

Student Learning Styles and Teaching Methodologies in Accountancy.

What if they Differ?

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Abstract

To produce graduates with competent technical and non-technical skills various teaching methods, both active and passive, are normally utilised throughout a degree programme. Students' learning styles are rarely assessed before teaching methods are decided upon. This study evaluates the learning styles of final year accounting students and assesses the interaction of teaching methods and learning styles.

A cohort of approximately 150 students evaluated their own learning styles pre any teaching methods. They were then subject to two different teaching methods, one active and the other one passive, while covering two separate auditing topics. Three significant findings ensued. First, students predominantly displayed passive learning styles, possibly due to the complexities of the subject area. Second, students' preferred styles varied depending on the topic. Third, when learning style matched the teaching method used, usefulness was assessed as high but when learning style and teaching method differed, usefulness deteriorated significantly.

The implications of this study are that instructors should consider carefully the appropriate teaching methods to utilise in all areas of accounting. It may even be beneficial to assess learning styles first before deciding on a particular teaching method.

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Introduction

Over the past two decades the accounting profession, accounting educators and researchers have advocated that future professional accountants need to acquire lifelong learning skills (AICPA, 2000; AECC, 1990). Future employers require University graduates to demonstrate they have the ability to become competent professionals. They want graduates who can make decisions, solve problems and quickly adjust to an increasingly complex and rapidly changing professional environment (Adler and Milne, 1997; Birrell, 2006; Smith 2001).

Although technical expertise is obviously important and is inherent in any tertiary accounting degree, increasing significance is being placed on graduates to acquire non-technical capabilities and skills, in readiness to enter and succeed in today's competitive global business economy (Braun, 2004; DeLange *et al.*, 2006). Employers require graduates to have acquired strong accounting, problem solving and analytical skills throughout their degree course. But graduates must also possess sound written and oral communication skills, teamwork and professional skills (Kavanagh and Drennan, 2008). They must be well presented, have developed interpersonal skills, initiative and enterprise and should self-manage their daily professional engagements (Evans *et al.*, 2010).

It is evident employers, lecturers and students all agree that the university learning environment is critical to the development of suitable trainee accountants. However, problems arise when decisions have to be made as to the most appropriate method(s) of instruction to employ in attempting to produce suitably prepared graduates. Much attention in

the accounting education literature (covered below) is generated towards research on the actual *learning styles* of accounting students. In terms of their learning styles students have been variously described as divergers, assimilators, convergers and accommodators (Kolb 1984), described in more detail below. The way students learn is important, as instructors need to deliver the material in the most appropriate manner in order to achieve the appropriate outcomes for accounting graduates. Similarly, the extant literature discusses in detail factors such as differing *teaching methodologies* and their effectiveness. Topics such as whether experiential (active) methods are more effective than non-experiential (passive) methods are covered. However, the interaction between learning styles and teaching methodologies in an accounting context does not appear to be well researched. Issues such as the impact upon students with a particular learning style, if placed in an educational environment where an opposing teaching methodology is employed, appear in need of further research.

Therefore, the objective of this paper is to examine how final year accounting students, with differing learning styles, respond to two different teaching methodologies. In addition, this paper extends the issue by examining whether students' learning styles differ in respect to different topics within the same study area. Two topics were chosen from the auditing area for this research. First, solving an auditing ethical dilemma and second using an audit software package to assist in evidence gathering. Prior research concerning learning styles for accounting students is therefore extended. The authors believe that no study to date has examined this specific issue of the interaction of learning styles and teaching methodologies, and tested it across two different topic areas in an audit environment.

The remainder of this paper is structured as follows. First, a literature review surveying prior research is presented. Then three hypotheses are derived from the literature and the research

design is outlined. Subsequent sections analyse the findings of the study conducted, discuss the results, recognise limitations in the work, and identify areas for future research.

Literature Review and Hypothesis Development

Student learning styles

The Experiential Learning Model (ELM) devised by Kolb (1984) and its associated learning style takes an information processing approach to learning which has been applied in medicine, engineering, management, marketing and accounting. Essentially the ELM is a four stage cyclical process, where students who learn effectively will experience all four stages at different times in the learning process and can move backward and forward through the stages, depending on what is being taught and the method used. However, the learner will generally have a preference for one particular style and, as their learning develops, that preference may change to a different style (McCarthy, 2010). Figure 1 summarises the model.

