

XML/XBRL: IT Skills for the New Accountant

**Jim Richards
Murdoch Business School
Murdoch University
South Street
MURDOCH
WA 6150
j.richards@murdoch.edu.au**

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Abstract

This paper explores the development process of the eXtensible Business Reporting Language (commonly referred to as XBRL) from W3C Recommendations through to the creation of various financial statement outputs required by most Australian organisations. The paper outlines the skills that accountants need to contribute to the various development phases. It concludes with a discussion of how the skills can be incorporated into the accounting curriculum.

1. Introduction

The extensible Business Reporting Language (commonly referred to as XBRL) is a standard-based reporting system being built to accommodate electronic preparation of financial reports around the world. Currently the work to date has been based on external financial reporting, but the long-term goals include moving further back in the information supply chain. XBRL International recently released the core components for XBRL for General Ledger (XBRL GL) that use XML tags when data is captured within an organisation's general ledger accounting system.

XBRL International is working in conjunction with other business related XML developments. Probably the most closely linked is ebXML, which is being developed by another independent group. ebXML is being developed for the electronic business market to record all the various types of transactions that occur within an organisation and between organisations. In the long-term it is likely that the two technologies will merge.

This paper provides a summary of the overall process in the development of XBRL as a financial reporting language. It does not attempt to include details of XBRL GL or ebXML. The latter two developments have not yet progressed as far as XBRL.

The basis behind XBRL is to develop a standard set of XML-type tags that can be used in creating instance documents. Once an instance document has been created it can be then presented in a variety of formats. XBRL is not trying to set new accounting standards; it is attempting to standardise the XML-based tags that are used in financial reporting so that the financial reports prepared by organisations can be more easily compared and collated for regulatory and other purposes.

2. Some Basic Concepts

XBRL is an extension of the XML language. This is not only being done for financial reporting, but there are a number of similar developments taking place in a whole range of areas. Visit the XML web site (<http://www.xml.org>) and look at the list of XML "languages" under development.

XBRL International is liaising with a number of these groups to ensure that information and developments are not being duplicated. For example, XBRL is very much aware of what is happening with ebXML (electronic business XML) and are making sure that the two technologies co-operate rather than compete with one another. Another project is being undertaken on Balanced Scorecard reporting. This group is also regularly monitored by XBRL members.

3. So Why is XBRL Necessary?

In the XML world, it is possible for any company or any country to develop its own specification and taxonomies (schemas in XML terminology) for financial reporting and other activities. The lower the level at which the development takes place, the lower the benefits to be achieved from implementation. The benefits of consistency between organisations would be lost.

For example, the first implementation of XBRL was the solution created by the Australian Prudential Regulatory Authority (APRA). This is a big bonus for Australia. However, the

taxonomy used by APRA in their current implementation is one that they have developed for their own needs. If APRA insisted in the future that its requirements must always conform to its specific taxonomy, despite it requiring similar information to ASIC and the ASX, then firms reporting to APRA and other organisations would need to prepare instance documents based on the different taxonomies.

As other more general taxonomies are developed, it is anticipated that the contents of the APRA taxonomy will reduce and it will use the general taxonomies wherever possible. By using the general taxonomies, APRA will enable its clients to reduce the amount work required to meet the needs of all of the organisations to which they report.

It may not suit companies that report to APRA to use the same taxonomy for reporting to the ASX or to ASIC. However, it may be possible to find many common elements that all of these bodies require. Rather than have each organisation produce its own taxonomy, each can leverage off a single taxonomy and then simply add its own unique requirements. If organisations prepare XBRL instance documents to meet the requirements of 3 different taxonomies, a new system would have implemented, but only some of its benefits will be achieved.

XML is a technology for developing databases using a tagging system. Each item in the database has a tag that is defined for a particular purpose. An important part of XML is to separate data from concepts and presentation from concepts. This means that the data is recorded in an instance document can be read by humans and computers. However, an XML (or XBRL) instance document is not pretty. It needs to be transformed using XSLT style sheets or some other software solution to convert it into a readable form.

