

# TRADITIONAL TEACHING METHODS VS. TEACHING THROUGH THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE ACCOUNTING FIELD: QUO VADIS?

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## Abstract

Much emphasis has been placed in the higher education literature, to the understanding of the manner and process of providing education in the accounting discipline. Specifically, the emphasis on using innovative teaching practices such as information and communication technologies, the Internet as well as various computer programs, simulations, case studies on real and virtual work environments, have been investigated in an attempt to understand current demands and move the discipline forward. Following a thorough review of the relevant literature, this study aims to identify and present different views and research findings on the key issue of teaching accounting, internationally. The findings suggest that despite the availability of the former teaching practices, students mainly prefer personalized teacher-centered methods; they also recommend the aforementioned practices as ancillary tools to the traditional method, rather than key learning tools in the courses taken. These findings have obvious implications for the design of accounting course curricula by professional bodies and/or Higher Education Institutions in order to help graduates meet and adapt to the demands for professional competency development in the accounting field.

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**Keywords:** Teaching Accounting Courses, Methods and Tools, Information and Communication Technology, Literature Research Approaches, HEIs

## **1. Introduction**

Recently, much attention and discussion has been evident in terms of the manner and process of providing education in the broader field of accounting, particularly in the area of higher education. Recent developments in accounting, specifically those relating to the international accounting standards, the continuously enhanced role of executive accounting staff in different organizations, the increased use of technology and implementing complex accounting practices, have activated a series of radical changes in the process of teaching (Williams, 1993). Discussing the future of accounting, Albrecht and Sacks (2000) argued that there are various innovative teaching practices that should be adopted to improve the educational aspect of the accounting discipline. Specifically, consideration should be given into both the theoretical and empirical skills required by the Industry and the general market to redesign and modernize the traditional curricula as well as implement teaching practices that will facilitate the development of the necessary skills and competencies (verbal or written) to allow students to tackle accounting problems in the real business world.

A key requirement for the future is the need to prepare students to participate in the information society, where knowledge is the most crucial factor in the social and the economic development of a country (Spathis, 2004). The adoption of new Information Technologies and Communication has led to significant changes in both the structure and the functionality of education. The introduction of new technologies led to the development and dissemination of Electronic learning (e-learning) and distance learning courses thereby offering a new dimension to the provision and content of education. This is evident across Universities and Open Universities in particular where new technologies now play a dominant role. Indeed, the use of new technologies of Information and Communication transforms traditional teaching and assists the adaptation of new curricula and new courses in existing applications (Petridou & Spathis, 2001; Mohamed & Lashire, 2003). The following review of the relevant literature aims at identifying and discussing the various arguments found, the views of students on the teaching methods of accounting courses, the challenges and the implications for future employment that arise in light of the aforementioned developments.

## **2. Literature review**

The teaching of accounting has been done, mostly, by conventional (traditional) or slightly sophisticated teacher-centered methods rather than modern student-oriented applications and techniques while the transmission of knowledge and information has been realized with the usual form of lectures or discussions requiring physical presence of both student and the

teacher. Furthermore the teaching methods used may differ in terms of the degree of influence on active learning (Cottel & Millis, 1993; Bonner, 1999 ) as shown below (Table 1).

<b>Traditional teaching methods</b>	<b>Moderately evolved teaching methods</b>
<ul style="list-style-type: none"> <li>• Reading texts and problems               <ul style="list-style-type: none"> <li>• Formulate questions</li> <li>• Attending lectures</li> <li>• Monitor discussions</li> </ul> </li> <li>• Writing and reply brief or extensive questions and objective type questions</li> <li>• Solving short or lengthy unstructured problems and cases</li> <li>• Oral presentation of topic and reply to short questions from the audience               <ul style="list-style-type: none"> <li>• Studies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Video Watching</li> <li>• Attendance and participation in lectures using interactive whiteboards</li> <li>• Accounting applications using simple systems               <ul style="list-style-type: none"> <li>• Role Playing</li> <li>• Simple modeling</li> </ul> </li> </ul>

Source: Cottel & Millis, 1993; Bonner, 1999

Nevertheless, active learning involves students and helps them to have an in-depth understanding of the course through induction of practice; in other words, the inductive teaching has better results than productive teaching (Adler, 1999). Moreover, it has been argued that inductive methods increase the consolidation and conservation of a subject as well as the assessment and evaluation of performance with better subsequent future career paths for students studying a given subject from a book (Kelley et al., 1999). Bonwell & Eison (1991) have proposed several techniques to support and promote active learning:

- The use of visual media during the lectures (video, multimedia, slides).
- The encouragement of students to take notes during lectures.
- The use of computers during teaching.
- The encouragement of students to solve problems during the case study.
- The use of simulations, role playing and various graphics.
- The use of collaborative learning.