The model has two opposing directions of how the experience and information is perceived - concrete experience (CE) and abstract conceptualization (AC), and two opposing directions of processing the experience and information – reflective observation (RO) and active experimentation (AE). Four types of learning styles emerge from this model – divergers, assimilators, convergers and accommodators (Kolb 1984).

Insert Figure 1

Divergers perceive learning through CE and process the learning through RO. They view situations from many different perspectives, are imaginative, interested in people and usually specialize in the arts (Baldwin and Reckers, 1984; Kolb 1984; McCarthy 2010). Assimilators perceive learning through AC and process it through RO. They create theoretical models from inductive reasoning, but are not concerned about practical application of the model or about people. Assimilators would normally be found in the sciences (Baldwin and Reckers, 1984; Kolb, 1984; McCarthy, 2010). Convergers perceive learning through AC and process it through AE. Their greatest strength is in the practical application of ideas to solve problems and make decisions. They use hypothetical deductive reasoning to focus on specific problems and perform best in situations where there is one correct answer. Accountants and engineers generally adopt a convergent learning style (Baker et al., 1986; Baldwin and Reckers, 1984; Kolb, 1984; McCarthy, 2010). Lastly, accommodators perceive learning through CE and process it through AE. Their strength is in doing things, carrying out plans and taking risks to excel in new situations. Accommodators are often found in active, practical jobs such as business, marketing and sales (Baldwin and Reckers, 1984; Kolb, 1984; McCarthy, 2010).

Kolb also developed the Learning Style Inventory (LSI) an instrument to assess individual learning styles (McCarthy 2010). It has been used as a tool for investigating experiential learning theory (ELT) and individual learning styles, to assist in improving instructional design, curriculum development and lifelong learning skills (Kolb and Kolb, 2005).

A number of studies have examined the learning styles of accounting students using the LSI. These have shown that accounting students overall have different learning styles from other business students and generally prefer a convergent learning style (Baker et al., 1986; Baldwin and Reckers, 1984; Brown and Burke, 1987). As students progress through their

course their learning style preference changes, with first and second level accounting students preferring an assimilator learning style (Baker et al., 1987; Baldwin and Reckers, 1984; Jenkins and Holley, 1991) and more advanced accounting students preferring a convergent style (Baker et al., 1986; Brown and Burke, 1987), with Baker et al., (1986) finding that 39% of senior accounting students preferred a converger learning style.

More importantly however, the preference for convergent learning style increases as accounting students and graduates are exposed to real work experience, complete their professional accounting qualifications and are more exposed to accounting education material (Baker et al., 1986; Brown and Burke, 1987). In a survey of accounting practitioners Brown and Burke (1987) found accountants exhibited predominantly converger style learning preferences, which increased as they attained more senior positions within the firm. They also found that over 53% of professional accountants were classified as converger learners.

This research suggests that accounting students progress through the ELM from assimilators when they are less experienced learners and their learning is more passive, to convergers when they are more experienced and their learning style is more active. Assimilators perceive learning through AC and process their learning through RO. Thus at this stage of their learning they are less inclined to practically apply theoretical models and are more concerned with creating models. They perform well in situations where they can draw generalized conclusions from a disparate set of observations using inductive reasoning. As they progress in their accounting studies at university and beyond they still perceive learning through AC but process it through AE – meaning they learn to apply the models to solve practical problems and make decisions, prefer dealing with technical tasks and problems than with

social and interpersonal issues. They perform well where there is one right conclusion which is deduced from a valid and sound premise that is, they use deductive reasoning.

Given that the predominant accounting professional learning style is that of a converger, the question arises - could universities better equip graduates for professional practice by examining students learning styles and developing the appropriate curriculum? Are we doing students an injustice by not preparing them adequately for the profession and preparing them to become life-long learners by not involving them in more active learning strategies? To align learning styles theory (discussed above) with teaching methodologies (discussed below) this study summarises learning styles into two simple categories, active learners and passive learners. It was also considered this was more practical from the participants' viewpoint as accountancy students are unlikely to be familiar with Klob's model, and if faced with a four category model to describe their learning style, may have considered it too complex. Hence a simple two category model was used. *Active* learners are described as participatory learners, who like to research topics first, either alone or in a group, come up with answers from their own experience and then reflect on the instructor's viewpoint and reaction thereto. *Passive* learners like to be instructed, given the answers by their instructor, the accepted 'expert' on the topic area, and then reflect upon this.