Let's assume that APRA, the ASX and ASIC all require firms to report net profit. If each developed its own taxonomy then we may end up with the following in the taxonomies:

```
APRA <element name="net.profit"/>
ASX <element name="net.Profit"/>
ASIC <element name="net.Income"/>
```

Further, let's assume that all 3 require the same figure to be reported as they use a common definition of net profit/income. However, because they use different tags, a company would need to tag its financial information with 3 sets of tags rather than one.

Other legal tags for net profit could include:

```
<net_profit>
<netProfit>
<netprofit>
<Net.Profit>
<Profit-Net>
```

The APRA and ASX tags shown above are different because XML (and therefore XBRL) is case sensitive. A computer system that understands XML/XBRL would see the two items as different tags. The ASIC example simply uses Income rather than Profit.

Australia has adopted many of the International Accounting Standards. If we were to go ahead and develop our own taxonomy for the IAS then we might have the same problem

between countries that have adopted the same standards. We would be reporting the same data but using different tags to represent the same definition of an accounting term. By cooperating at the international level, an international taxonomy can be created for the IASs that all countries agree to use. This makes it possible to achieve the benefits of cross-country comparisons where countries use the same standards.

Once the IAS taxonomy has been created then all we need to do in Australia is add into our own taxonomy standards that are unique to Australia. This may be because there is no equivalent IAS or we have not adopted some of the IAS core set of standards.

A taxonomy simply includes the elements that are valid for an XBRL instance document. A taxonomy does not contain any data.

The data is included in what is referred to as an instance document. These instance documents contain the XBRL tags with the values between the tags. Using the Net Profit example from before, an instance document would contain the following line:

```
<Net.Profit>100000</Net.Profit>
```

There is additional data in the instance document to tell the user the name of the company, the time period that the instance document relates and many other necessary pieces of information to ensure that the recipient of that instance document is able to clearly understand what it is all about.

For more details on the naming conventions for XML/XBRL items, refer to the handout contain the chapter from *The Complete Idiot's Guide to XML*.

3. An Overview of the XBRL Process

A diagram showing the overall process is presented over the next page. The sections of the paper that follow provide an explanation of the various stages in the process. For each stage, the role that accountants can play is outlined and the skills needed are also discussed. Wherever possible, comparisons are made to existing practices in financial reporting.

3.1. W3C Recommendations

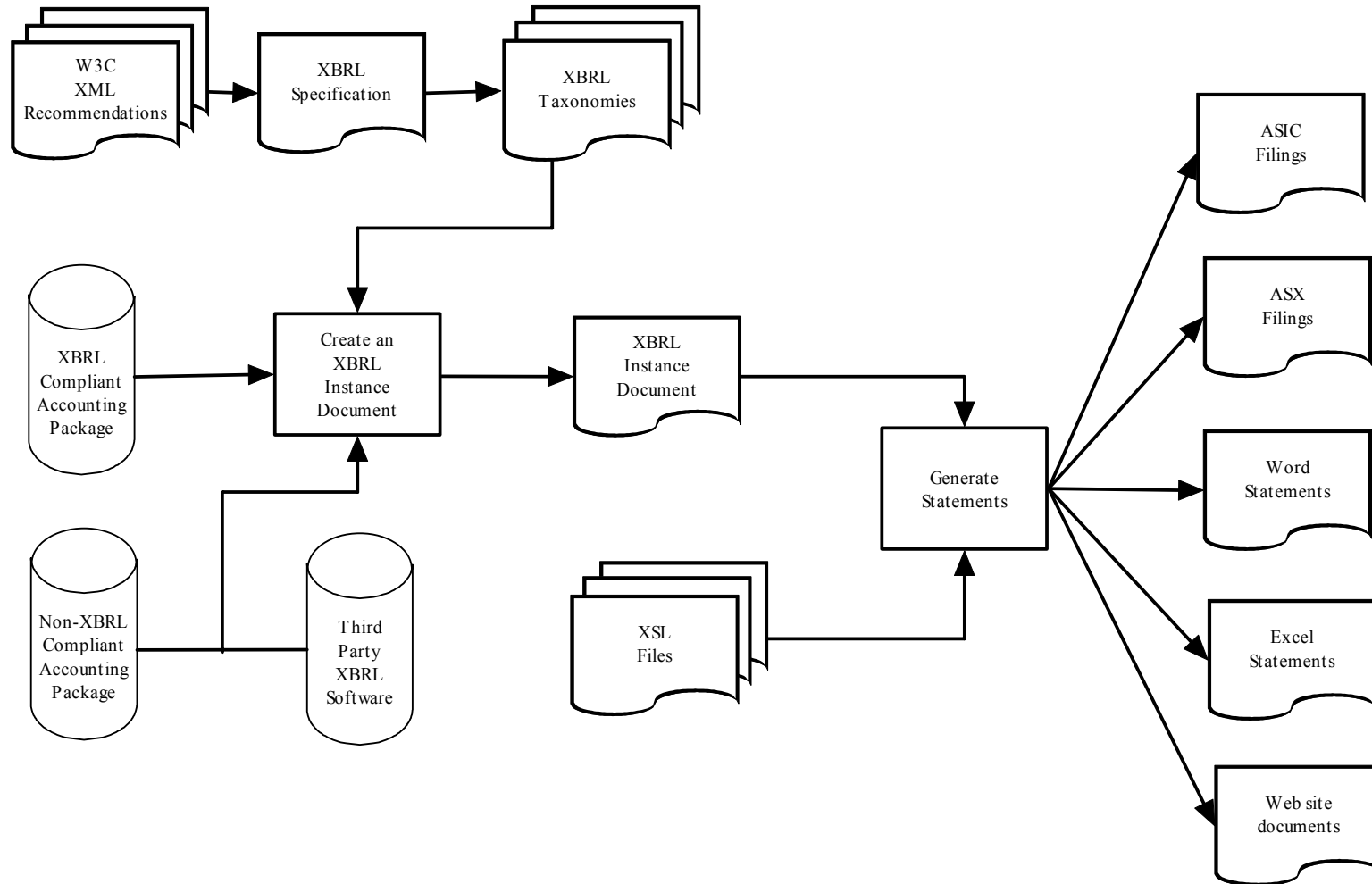
The starting point of any XML language, of which XBRL is only one of many under development, starts with the recommendations created by the W3C consortium.