Regarding the key question about what should be the selection criterion for the “correct” active learning method adopted for teaching accounting courses, Bonner (1999) states that the teacher who designates (short and long) learning goals has to evaluate the theoretical knowledge and abilities (skills) of the students to be able to choose the method(s) that promote(s) the process of learning. In the accounting context in particular, Beattie et al. (1997) introduce the concept of the "in-depth learning" according to which, a specific approach that promotes a deeper understanding of the subject, rather than superficial learning, is required. However, learning is largely determined by the motivation of the students,

too; to improve the process of teaching and learning as well as the understanding of the subject, specific strategies and educational techniques should be developed that take into account also, what motivates students and how these motivators can be strengthened.

### **3. Teaching Methods of Accounting Course Content**

The traditional (or conventional) teaching methods are teacher-centered and include the use of lectures and discussions while the problem solving element (e.g. see section 3.1) is presented by and/or discussed with the instructor; the syllabus, the teaching materials and the student assessments are determined by the tutor and transmitted to students in various lectures (Cottel & Millis, 1993). However, recent developments in accounting, such as the role of accountants in companies and organizations, the increased use of technology and the implementation of complex accounting practices have allowed a number of important changes in teaching (Williams, 1993) (see also Table 2).

#### **3.1 Traditional Teaching Methods**

##### **3.1.1 Case Studies**

Arquero-Montano et al. (2004) studied the use of two teaching methods in different cases fostering the development of competencies and skills, such as communication skills and accounting problem solving. Specifically, the experimental group whose task was decision-making, looked into more difficult cases than the control group that studied smaller and more process oriented cases. The results of the tests showed no significant difference in the points gained by the two groups, except that more points were uniformly distributed in the control group. Cullen et al. (2004) used a real case study where accounting problem solving and role play from the students' point of view was researched by using questionnaires. The students' views on the effectiveness of the proposed method in terms of developing their research skills suggest that case studies are a useful tool that should be included when teaching accounting courses. Weil et al. (2004) had similar findings regarding the use of the same method of teaching namely, case studies; this method in particular, benefited male students more than female students by facilitating the development of several significant competencies such as the ability to: evaluate a situation from more than one perspectives, consider alternative solutions and apply judgment, analyse and solve problems, distinguish relevant from irrelevant information on a given issue as well as integrate knowledge gained.

### **3.1.2 Quiz Team vs. Control Group**

Another tool employed is group quizzes. Clinton and Kohlmeyer (2005) studied the effect of group quizzes on the performance of the students in general and the subject taught, in particular. To do so, a group of students was selected to participate in team quiz along with a control group. No statistically significant difference between the two groups was found, suggesting that the former tool does not affect the accounting students' performance.

### **3.1.3 Collaborative Teaching vs. Lecture**

Hwang et al. (2005) studied the effect of collaborative teaching versus lectures including the type of questions posed to students (i.e. indirect and direct application of the acquired knowledge). This study concludes that cooperative teaching improves significantly the students' performance in comparison with that of lectures, only. Despite all the evidence, that collaborative teaching has better results than the traditional way of lecturing, there is no compelling evidence in support of one method over the other. More specifically, a study by Hosal-Akman & Sigma-Mugan (2010) looked into the performance of students taught by two different methods; in the first group of students, cases studies and problem-solving was undertaken in collaboration with the teacher, while in the second group problem-solving was carried out by the teacher (only), without student involvement. No significant difference was found between the two groups (and teaching practices), with the exception that the collaborative group had slightly better grades on tests than the group attending lectures.

### **3.1.4 Homework**

Homework is a common practice in teaching accounting courses; it has been found to promote learning (Rayburn & Rayburn, 1999; Peters et al., 2002). Tutors often assign homework because they believe that the preparation work requires additional effort by the students that will give them the necessary motivation to study further (Rayburn & Rayburn, 1999). Besides motivation, home assignments have as an additional goal the initiation of cognitive and experiential problem solving techniques (or competencies) which are considered highly useful for a student's future career (Davidson & Baldwin, 2005).