Based upon the earlier discussion and the preponderance of converger style learners in accountancy studies, especially as their experience grows, hypothesis 1 (H1) is stated as follows:

H1: Final year accountancy students will predominantly be active learners.

Also based upon the results of the above studies, it is assumed accountancy students will not change their learning style while studying different topics from within the same accounting area. Hence hypothesis 2 (H2) is stated as follows:

H2: Final year accountancy students will have the same learning style, even if studying two different topics if they are in the same accounting area.

Teaching methodologies

Literature in the field of education occasionally classifies instruction methodologies as either *active (experiential)* or *passive (non-experiential)*¹. Active teaching as defined by Hawtrey (2007) relates to the incorporation of active, participatory learning opportunities into a course of study. In its purest form, it occurs whenever the student is roused from the role of passive listener to that of active respondent. Active student learning tasks involve the delegation of some control and responsibility from the instructor to the students, who in turn make decisions about what they will learn and how they will learn (Adler and Milne, 1997). Examples of active learning methods include the use of case studies, role plays and seminar presentations. Where students have taken a more active role it has resulted in positive outcomes with student's learning being optimized (Smart and Csapo, 2007).

Many methods have been used to provide accounting students with the opportunity to become more active learners. Results from Healy and McCutcheon (2008) indicate that accounting students benefited from case study and problem-based learning in groups, gaining confidence, self-learning skills and lifelong learning skills. Brickner and Etter (2008) provided in-class and out-of-class active learning strategies, including having the students fill

¹ For the remainder of this paper they will be referred to simply as active and passive.

in partial lecture notes during class, with instructors walking around asking questions and student then reflecting on the information provided during the lecture. Out-of-class activities included students preparing article summaries and reviewing annual reports.

A study by Lock and Kocakulah (2007), reports on the benefits of engaging students in active learning by having them participate in the Volunteer Income Tax Assistance program . Other researchers have focused on the area of self-regulated and cooperative learning as a teaching strategy to encourage active student participation, which should result in producing accounting graduates who are self-motivated, independent, and have acquired lifelong learning skills (Cottell and Millis, 1992; Cottell and Millis, 1993; Smith, 2001). Cooperative learning, which is an active learning strategy, was found to be an effective strategy to teach accounting students where, although students were working in small groups, they were held individually responsible for their own academic achievements (Cottell and Millis 1993). Cooperative learning has also been encouraged through the use of role-playing, self-reflection techniques, problem based learning and case studies techniques (Cottell and Millis 1992: Cottell and Millis 1993). The view that instructors can create a classroom atmosphere to enhance self-regulatory learning to assist graduates to achieve independence as life-long learners has been promoted by Smith (2001). The use of business case studies has also been promoted to encourage accounting students to become more active and independent learners (AECC 1990, Sundem et al., 1990). The use of business case studies to teach accounting was extended further to examine whether student-led (active) or instructor-led (passive), achieved the most effective learning outcomes (Adler et al., 2004: Wynn-Williams et al., 2008).

Learning which is classified as passive does not actively involve students. Heron (2002) describes it as ‘information bound’, and all to do with indirect knowledge. It consists of

description, extraction, ideation and judgement mediated by the written and spoken word. Relating this to accountancy students, passive training techniques include items such as: lectures with accompanying class notes and exercises (Loeb, 1988); guest lecturers (Huss and Patterson, 1993); guided examination of operational codes of businesses (Stewart, 1997); vignettes with explanatory interventions (Chung and Monroe, 2007); and viewing professionally produced videos (Ziegenfuss, 1996).

Passive learning is the traditional method of instruction, as described by Dewey (1938). A plethora of techniques involve the expert in an area imparting his/her knowledge to the recipient. As a foundation stone of learning Dewey considered it critical as a precursor to active learning. Some studies support passive learning in an accounting context. These studies contend there are moral absolutes in existence (that things are merely right or wrong). Any training that simply does not 'deliver the message' ignores that existence (Weber, 2007). Passive ethics training techniques are therefore recommended as they can assist in this process of reinforcing the moral absolutes. Studies looking at cultures where passive learning is the norm, particularly in Hong Kong, report success with traditional lectures (Hwang et al 2005, 2008). Further support for passive techniques can be found in Sims (2002). He argues that as student learning styles are different, students with passive learning styles respond better to passive techniques. Spence and Wadsworth (2002), found some students, obviously those with a passive learning style, were actually hostile to active approaches, preferring the anonymity of passive techniques.