In the development of any W3C specification there are at least three stages:

- Specification
- Working Draft
- Recommendation

Any particular W3C specification may go through these processes a number of times. Some never pass the first step, while others never make to it a final recommendation.

An Overview of the XBRL Process



At present XBRL Specification 2.0 uses the following W3C recommendations:

- XML
- XML Schema
- Xlink
- XML Namespace
- XPath
- XSLT

These recommendations are usually written technical experts and it is unlikely for accountants to be involved at this point in the process.

3.2. XBRL Specification

The XBRL Specification is initially prepared by the Specification Working Group of XBRL International. A number of drafts are usually produced and these are distributed for comment to the wider XBRL community. XBRL Australia has representation on the Specification Working Group.

In 2000 Specification 1.0 was released and the Australian Prudential Regulatory Authority (APRA) was the first organisation world-wide to implement a system based on XBRL Specification 1.0.

In December, 2001, Specification 2.0 was released and the International Accounting Standards (PFS) Taxonomy (current in alpha format) is being developed according to Specification 2.0.

The Specification is an ongoing task for XBRL. The current version is Specification 2.0, which was released in December 2001. Discussions are still continuing on improvements and including new XML specifications as they become available.

In order to be involved in writing/updating the XBRL specification it is important to not only understand the XML technologies behind the specification, but to also understand how financial statements and their accompanying notes are produced and how they are used in the wider community. There is no point in producing a specification that has no validity for the users of financial information.

Members of this group need a combination of skills. The group currently and in the future will consist of three types of people:

- High level XML skills but low level accounting skills
- Low level XML skills but high level accounting skills
- Somewhere in between for both XML and accounting skills

Firstly, some members will have a very good understanding of the various XML recommendations used by XBRL but only a basic knowledge of accounting and how accounting data is used. Other members will have a basic understanding of the various XML recommendations, but will have in-depth knowledge of accounting standards and how accounting information is used. Ideally, members would be highly skilled in both areas – XML and accounting.

The most recent development in the specification area has been the recent release of the specification for XBRL for General Ledger (XBRL GL). This is another area where accountants can be involved. XBRL GL moves XBRL technologies further back into the financial reporting chain process. The knowledge possessed by accountants will enable them to be able to contribute as this level in the project.