### **3.1.5 Pause Method**

Braun and Simpson (2004), studied the impact of the pause method in learning; they have done so, in a class of graduate students in different accounting departments. The teaching method of pause includes periodic pauses of the tutor during the lecture and participation of the audience

through written or oral activities. The researchers studied the effect of the former method during the learning process and the students' performance in the exams. Interestingly, it was found that student performance increases when students are allowed to make choices during the learning process. In fact, when allowed to choose their own activity (written or oral) during the pause, students performed better in their final exam.

### **3.1.6 Blackboard vs. Simple Computer Programs**

In addition to accounting, the teaching of various disciplines in a class has already moved beyond the use of blackboard and chalk into using simple computer programs such as, for example, Microsoft's PowerPoint to facilitate the delivery of education. In this context, Nouri and Shahid (2005), studied the views of two student groups comparing the traditional way of teaching with blackboard against the one using PowerPoint. The findings suggest that teaching with the help of such software as PowerPoint helps students' understanding of a topic; also, it is considered more fun thereby triggering student attention and resulting ultimately, into better student performance in the final exam.

## **3.2 Modern Teaching Methods**

### **3.2.1 Software Programs**

The increased use of computers and computer programs in accounting courses seems to have a positive impact in terms of valuable time savings, the simplification of instruction and the enhancement of the learning process; in addition, it helps the development of certain skills including writing, communication, interaction, collaborative, critical thinking and consciousness (Boyce, 1999), while offering students the necessary knowledge and practical experience required by the market (Thomas, 1994). A variety of software programs is used for the teaching of accounting courses enabling the achievement of different teaching and learning goals. As a matter of fact, the use of computers is not limited to the use of software but extends to the use of the Internet in order to access learning materials. Despite that the teaching and learning of accounting benefits from the use of computers, it is worth noting that problems also may arise relating to the educational content and the result of the educational process; this is when computers are used without maintaining relevance (or paying attention) to established educational paradigms (see Boyce, 1999). However, the main types of software employed, according to Boyce (1999), include:

- Productivity software: Primarily including programs-banks (i.e. groups of software applications) of topic and exercises used by the students for practice; multiple choice questions, quizzes etc. that can be used for better understanding accounting concepts. With proper feedback, the

students are able to correct their mistakes and to focus on important points of the subject taught. These programs are designed for student learning of simple accounting operations as well as developing skills such as for example, the ability to identify, analyze, interpret and choose among alternatives provided (Boyce, 1999). Later, Gujarathi (2005) presented the results of using a spreadsheet productivity program (by Enterprise Resource Planning Systems running software invoices, balance sheets, etc.) for managing and solving an accounting cycle problem. The use of this program aimed to introduce students in maintaining duplicate books with such added constraints as accounting errors. The students' reactions with respect to the use of the ERP software were highly positive. The majority of them argued that the use of such software based methodology assisted the learning of accounting relative to the more conventional (traditional) teaching methods.

- Drill-and-practice software: Includes programs for accounting problems with which students have the opportunity to practice and improve their mistakes.

- Last, the modeling software and the simulation software.

The foregoing programs include modeling and simulation in order to create an accounting problem that the students are trying to solve, under conditions of (simulated) reality in the real world (Boyce, 1999). Marriott (2004) had studied the effect on student learning accounting with the use of a "game" simulation. More specifically, this game included the creation of a company in the automotive sector, where each student undertook different work in order to avoid a conflict of interest. Students were invited to apply for funding from a bank (they had previously done an economic study of the company they had to set up). The amount of funding received was virtually equal so as to maintain equality in terms of competitiveness among them. The game was called "The Entrepreneur", and put them face to face with virtual reality situations-problems similar to those found in the real world. It turned out that the use of simulation and model spreadsheet, gave the opportunity to the students to study a work-problem as a whole, combining knowledge from different courses and acquiring more empirical skills and abilities.