From the previous section concerning student learning styles, it would be assumed active learners would find active teaching methods more beneficial and passive learners would find passive teaching methods more beneficial. Hypothesis 3 (H3) is therefore stated as follows:

H3: Active learners will consider active teaching methods more effective whereas passive learners will find passive methods more effective.

Research Design

A final year (third year) undergraduate accounting class, studying the subject *Audit and Assurance* took part in the survey. This is a mandatory subject as part of the Bachelor of Business (Accountancy) degree. Enrolled numbers for the class totalled approximately 280 students. The subject consisted of a weekly lecture (2 hours) and a tutorial (1 hour). Assessment procedures for this subject are such that any week's tutorial work can be collected for marking. Weeks are chosen at random. Hence, tutorial attendance was effectively mandatory.

For the purpose of collecting data, three variations of a questionnaire were used as instruments within the study. At the commencement of the first lecture in the subject, students were told there would be different approaches taken in tutorials for two of the thirteen weeks of the Semester. To assist in this, they were told it was necessary to attempt to determine their preferred learning style. They were then given a simple description of active and passive learning and asked to describe which type of learner they were and identify their tutorial group. Appendix 1 provides an abridged version of Questionnaire 1.

After the students had been subject to two training methods (discussed below) in the area of teaching ethics to trainee auditors, they completed questionnaire 2 in week six of the course. This asked them to re-evaluate their learning styles and evaluate the training methods as regards the ethics topic (see Appendix 1 for an abridged version). Finally, after the students had been subject to two training methods (discussed below) in the area of using audit

software to assist evidence gathering, they completed questionnaire 3 in week nine of the course. This again asked them to re-evaluate their learning style and evaluate the training methods as regards the audit software topic (see Appendix 1 for an abridged version).

The first lecture consisted of a one-hour introduction to the topic of auditing and then a one-hour lecture discussing the impact of ethics on the practice of auditing. The latter included an introduction to the Code of Ethics (the APESB (2010) statements) of the major professional accounting bodies in Australia namely the Institute of Chartered Accountants (ICAA) and CPA Australia (CPAA), a discussion of ethical theory and examples of unethical accounting practices. The students were set readings from their text and questions on ethics to be answered in the following week's tutorial. This lecture comprised the first teaching method on the ethics topic and was the traditional passive teaching technique.

In the second week of the course, the students were given a one-hour lecture on how to solve an ethical dilemma using a six-step model explained in their textbook. Their tutorials for the following week were then split. Half were run actively and half were run passively. The students assigned to active tutorials had to work through an interactive computer based ethics (CBE) training case study, formerly used as an instruction instrument by the ICAA as part of their training programme. The CBE tool involves providing the user with the details of an audit partner receiving an "opinion shopping" request. The user then has to work through the following six step model to solve the dilemma:

1. Obtain the relevant facts;
2. Identify the ethical issues from the facts;
3. Determine all stakeholders and how they are affected;
4. Identify the alternatives available;
5. Identify the consequences of each alternative; and
6. Decide the appropriate action.

Each screen pops up in turn with a list of factors to be considered at each stage. The user is therefore forced to work through the full ethical decision-making model before being directed to the appropriate action as stated in the accountants' code of professional conduct. The model in the CBE program was almost identical to the six-step model referred to above from their text. The exercise finished with the completion of a brief memo as to their recommended solution to the problem, referring to Ethical pronouncements as appropriate.

The active group were given no support whatsoever. The case study was loaded in the laboratories and the students had one week to access it and go through it themselves, before their following week's tutorial. It was their week's homework and they had to arrive at the tutorial with the summary memo as to their recommended solution fully prepared. They were encouraged to collaborate if they wished, during the week but each student had to hand up an individual completed memo. Hence, this second instruction method, the tutorial, was an active technique for these students.