3.3. XBRL Taxonomies

The next step in the process is to develop the taxonomies for financial statements. A number of taxonomies can be involved in the creation of a single XBRL instance document. The current emphasis on taxonomy development is for International Accounting Standards. Once this has been finalised other more specific taxonomies can be created at country (referred to as jurisdiction) and industry levels.

To be involved in taxonomy creation at the International Accounting Standards level needs significant knowledge of International Accounting Standards and some knowledge of the current XBRL Specification. XBRL Australia Limited is actively represented on the working group developing the IAS taxonomy.

Once the international taxonomy is completed, there is a need to create a taxonomy for each country (eg., Australia). Countries that have officially joined XBRL International are referred to as jurisdictions.

There may be items that are required for disclosure in Australia that are not required in other countries, or Australia has not yet adopted the relevant IAS.

The next level is to create taxonomies for a specific industry. For example, there may be items that are unique to the financial services sector and so another taxonomy is created to meet their specific needs. Alternatively, there may be items in a particular industry that are reported differently for that particular industry grouping.

The next level down is where a particular firm makes voluntary disclosures that are not in any other taxonomy. It will be necessary for that firm to create its' own taxonomy in accordance with the XBRL specification.

Accountants can be involved in creating taxonomies at all levels. They can be involved at the international, national, industry or firm level. It depends on the skill level and the interest of each individual in the overall development process.

At some stage, many accountants are going to be involved in taxonomy development. At the lowest level, they may need to be involved in developing a small taxonomy for items unique to their firm. If they do not create the taxonomy themselves, they may work with a consultant who will be able to create the taxonomy for them.

In creating an XBRL instance document, the relevant taxonomies are referenced within the document and that document is validated against the taxonomies. This is to check that the instance documents only contains elements that are included in the taxonomies it references. The different taxonomies are referenced by what is termed an XML namespace. This ensures that a user is aware of the taxonomy where the element in the instance document originated.

In order to create a large taxonomy, such as that currently being developed for International Accounting Standards, it is also necessary to have adequate software tools. Although development can be done using something as simple as Notepad (or any other text editor), it is very difficult to develop large taxonomies without adequate tools. Accountants can work together with software developers to design and develop tools that will simplify the taxonomy development process.

3.4. XBRL Compliant Accounting Software

As XBRL is implemented, the various software development companies providing accounting software will update their software so that it is XBRL compliant. If you look at the various XBRL web sites you will see that many of the major accounting software developers are members of the XBRL consortium.

For example, Great Plains (now owned by Microsoft) has already released an XBRL compliant version of its software. The current version, however, is compliant with Specification 1.0 and will need to be upgraded to Specification 2.0.

Accountants can be involved at this level by working with the software solution providers in developing new versions that are XBRL compliant. This will make it much easier to generate the XBRL instance documents. This will require an understanding of the accounting package and the current details of XBRL.

3.5. Third-Party Software Developers

In the interim period (and also in the longer term), third-party software developers are creating various ways to extract data from existing accounting packages and enabling users to create XBRL instance documents. Again, as a user of these tools, accountants will be able to work in partnership with software developers to create the sort of interface and features they prefer.

There are a number of international software developers currently involved in this process. For example, UBMatrix (USA), FRS Solutions (South Africa), SemanSys (Germany) and eNumerate (USA) are examples of companies involved in creating third-party XBRL tools. The Corporate Tax Department of General Electric announced in February 2002 that it has adopted an XBRL solution from eNumerate. This will enable it to more easily and quickly complete its end-of-year consolidation process for the over 150 distinct general ledgers that are used by its subsidiaries. GE's US tax return consists of more than 40,000 pages. The distinct general ledgers are not currently XBRL compliant, but the eNumerate solution allows the data to be extracted and converted into XBRL format.

3.6. Creating XSLT Files to Create Various Outputs

One of the many claims of the developers of XBRL is that one of its big advantages is that you create an instance document once but can easily render it many times in different formats. The diagram provided earlier shows an organisation that needs to make ASIC and ASX filings, creates a word document of its statements (possibly for transmission to its printer for inclusion in its annual report), creates an Excel spreadsheet to perform some analysis of its performance, and displays its financial statements on the organisation's web page.

By using an XBRL instance document and a variety of XML-based XSLT style sheets it is possible to create all of the documents electronically. The unique tagging system used by the XBRL taxonomies allows this to occur.