In line with the above, Hoffjan (2005) used a relatively similar business game to teach students better accounting concepts. The game was set up around a company called Calvados which made French apple brandy. Hoffjan (2005) claimed that the game increased the sensitivity of the students towards the difficulties of coordinating the decentralized units of the company. Green and Calderon (2005) studied the effect of plausible simulations (reality-based simulations) on the ability of the students to recognize management fraud. They concluded that students taught with lifelike simulations had a better understanding of the calculated risks

involved and better competence in applying professional standards as well as confidence in the results. In those two cases the students themselves were very happy and positive about the usefulness of the specific games in the whole learning process.

The main concern about the use of various computer programs is whether a simple teaching tool that could easily replace teaching itself, may turn accounting into a vocational learning profession, cancel its academic dimension and eliminate any pedagogical principle-concept on a course that traditionally used to require an active participation of those involved (Chorover, 1984; Boyce, 1999). By implication, the excessive use of relevant computer programs for teaching purposes may develop what has been defined as a "coded" way of learning rather than an in-depth understanding of the accounting subject, resulting ultimately, in a rather "mechanistic" or superficial learning on the subject. Similarly, the all-important adoption of computer software for student training and practice purposes by which one learns to solve accounting problems, may defeat its purpose when inadequate care is taken to develop first, the students' sound theory background on the accounting discipline to enable the students to understand and subsequently, tackle a given problem.

To sum up, software modeling and simulation can facilitate active learning and also, personalize learning for those students attending a course. These programs combine the accounting information and procedures by conveying the element of realism into the class, something that is not possible to attain with the traditional teaching method of accounting; also, the students are given autonomy and the freedom to determine the extent of their learning (Gow et al., 1994; Boyce, 1999). However, these programs may have a negative effect on students' learning when allowed to introduce misunderstandings (or confusion) to the classroom in terms of established accounting concepts and procedures, something that can be prevented by the appropriate use of traditional teaching (Leidner & Jarvenpaa, 1995).

### **3.4. Distance Learning Approaches**

#### **3.4.1 Interactive Multimedia CD**

Stanley and Edwards (2005) developed an interactive multimedia CD for the understanding of computerized accounting systems. The goal of the multimedia CD was to provide information from three real companies to help students understand accounting system information cycles, in a real business environment. For each cycle, the CD contained a case study about each of these companies, accompanied by video clips, a detailed description of each cycle exercises (short questions, circular questions, a summary of the case study) etc. The evaluation of this tool as a teaching method had been



very positive from the students allowing the authors to conclude that the latter greatly benefited from the use of the CD.

### **3.4.2 Interactive TV for Tele-education/ Tele-educational lectures**

Academic institutions around the world have invested time and money on the introduction of ICTs in education. The technological development of the media provided the base of transforming the face to face education to distance learning (Bryant & Hunton, 2000). The distance learning is the result of the evolution of interactive media and technology and has broad applications in the teaching of different disciplines (Bryant & Hunton, 2000; Halabi et al., 2002). Tele-education includes the use of interactive telecommunications to conduct teaching and distance learning (Halabi, 2005). Web technology in general and information technologies were adopted primarily by tutors participating in programs often offered to widely dispersed student populations. These tools made possible the spreading of knowledge and the cultivation of learning among adults based far (geographically and temporally) from the tutor (Atkinson et al., 1996; Wade, 1999; Liaw & Huang, 2000). Soon, ICT seemed to also attract people involved with the traditional (face to face teaching), as such tools proved to be ideal for teaching students operating within a digital context.

Against the above, it should be noted however, that Halabi et al. (2002) and Halabi (2005) found that students attending the accounting direction courses prefer the traditional way of teaching (i.e. face to face teaching) as opposed to distance learning and interactive television use. Specifically, a survey was conducted between two groups of accounting students attending a class delivered by the same tutor using a different means each time; in fact, the only difference was the means of teaching the students. The latter felt that the interactive television did not promote teacher-student interaction as good as traditional teaching did; yet, no significant difference between the two groups of students was found (i.e. one group taught with the traditional method and the other group with the use of interactive television for distance learning) in terms of their performance in the exams.