Whereas the active group were given no support, in contrast, those assigned to passive tutorials were given full support. This time the tutors took their students through the step-by-step completion of the dilemma in the computer laboratories. This the students did as individuals, guided by their tutor. As they were taken through step by step, in the computer laboratory, it seems valid to refer to this as a passive learning technique. The students were told not to look at the case study before the tutorial or attempt it in any way. Whereas this could not be verified, as mentioned previously, assessment procedures for this subject are such that any week's tutorial work can be collected for marking. Weeks are chosen at random. Students assigned to passive tutorials this week were told this would be the only week they would not have their tutorial work collected. Effectively, they got a week off study

in a subject with a heavy work load. So it is highly unlikely they reviewed the case study prior to the tutorial. Hence, this second instruction method, the tutorial, was a passive technique for these students. Questionnaire 2 was completed evaluating all teaching and learning style techniques as regards ethical instruction in the week 6 lecture.

The week 7 lecture consisted of a one-hour introduction to the topic of audit software and then a one-hour lecture discussing the software package *ACL*. The lecturer gave a practical in-class demonstration of how *ACL* worked. The students' textbook comes with a cut down version of the package on CD. This lecture comprised the first teaching method on the audit software topic, and was the traditional passive teaching technique. Then, as with the ethical instruction topic, tutorials for the following week were split. Half were run actively and half were run passively, reversing the two groups, from the prior Ethics CBE Case Study. The students assigned to active tutorials had to work through a case study from their text. This involved using *ACL* to plan the audit of debtors for a particular company, and the students had to produce four spreadsheets, generating an ageing of debtors, a stratification of the ledger balances etc.

Mirroring the approach to the ethics topic, those in active tutorials were given no support whatsoever for the *ACL* assignment. The software was loaded in the laboratories and the students had one week to access it and go through it themselves, before their following week's tutorial. It was their week's homework and they had to arrive at the tutorial with the four printouts fully prepared. They were encouraged to collaborate if they wished, during the week but each student had to hand up individually completed spreadsheets. Hence, this second instruction method in the audit software area, the tutorial, was an active technique for these students.

Those assigned to passive tutorials were given full support. This time the tutors took their students through the step-by-step completion of the four printouts using ACL in the computer laboratories. This the students did as individuals, guided by their tutor. As they were taken through step by step, in the computer laboratory, it seems valid to refer to this as a passive learning technique. The students were told not to look at the ACL software before the tutorial and for the reasons discussed previously, it is assumed unlikely they would have done so. Hence, this second instruction method, the tutorial, was a passive technique for these students. Questionnaire 3 was completed evaluating all teaching and learning style techniques as regards using the ACL audit software in the week 9 lecture.

Results

The first goal of this paper was to get students to self evaluate their learning styles in the accounting discipline. Recall, H1 had predicted there would be a preponderance of active learners based upon the results of previous studies. Table1 presents the raw data.

Insert Table 1

Earlier studies have noted how accountancy students appear to change their learning styles as their experience levels progress. And based upon this it was assumed at final year level active learners would be more prevelant. However this was not the case. Possibly due to the nature of the subject area, auditing, and the fact that students acknowledge they have no knowledge of this particular subject area in the overall accounting spectrum, 47% of students classified themselves as passive learners. This was more than the 35% who classified themselves as

active learners. Interestingly 18% of students, almost 1 in every 5, even though in their final year, were unsure what their learning style was.

The students were then asked to re-evaluate their learning styles after being subject to two teachings methods covering ethics in auditing and a further two teaching methods covering audit software. Table 2 summarises the results.

Insert Table 2

Considering the more practical, concrete topic first, i.e. the use of audit software, the percentage of students who considered their learning style to be active before the instruction methods, actually increased after being subject to those methods, from 35% to 40%. Those who considered themselves passive learners also increased from 46% to 51% (comparing Tables 1 to 2 in both instances). These figures are most probably explained by the fact that of the 18% (Table 1) of students who were unsure of their learning style, this fell to just 6% (Table 2) post instruction methods. It would appear exposure to the differing instruction methods helped them decide which learning style they preferred and they categorised themselves accordingly.

However, when it came to the more nebulous topic of ethical instruction the proportion of students who described themselves as active, pre instruction (35% in Table 1) actually fell to just 31% (Table 2) post instruction. Passive learners jumped significantly from 47% (Table 1) to 63% (Table 2). It appears as if the undecided students now considered themselves passive learners and some of the active students considered they had made the wrong assumption about themselves initially and changed their categorisation. Table 3 provides more data about the changes in categorisations.

