is an emerging technology and the pioneering efforts in this area are likely to be borne by the AIS faculty.

Conclusions

The findings from this study will be useful to accounting educators. XBRL has the potential to significantly affect accounting information flows, and may lead to dramatic changes in internal controls and auditing (The Canadian Institute of Chartered Accountants, Information Advisory Technology Committee, 2002). Because of this potential, it is necessary to understand the problems and opportunities associated with introducing XBRL in the classroom. This paper is a first step in that direction.

⁹ Two tests were performed to assess the possibility of a non-response bias. The first test examined the various demographic data related to the respondents versus the non-respondents. No significant differences were noted between the two groups. A second test for non-response bias compared the responses of the "early" AAA-IS respondents (i.e., the first emailing) versus the "later" AAA-IS respondents (i.e., the second request mailing). Out of nearly 50 items surveyed, only 3 significant differences were noted. These include: (1) For the early responders, 42% indicated they were very knowledgeable about XML/XBRL and 58% have some familiarity with the topic. For the later responders only 10% indicated they were very knowledgeable about XML/XBRL and 90% have some familiarity; (2) Early respondents indicated that the topic of ACL/IDEA was significantly more important to cover in an AIS or auditing course than later respondents (3.23 vs. 2.20, $p < 0.04$); and (3) Early respondents indicated that the topic of Data extraction and manipulation was significantly less important to cover in an AIS or auditing course than later respondents (3.71 vs. 4.50, $p < 0.01$). There were no significant differences between early and later respondents in approximately 94% of the items surveyed. Therefore, it appears that it is unlikely that the major results discussed in this research were driven by a non-response bias. It would appear that the more knowledgeable subjects may have been more likely to return the survey. But as discussed in the paper, the more knowledgeable subjects seldom responded significantly different from other respondents.

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APPENDIX A: XML/XBRL QUESTIONNAIRE

This questionnaire is designed to determine faculty opinion and coverage of XML/XBRL in accounting curriculum. Thank you for your cooperation.

1. **Indicate your familiarity with XML or XBRL.**
 - a. Completely unfamiliar with topic
 - b. Some familiarity with topic
 - c. Very knowledgeable about topic
2. **Please describe the familiarity of your graduating bachelor students with XML/XBRL.**
 - a. Completely unfamiliar with topic
 - b. Some familiarity with topic
 - c. Very knowledgeable about topic
3. **How do you integrate XML/XBRL education into your curriculum?**
 - a. Do not cover XML/XBRL at all
 - b. Include in an accounting information systems course
 - c. Offer a separate entire course
 - d. Include in more general systems/computer class

4. **If you do not currently offer XML/XBRL coverage, what are your institution's plans to offer coverage? Please skip if your institution already offers coverage.**
 - a. Within a year
 - b. Within two years
 - c. Within five years
 - d. Do not plan to offer such coverage

5. **Please indicate the extent to which you would agree with the following statements by circling the appropriate responses where 1 = strongly disagree and 5 = strongly agree.**
 - a. The current accounting curriculum does not provide sufficient coverage of XML/XBRL.
 - b. The accounting curriculum should provide XML/XBRL coverage.
 - c. XML/XBRL experience should be integrated into accounting standards.
 - d. Coverage of XML/XBRL is not necessary.

6. **What is your opinion of the future prospects for XML/XBRL?**
 - a. Will not sustain momentum and fade from existence
 - b. You are uncertain about the future prospects
 - c. Appears to have some potential
 - d. Has an enormous potential

7. **Please indicate the perceived obstacles in integrating XML/XBRL coverage into the accounting curriculum by circling the appropriate number (1 = no obstacles and 5 = very severe)**
 - a. Lack of faculty interest
 - b. Lack of student interest
 - c. Lack of instructional materials including textbooks
 - d. Lack of job opportunities
 - e. Lack of faculty preparedness on this topic
 - f. Others. Please specify.

8. **The following is a list of topics in XML/XBRL. Please rank the importance of each item. (1 = not important, 5 = very important)**
 - a. Concept of markups and tags
 - b. Elements, attributes, and namespaces in XML
 - c. Document type definitions
 - d. XML Schema
 - e. XSL (eXtensible style sheets)
 - f. XBRL components
 - g. Preparing and validating XBRL reports
 - h. XML/XBRL Software
 - i. Strategic uses of XBRL

9. **The following is a list of topics in XML/XBRL. Please rank the coverage of each item in your curriculum. (1 = not covered, 5 = covered in depth)**
 - a. Concept of markups and tags
 - b. Elements, attributes, and namespaces in XML
 - c. Document type definitions
 - d. XML Schema
 - e. XSL (eXtensible style sheets)
 - f. XBRL components
 - g. Preparing and validating XBRL reports
 - h. XML/XBRL Software
 - i. Strategic uses of XBRL

10. Please indicate the importance of covering the following topics in accounting information systems course or modules integrated into an auditing course by circling the appropriate number where 1 = least important and 5 = most important.

- a. XML/XBRL
- b. Advanced Excel techniques
- c. Database software
- d. General ledger software
- e. Flowcharting software
- f. ACL/IDEA
- g. Working trial balance software
- h. SQL
- i. Data extraction and manipulation
- j. Other topics. Please specify.

11. Please indicate the importance of the following presentation methods for covering XML/XBRL by circling the appropriate number where 1 = least important and 5 = most important.

- a. Textbooks
- b. Tutorials
- c. Videos
- d. Supplementary text books
- e. Case materials
- f. Others. Please specify.

12. Please indicate your rank.

- a. Full Professor
- b. Associate Professor
- c. Assistant Professor
- d. Others. Please specify.

13. What are your primary teaching responsibilities?

- a. Accounting Information Systems
- b. Auditing
- c. Financial Accounting
- d. Managerial Accounting
- e. Other

14. Is your business program AACSB accredited?

- a. Yes
- b. No

15. Is your accounting program AACSB accredited?

- a. Yes
- b. No

16. Are you a CPA?

- a. Yes
- b. No

17. Please check your university location in one of the following regional classifications.

- a. Northeast
- b. Northwest
- c. Southeast
- d. Southwest
- e. Far West
- f. Mid West
- g. Rocky Mountains

18. How many students do you graduate in accounting per year in each of the following categories?

- a. Undergraduate
- b. Masters
- c. Doctoral

19. Comments.

Thank you very much for completing the survey.