### **3.4.3 Teaching through the Virtual Learning Environment**

The traditional way of teaching with notes, slides and books started to be replaced by tools drawn from the Virtual Learning Environment. The Virtual Learning Environment (Web-based Learning Environment-WBLE), is defined as the technology that uses the internet as a tool to support and promote learning. Today, it is used as the only tool in distance teaching or as supplementary means to the traditional teaching (Basioudis & DeLange,

2009). According to Basioudis & DeLange (2009), the virtual learning environment includes the following features:

- Most learning programs are internet-centered (learning begins and ends in the Internet), each course has its own website and students are responsible for Internet access
- Most learning programs have a lot of interactions between teachers and students, among students and between students and other sources.
- Most learning programs are based primarily on access to human and material resources that is possible through the internet, only.

### **3.4.4 Teaching through software tools.**

In addition to the internet, some other information and communication tools are used in teaching accounting such as WebCT or Blackboard (i.e. online proprietary virtual learning environment) and perhaps, Interactive White Boards (IWB). With the former tool in particular, learning is accomplished and promoted in different ways than the process of traditional teaching. The extensive use of information technology in the process of learning is often called Virtual Learning Environment (VLE). The VLE uses internet technology for communication and information dissemination aiming to promote learning (Seale & Mence, 2001; Weller, 2007). Coupled with the development of ICTs and their integration into the educational process, there is now the need to create new learning strategies that offer students all the necessary knowledge and skills required by the market (Wells et al., 2008). These strategies include the development of more learner-centered, rather than teacher-centered learning activities, while their main goal, in addition to understanding the subject of accountancy, is the cultivation of various other skills as well (DeLange et al., 2006).

DeLange et al. (2003) investigated the student views on the tool WebCT that is a learning tool in the virtual environment. Specifically, they studied the relationship between learning in a virtual environment and motivating students. The survey results showed that student satisfaction of the virtual environment is directly related to the availability of on-line lectures, the usage of bulletin board, assignment and evaluation of on-line work, chat and video. Furthermore, Dunbar (2004) discussed the conversion of an accounting course into an on-line course. The study included students who attended the course with WebCT technology. The study focused on student frequency of using different learning methods, student views on how they could improve the learning tools, information on the use of modern classrooms and desired manner of virtual instruction in order to improve educational experience. Student replies about whether they prefer the

traditional teaching or the virtual environment were not entirely clear because the relevant scores varied.

### **3.4.5 Teaching by Using Information and Communication Technologies (ICT Technology)**

Marriott et al. (2004) studied the use of Information and Communication Technologies (ICT Technology) by senior students and their views regarding the use of the internet. The level of use of technologies differs from university to university; male students had a better knowledge of computer use, better analytical and spreadsheet skills relative to female students. A significant number of students reported their preference for the traditional face to face teaching while they were also positive about the use of the Internet as a teaching tool when its role is purely supportive. Increased interest for the use of the Internet in order to enhance student-centered teaching, combined with the growing need for distance teaching, led various higher education institutions to introduce the virtual environment in their curricula to allow them to teach accounting to open and distance learning students. In this context, it could be claimed that when learning is provided with new and innovative ways, students are encouraged to learn by using new technologies (Kozma, 1991), which may also determine to an extent, the degree to which students will "embrace" internet as a teaching tool (see De Lange et al., 2003).

### **3.4.6 Teaching Through the Use of the Blackboard tool**

Wells et al. (2008) investigated the effectiveness of the virtual learning environment in an accounting graduate program. More specifically the virtual tool used was Blackboard (i.e. an online proprietary virtual learning environment), where the views of a group of students who used it were studied. The main goal of the research was to evaluate the usefulness in terms of the provision of lectures, additional information and notes, exercises as well as forum discussions. The students' views were positive about the integration of the virtual learning environment for teaching accounting; indeed, teacher-student interaction was strengthened as well as the process of learning. Furthermore, working students' views were positive as teaching did not require their physical presence in the class. However, students argued that it should not be used as a tool for full replacement of face to face teaching. In general, this study that took place in a virtual learning environment showed that students mainly prefer one-way communication and interaction with the tool rather than the interactive mode (Lindner & Murphy, 2001; Beard & Harper, 2002; Breen et al., 2003). More recently, Basioudis and DeLange (2009), studied student views regarding student interaction with the aforementioned tool called, Blackboard. The results

showed that the former tool influenced students' mental effort and participation to the course.

### **3.5 Hybrid Teaching Models**

#### **3.5.1 Hybrid Models of Teaching vs. traditional Teaching**

Dowling et al. (2003), studied the effectiveness of a hybrid teaching model in comparison to the traditional teaching. The survey was conducted among students attending accounting information systems courses in two universities. The hybrid model was a combination of various media and face to face instruction while the effectiveness of the model was assessed by the marks received in final exams. Besides the fact that female students were found to outperform male, the model studied had an overall positive effect on student performance.