Insert Table 3

As regards audit software, 25% of students considered they may have changed classification post instruction, whereas in the ethics area up to 35% considered they may have changed. H1 and H2 must therefore both be rejected. Final year accountancy students do not appear to be predominantly active learners and most interestingly, they do not appear to have a consistent learning style preference within a particular area. It appears to vary significantly from individual topic to topic.

The interaction of teaching methods on learning styles was then examined. Recall, H3 predicted active learners would consider active teaching methods more effective and passive learners would consider passive methods more effective. Tables 4 and 5 present data comparing reactions to the two instruction methods for both auditing topics, the ethical issues at Table 4 and the audit software studies at Table 5.

Insert Table 4

As per the questionnaires (Appendix 1) the students ranked the usefulness of all teaching techniques they encountered on a 9-point scale with 1 designating the technique as not useful, 5 as fairly useful and 9 as very useful. Table 4 considers the ethical teaching methods first. Students were divided into active and passive as per their post instruction self classification, which was topic specific. As anticipated by traditional theory, active learners considered the lecture on the topic useful, but the passive learners considered the lecture, a passive technique, far more useful, the difference in means even being statistically significant (at the .01 level). When it came to the tutorial method of instruction (which was active for half the group and passive for the other half) again as anticipated by traditional theory, active learners

considered this technique (an active technique for half the group) more useful than the passive group (mean of 5.56 as opposed to 5.14, as per table 4).

Table 5 considers the audit software teaching methods. Again, students were divided into active and passive as per their topic specific, post instruction self classification. Here again, active learners considered the lecture on the topic useful, but the passive learners considered the lecture, a passive technique, far more useful, (mean of 5.58 as opposed to 5.23). When it came to the tutorial method of instruction (which was active for half the group and passive for the other half) again as anticipated by traditional theory, active learners considered this technique (an active technique for half the group) more useful than the passive group (mean of 6.42 as opposed to 6.13, as per table 5).

Insert Table 5

These results offer strong support for H3.

Summary and Conclusions

The issue of accounting education is critical. Future employees are more and more insistent university graduates are as well prepared for the workplace as possible, upon completion of their tertiary studies. Their technical knowledge and their non-technical skills, communication, problem solving, teamwork etc. are expected to be of the highest standards. To achieve this, accounting educators employ a range of teaching methods, active and passive, across subjects taught during a basic three year accounting/business degree.

Whether these varying teaching methods are effective or not depends significantly upon the recipients' (accounting students') learning styles. But more often than not the teaching

methodology to be employed is employed irrespective of the student learning style. The current study required final year accounting students, studying auditing, to self evaluate their preferred learning style both before and after they were subject to differing teaching methods. Contrary to some previous studies in the area, the majority of students still considered their core learning style to be passive rather than active. Traditional wisdom has it that accounting students learning styles evolve from passive to active the further into their course they progress. Possibly because the particular accountancy topic being covered in this study was auditing, traditionally an area students find complex, even though in their final year the majority considered they possessed a passive learning style.

Of even greater interest however was the finding that individual students' learning styles were not consistent across two topics from the same area. In studying a technical, straightforward topic, using audit software, just over half the cohort (51%) considered themselves passive learners with 40% considering themselves active. But, when the topic became more nebulous (and possibly more personal?) students' learning style preferences shifted significantly. 63% of the cohort now described themselves as passive learners and the active group fell from 40% to just 30%.

Finally, matching students by learning style to an appropriate teaching method proved highly beneficial, with active/passive learners finding active/passive teaching very beneficial. When the learning style and the teaching method differed however, the usefulness of the teaching experience for the student declined, in some cases significantly.

The implications for accounting educators are significant. First, to assume active teaching methods are more appropriate for final year students may be incorrect. Second, even students

of the same experience level may have differing learning styles depending upon the specific topic being covered. Hence, care must be taken before deciding on the optimal teaching technique(s) to be used in any particular area. Third and probably most significant, matching the appropriate teaching method to the specific student's learning style appears to produce the best educational result for the student. This was derived from students' evaluations of the usefulness, to them (individually), of varying techniques. As learning styles differ from student to student it may be beneficial to ascertain the learning styles of students and assign them to classes as appropriate. Different teaching methods could then be employed in the different classes. This raises several issues such as practicality and funding, to name just two. These issues provide grounds for future research.