Under current reporting methods, creating the various documents may be a manual process or a cutting and pasting from other documents to produce the necessary variety of documents. Whilst there may be similarities between the documents, there are unique aspects to each document that are not contained in all of the others.

Creating XSLT style sheets to produce the various documents in some ways mirrors the use of report writers to create non-standard reports from existing accounting systems. The requirement is the same, but the tools will be different and will allow accountants to produce various reports quicker and cheaper.

For example, many accounting firms use Solution6 as their package for undertaking client accounting. It comes with a number of standard Freeform reports. Provided the Chart of Accounts used meets the necessary rules, the accounting firms can simply use the standard reports provided by Solution6. If additional reports are needed, they create their own Freeform reports by learning the appropriate underlying language. The same applies to many accounting packages that use Crystal Report writer as their reporting language. In the past, many accountants have needed to learn how to use Crystal Reports or some similar product in order to generate specific reports.

The same will need to be done with XBRL, but accountants will use XML-based tools to complete the task. Tools to assist in this process will be developed as XML becomes more integrated into business systems.

XSLT is just one of several ways that instance documents can be rendered into outputs in different formats. Java, Javascript, C++, Visual Basic or any other programming languages are other options. In the long-term, it is expected that XML tools will be developed to make this process simpler. If there is a market for tools to create the XSLT style sheets required to make this possible, software developers will provide the solution.

3.7. Generating the Statements

Once all of the above has been completed, it is a simple exercise to create the various reports. You match an XBRL instance document with an XSLT sheet and the required output will be created.

3.8. XBRL Instance Document Recipients

The benefits for XBRL are not only for preparers of financial reports, but also the receivers of those reports. The initial catch cry for XBRL was “better, cheaper, faster”. All of these apply to external parties who are interested in the financial performance of your firm or your clients’ firms.

For example, stockbrokers will be able to import the XBRL instance documents directly into XML compatible spreadsheets rather than having to re-key the data into their spreadsheets. The Australian Prudential Regulatory Authority (APRA) was the first organisation world-wide to incorporate XBRL technologies into its systems. Clients of APRA now enter the necessary data into APRA provided software

(Direct2APRA) rather than complete a paper-based form. The output from the program can then be emailed directly to APRA. Once APRA receive the data, they know that it has already been validated during data input. The time to aggregate the data that it transfers to the Bureau of Statistics and the Reserve Bank has been significantly reduced. This means APRA staff can now spend more time on their regulatory role rather than simply acting as a data entry and aggregator organisation.

The Australian Stock Exchange is also considering accepting data in XBRL format in the near future.

In the UK, it was announced in February 2002 that from 2004-2005 the entire tax filing system, including the supporting statutory accounts, can be submitted in XBRL format.

There are opportunities for accountants who are familiar with XBRL to be involved as consultants to various organisations that receive financial data to assist in the implementation of XBRL in their client organisations.

4. Future Developments of XBRL

As was shown earlier, the specification and taxonomies that have been developed or are under development relate to financial reporting. The biggest benefits of XBRL will occur as we move further back in the financial information supply chain. The specification for XBRL GL (General Ledger) was released as a draft in March 2002. The release of the specification is only the start. Accounting software developers need to begin the process of modifying their software to make them compatible with the XBRL GL specification so that accountants in particular can achieve the benefits of this new technology. They will then be able to automate many of the processes that are currently completed manually. This is particularly true where an organisation consists of a group of organisations that need to prepare consolidated accounts. XBRL and XBRL GL in particular will allow this process to become more automated.

As XML develops, XBRL and its derivatives will also develop to include new XML recommendations. We have already seen this when you compare Specification 1.0 and Specification 2.0. Many of the new features in Specification 2.0 (XLink, XML Schema, XPath for example) are XML recommendations that were finalised between the releases of the two XBRL specifications.

Current discussions on the specification involve how to include calculations. One option is to add to the specification the type of calculations that can be permitted on the data. Another option is to refer to another XML recommendation regarding calculations – MathML.

In Australia, the ASX is currently investigating the possibilities of accepting company reports in XBRL format. Following the recent announcement by the UK IRS, it can be anticipated that the ATO will at some stage follow the same path.