#### **3.5.2 Teaching through the Business Planning Model**

Barsky and Catanach (2005) suggested an alternative hybrid teaching model comprising also a Business Planning Model (BPM) for teaching introductory management accounting. Their teaching model included a big case study in sequels, various small case studies and a simulation of business planning. The model aimed to mainly, highlight the importance of information in making financial decisions and promote general understanding of the subject. The empirical part of the study was based on a sample of professional accountants and accounting students attending the course including students that were not. The study concluded that the proposed teaching model was found to benefit teaching and learning.

#### **3.5.3 Creating Financial Model and Calculation of costs by using Spreadsheet**

Beaman et al. (2005) studied the effectiveness of training students in financial modeling; more specifically, the development of skills relating to the design and evaluation of own models by using programs that calculate cost, too (e.g. Microsoft Excel). To do so, a sample of 187 second year students was used as the experiment group and 47 sophomores as the control group. Students were asked, twice a year, to design a spreadsheet that calculates costs for a wall construction based on given materials. No significant differences were found between the two groups, except from the fact that less qualitative and quantitative errors were noted in the experimental group in terms of the design and the calculations made.

### **3.5.4 Teaching method through the use of Low-Income Taxpayer Clinics tool.**

Anderson and Bauman (2004) tested the use of Low-Income Taxpayer Clinics (LITC) as a mean of practical training at the Universities of Wisconsin-Milwaukee and North Carolina-Greensboro. The low-income citizens who cannot afford an accountant resort to this service which is offered free of charge or for a nominal fee and can help them with their accounting affairs. Their findings are particularly interesting as practice in such service increased students' auditing skills, problem-solving and communication skills. In line with the above, Still and Clayton (2004) studied internship as an educational practice using a student experimental group and a student control group. The group that took part in internships performed better in audits as compared to the group that did not. Bear in mind however, that these results should be treated with caution because the sample was small, which does not allow any generalizations to be made.

### **3.5.5 Teaching through the Accounting Program SCAM**

Accounting students are often required to develop expertise in auditing without having any practical experience in it; to fill this gap, accounting education providers may resort to software tools such as SCAM. This is a program that serves the end of providing experience to students by using a computational implementation/simulation based on real data drawn from a supermarket chain in UK. The SCAM tool was designed to provide the experience of a real business environment and help students develop various skills including teamwork. While the program's design was based on a pedagogical framework that takes into account the techniques of experiential learning and processing information, the effectiveness of the former tool in education is still under study; yet, the preliminary findings are encouraging (Crawford et al., 2011).

## **4. Application of Teaching Methods for Accounting in Higher Education in Greece.**

The literature lacks empirical evidence on the use of Information and Communication Technologies (ICT) in the teaching of business and accounting in Greece. An exception is Spathis' (2004) study focusing on the use of technology in business administration courses offered in Greek Higher Education. This study investigated the extent to which students use ICT and also, any likely link between the use of ICT and students' profile characteristics (i.e. including gender, age, high school degree and former accounting experience). The study was conducted on a sample of two hundred and twelve freshmen attending the accounting course at the Department of Economics and focused on such ICT practices as word

processing, treatment tables, databases, accounting software packages, presentations, use of email and internet. The study found that the degree of ICT adoption and creativity is significantly higher for male students relative to female while overall, ICT usage was placed relatively low in the evaluative scale. It also concluded that business administration courses need to be revised in terms of increasing ICT courses and combine theoretical knowledge with practical applications in labs in order to remain competitive and meet market demands.

Koukoufiki (2009) on the other hand, investigated the use of asynchronous e-learning platform of CoMPUs in the education process. CoMPUs (Course Management Platform for Universities) is an integrated system of Asynchronous e-Learning University of the University of Macedonia (Thessaloniki, Greece) addressing the needs of the academic communities (Evaggelidis, 2005). The empirical study was conducted among users of the above institution while the sample also included 9% of accounting and finance students studying there. The findings suggest that users (both teachers and students) of the asynchronous learning platform «CoMPUs» were satisfied with the services offered by this tool and more importantly, they find the application of such new technologies beneficial for education.