The main limitation of this research lies in the design of the study. To maximize responses, confidentiality was assured on all questionnaires. This, by definition precluded a matched pair comparison of individuals' responses which would have lead to more robust findings and stronger analysis. Also the possibility of demand effects exists. Students may have ranked the techniques higher than they considered them, just because they consider this is what the study wanted. Whereas there is no reason to consider students may have falsified their answers just to achieve this result, the limitation must be recognised.

Appendix 1 – Questionnaires

Questionnaire 1 (abridged)

1. How do you like to learn about a subject area such as auditing?

Learning Style	Tick
I am an <i>experiential (active)</i> learner. I like to research a topic, with or without colleagues, and then come up with an answer.	
I am a <i>non-experiential (passive)</i> learner. I like to get the answers from a lecturer/tutor or textbook, and then reflect on it.	
I don't know which type of learning style describes me.	

2. Please tick the box which identifies your tutorial class for [*this subject*]?

Time	Room	Tutor	Tick (one only)
10-11am	B227	[<i>tutor's name</i>]	
10-11am	B234	[<i>tutor's name</i>]	
1-2pm	B227	[<i>tutor's name</i>]	
1-2pm	B234	[<i>tutor's name</i>]	
2-3pm	B227	[<i>tutor's name</i>]	
2-3pm	B234	[<i>tutor's name</i>]	
5-6pm	B233	[<i>tutor's name</i>]	
5-6pm	B234	[<i>tutor's name</i>]	
8-9pm	B233	[<i>tutor's name</i>]	
8-9pm	B234	[<i>tutor's name</i>]	

Questionnaire 2 (abridged)

1. How do you consider you like to learn about a topic such as ethics?

Learning Style	Tick (one only)
I am an <i>experiential (active)</i> learner. I like to research a topic, with or without colleagues, and then come up with an answer.	
I am a <i>non-experiential (passive)</i> learner. I like to get the answers from a lecturer/tutor or textbook, and then reflect on it.	
I don't know which type of learning style describes me.	

2. Do you think your answer to the previous question has changed since you first answered a question on learning styles six weeks ago?

Yes	
No	

Over the past few weeks you have been involved in two (2) different methods of studying ethics. Please evaluate the two methods.

3. How did you consider the **traditional lecture** approach as a tool to increase your focus on auditing ethical issues? (please **circle one number**).

Not Useful				Fairly Useful					Very Useful
<hr/>									
1	2	3	4	5	6	7	8	9	

4. How did you consider the **tutorial based computer case study** approach as a tool to increase your focus on accounting ethical issues? (please **circle one number**).

Not Useful				Fairly Useful					Very Useful
<hr/>									
1	2	3	4	5	6	7	8	9	

Questionnaire 3 (abridged)

5. How do you consider you like to learn about an IT software topic such as ACL?

Learning Style	Tick (one only)
I am an <i>experiential (active)</i> learner. I like to research a software topic, with or without colleagues, and then come up with an answer, to have it reviewed.	
I am a <i>non-experiential (passive)</i> learner. I like to be shown the software topic by a lecturer/tutor, and then reflect on it.	
I don't know which type of learning style describes me.	