5. Key Web Sites

It is always dangerous to list web sites in a published document. By the time the document is published there is a very good chance that at least one, and probably more, addresses have changed.

XBRL.org	http://www.xbrl.org
W3C.org	http://www.w3c.org
XBRL Australia	http://www.xbrl.org.au
XBRL Education	http://web.bryant.edu/~xbrl/index.html
XML.org	http://www.xml.org
KPMG	http://www.learningstore.com/xbrlearningchannel

6. Curriculum Implications

This section discusses how XML/XBRL might be included into the future accounting curriculum. It proposes a number ways in which it could be included without providing a specific preferred alternative.

No matter how XML/XBRL is included in the future accounting curriculum, for the near future a significant problem will be the lack of suitable text book materials. In addition, the XML world is changing so rapidly that many books are almost obsolete before they make it to print.

6.1 A Specific Unit covering XML/XBRL

Given the cross-disciplinary nature of XBRL, one logical proposal would be to design a unit that specifically covers in detail the various technologies involved in XBRL. Unless accounting majors have undertaken a large number of IT-related units, it is unlikely that they will have been exposed to XML technologies. A unit curriculum could be designed to introduce students to XML using accounting examples rather than the general examples found in most XML books currently available.

The advantage for a specific unit covering all aspects of XML/XBRL is that the technologies can be taught at both a conceptual level and a detailed level. Students could first be introduced to the overall goals and purposes XML and XBRL. This could then be followed by a technical introduction to XML using accounting examples.

The next step could be to introduce the students to the XBRL Specifications. This could start with Specification 1 and then build to Specification 2, which is much more complicated.

The content would not specifically follow a sequence of XML and then XBRL. These could be intertwined. There could be an introduction to basic XML concepts followed by an introduction to XBRL Specification 1.0. Then the later XML recommendations used by Specification 2.0 could be explained. The course could then conclude with details of how to implement XBRL Specification 2.0 using the various XML technologies the specification requires.

The disadvantage of such a unit is that it is unlikely that it would be a required unit for all accounting majors. It is most likely that such a technically oriented unit would be an elective. If this were the only unit to discuss XML/XBRL then many future accounting graduates will not learn anything about XBRL.

6.2 Integrate XML/XBRL into Existing Accounting Units

A second option is to integrate the various aspects of XBRL into existing accounting units. For example, XBRL could be included at a conceptual level in units or units related to financial reporting. The current focus of XBRL is external financial reporting. Discussions of XBRL in units related to financial reporting could include a section related to the problems of current financial reporting technologies and how XBRL can overcome these problems. There would be no requirement to understand the specific technologies underlying XBRL. This would be a bit like students learning how to use a word processor without having to learn how to write code to develop a word processor.

For many accounting graduates, this is all that they may need to understand about XBRL. Their role as future accountants will be to use XBRL tools in the same way that current accountants use accounting software packages. They have an understanding of the basic rules of accounting and implement them using the specific accounting package or packages used by their employers.

This approach is the one most likely to ensure that all accounting majors receive at the very least a minimal exposure to XBRL and its role in the financial reporting supply chain.

Students who are interested in learning about the underlying technologies could undertake a unit similar to that described previously. An alternative would be to include a major section on XML/XBRL into an Accounting Information Systems course. Students would be exposed to some technical detail of XML/XBRL, but not to the same extent as a unit devoted to these technologies.

6.3 XML in IT Units – XBRL in Accounting Units

A third approach would be to not integrate the technologies in any specific way. This would mean that students could develop XML skills in IT units and then learn about XBRL in accounting units. The integration between the two technologies would be left to the students who are interested to develop their own methods of integrating the knowledge skills acquired from the different units.

This approach would most likely suit students who are undertaking a double major of accounting and IT.

7. Concluding Comments

This paper has set out to educate accounting educators about an exciting technological development that is occurring in accounting. XBRL has developed rapidly since it was first proposed to the AICPA in 1997. As XML technologies develop, then XBRL will also continue to develop.

The paper has explained the overall process of how XML/XBRL are developed and implemented. It has detailed the skills necessary for future accountants to be involved in the various stages of the process. Finally, ways of integrating the underlying technologies into the accounting curriculum were proposed. There are a variety of ways in which they can be included, but it will be up to each institution to decide how to integrate them into their specific curricula.

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