The relevant literature also paid scant attention to the use of ICT in the context of economics course teaching in Greece. Yet, Tyrovouzis (2006) designed and tested the effectiveness of a virtual software environment namely “infonomics”, in the context of teaching "Principles of Economic Theory." To do so, two groups of students were used: one group was taught by the use of the foregoing software while the control group was taught by the conventional way of teaching this module. Despite that no significant performance differences were found between the two groups' final exam scores, the findings suggest that students overall, commented positively on the new means of teaching the former module. More recently, Sidiropoulos (2008) studied the use of the virtual learning environment during teaching the Macroeconomics module offered by the University of Macedonia (Thessaloniki, Greece). The study adopted a similar methodological approach using a group of students taught in the conventional way as control and another group taught by the use of an online platform ADLSE. Once again, the results reflect the very positive views of the respondents towards the new technology ADLSE. Furthermore, it should be noted that the use of this platform contributed to student performance because students taught by this platform were found to do better than students who were taught by the conventional means.

Against the above background, a key question arises in terms of whether the integration of ICT in teaching will be just another novelty in

teaching. More specifically, the extent to which, the extensive adoption of ICTs will help improve learning and student performance. In this respect, Tsami (2010) argues that while the majority of students prefer to be taught with the use of ICT, their learning process was not found to have progressed dramatically.

**Table 2:** Literature Review on Teaching Methods for accounting courses, internationally.

<b>Traditional teaching methods</b>					
<b>Writer</b>	<b>Year</b>	<b>Title</b>	<b>Country</b>	<b>Tool</b>	<b>Conclusion</b>
Arquero-Montano et al.,	2004	Skills development, motivation and learning in financial statement analysis: An evaluation of alternative types of case studies.	Spain	Case studies	Didn't affect students' results
Cullen et al.	2004	Exploring the teaching potential of empirically-based case studies.	U.K.	Case study, which included research, problem solving and role play	Influenced positively the research skills of students.
Weil et al.	2004	The usefulness of case studies in developing core competencies in a professional accounting programme: A New Zealand study.	New Zealand	Case study	Significantly improved various abilities
Clinton & Kohlmeier	2005	The effects of group quizzes on performance and motivation to learn: Two experiments in cooperative learning.	U.S.A.	Group quizzes	Didn't affect students' results
Hwang et al.	2005	An empirical test of cooperative learning in a passive learning environment.	Japan	Collaborative teaching and lectures	Collaborative teaching-learning improved the performance of students in comparison to lectures.
Braun & Simpson	2004	The pause method in undergraduate auditing: An analysis of student assessments and relative effectiveness.	U.K.	Pause method, pauses during lectures and public participation through written or	Students performance in examinations were better when they chose their own activity during the pause (written or

				oral activities.	oral).
Hosal-Akman & Sigma-Mugan	2010	An assessment of the effects of teaching methods on academic performance of students in accounting courses.	Turkey	Case studies and problem solving by the teacher or the students (two groups).	There was no statistically significant difference between the two methods
Nouri and Shahid	2005	The effect of PowerPoint presentations on student learning and attitudes.	U.S.A.	Teaching with the usage of PowerPoint	Promotion of learning, fun, improved the performance of students in examinations
<b>Contemporary teaching methods</b>					
Gujarathi	2005	Use of ERP software in accounting: A teaching note.	U.S.A.	ERP-computer program for managing and resolving accounting cycle problems	Positive reactions of students. Preferred it to the conventional ways of teaching.
Marriott	2004	Using computerized business simulations and spreadsheet models in accounting education: a case study.	U.K.	Simulation game	Enhancement of experiential learning, algorithmic thinking and minimization of inductive reasoning.
Hoffjan	2005	Calvados—A business game for your cost accounting course.	Canada - Germany	Simulation game	Promotion of learning process
Green & Calderon	2005	Assessing student learning and growth through audit risk simulations.	U.S.A.	Plausible simulation game	Better understanding of risk calculation, application of professional standards and confidence in achieving results
<b>Web – based education</b>					