Tables and Figures

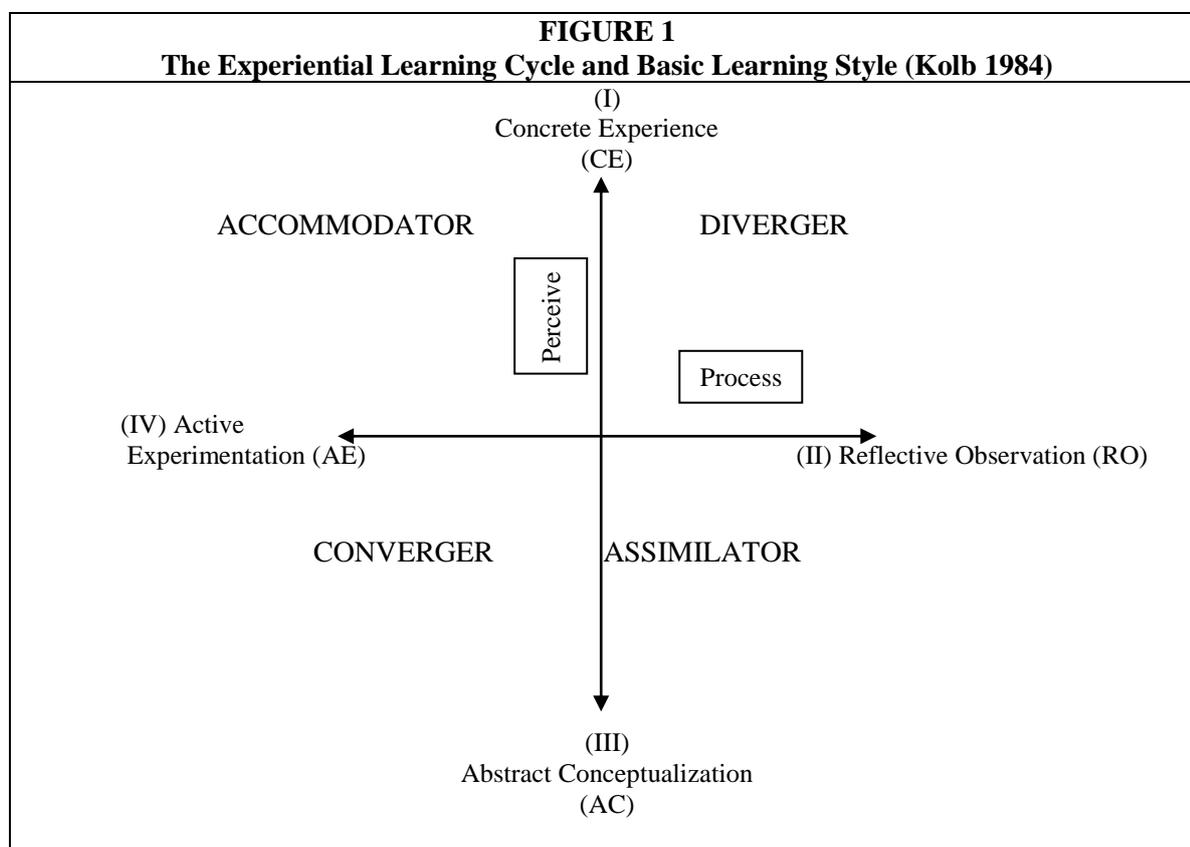


Table 1 – Analysis of Student Learning Styles Pre-Instruction

	# (137)	%
I am an <i>experiential (active)</i> learner. I like to research a topic, with or without colleagues, and then come up with an answer, to have it reviewed.	48	35.0
I am a <i>non-experiential (passive)</i> learner. I like to be shown a topic by a lecturer/tutor, and then reflect on it.	64	46.7
I don't know which type of learning style describes me.	25	18.3

Table 2 – Analysis of Student Learning Styles Post-Instruction

Learning Style	Audit Software		Ethical Issues	
	# (146)	%	# (134)	%
I am an <i>experiential (active)</i> learner. I like to research a topic, with or without colleagues, and then come up with an answer, to have it reviewed.	59	40.4	41	30.6
I am a <i>non-experiential (passive)</i> learner. I like to be shown a topic by a lecturer/tutor, and then reflect on it.	75	51.4	85	63.4
I don't know which type of learning style describes me.	9	6.2	8	6.0

Learning Style	Audit Software		Ethical Issues	
	# (146)	%	# (134)	%
I think my answer, as to the type of learning style that suits me, has changed since I looked at { <i>this topic</i> } the first time.	37	25.3	47	35.1
I <u>do not</u> think my answer, as to the type of learning style that suits me, has changed since I looked at { <i>this topic</i> } the first time.	106	72.6	86	64.2
I am unsure if my answer, as to the type of learning style that suits me, has changed since I looked at { <i>this topic</i> } the first time.	3	2.1	1	.7

	N	Mean	Std. Dev'n	Std. Error Mean	Sig.
Lecture Active	41	5.6829	2.03026	.31707	.006
Passive	84	6.5476	1.38325	.15092	
Tutorial Active	41	5.5610	1.98807	.31049	.322
Passive	84	5.1429	2.30318	.25130	

	N	Mean	Std. Dev'n	Std. Error Mean	Sig.
Lecture Active	59	5.2373	1.93283	.25163	.323
Passive	75	5.5867	2.09306	.24169	
Tutorial Active	59	6.4237	2.03591	.26505	.426
Passive	75	6.1333	2.13297	.24629	

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