Lindquist & Olsen	2007	How much help, is too much help? An experimental investigation of the use of check figures and completed solutions in teaching intermediate accounting.	U.S.A.	On-line study	Enables students improve their problem solving skills
Peng	2009	Using an Online Homework System to Submit Accounting Homework: Role of Cognitive Need, Computer Efficacy, and Perception.	U.S.A.	On-line study	Enables students improve their problem solving skills
Abdolmohammadi et al.	2003	Students' perceptions of learning in a web-assisted financial statement analysis course.	U.S.A.	Internet (in and out of the class)	Did not improve the understanding of the course. Students were negative towards the use of internet.
Kopel & Dudley	2003	A beginner's guide to Internet-enhanced financial accounting courses.	U.S.A.	Internet	Enhances the understanding of the course and the cultivation of skills necessary for professional accountants.
<b>Distance Teaching methods</b>					
Stanley & Edwards	2005	Interactive multimedia teaching of accounting information systems (AIS) cycles: Student perceptions and views.	Australia	Interactive multimedia CD	Acceptance by students and positive impact on teaching the course.
Halabi et al.	2002	Accounting tele-teaching lectures: issues of interaction and performance.	Australia	Interactive television for distance learning	Students prefer the conventional way of teaching
Halabi	2005	Tele teaching accounting lectures across a multi campus: A student's perspective.	Australia	Distance learning with lectures	Students felt that the tele-teaching did not promote teacher-student interaction and prefer the conventional teaching. The performance of

					students showed no significant difference.
DeLange et al.	2003	Integrating a virtual learning environment into an introductory accounting course: Determinants of student motivation.	Australia	On line course using WebCT	The student satisfaction was directly related to the number of provided tools (on-line lectures, blackboards, assignment and evaluation work on-line, chat and video).
Dunbar	2004	Genesis of an online course.	U.S.A.	On line course using WebCT	50% of students were positive about the use of tools and the replacement of conventional teaching.
Marriott et al.	2004	Accounting undergraduates' changing use of ICT and their views on using the Internet in higher education—A research note.	U.K.	Various ICT tools & internet	The students were keen on using the tools; however, they do want to be supplementary teaching tools without replacing the conventional teaching.
Wells et al.	2008	Integrating a virtual learning environment into a second-year accounting course: determinants of overall student perception.	New Zealand	On line course using Blackboard	Positive views of students on the integration of the tool as a teaching alternative rather than complete replacement of the conventional teaching.
Basioudis & De Lange	2009	An assessment of the learning benefits of using	U.K.	Blackboard	The interaction of students with

		a Web-based Learning Environment when teaching accounting.			the tool positively affected their participation in class and their mental effort.
Tirovouzis	2006	The use of new technologies in teaching economics: The influence of the developmental model of open source code.	Greece	Virtual environment (infonomics)	Positive views for the tool. No significant performance difference between the experimental and the control group of students taught virtually and conventionally, respectively.
Sidiropoulos	2008	Design and development of surrounding net and asynchronous distance education with the possibility of individualized learning (an application in economics).	Greece	Online platform ADLSE.	Student views were overall, very positive. Students taught with the help of the platform performed better than those taught by more conventional means.
Koukoufiki	2009	Trends in Teaching Using ICT in Higher Education.	Greece	Online platform CoMPUs.	Positive impressions for the tool.
<b>Hybrid systems</b>					
Dowling et al.	2003	Do hybrid flexible delivery teaching methods improve accounting students' learning outcomes?	Australia	Combination of different media and face to face instruction.	Positive effect of the hybrid model.
Spathis	2004	Use of Information Technologies and Communication of Business Studies students.	Greece	ICT: word processing, processing tables, databases, internet and email, accounting packages.	Low use of ICT. Proposed increase in ICT courses.
Anderson &	2004	Low-income taxpayer	U.S.A.	Low-Income	"Internsgip"

Bauman		clinics as a form of service learning.		Taxpayer Clinics	increased student competency to prepare audits, communication and problem solving skills.
Still & Clayton	2004	Utilizing service-learning in accounting programs.	U.S.A.	Internships	Group participating in internships performed better in audits as compared to group that did not.
Barsky & Catanach	2005	Motivating student interest in accounting: A business planning approach to the introductory management accounting course.	U.S.A.	A case study in sequels, small case studies and a simulation business planning.	Enhance understanding of the subject.
Beaman et al.	2005.	The impact of training in financial modeling principles on the incidence of spreadsheet errors.	Australia	Creating a financial model and calculate the cost of it by using spreadsheet	No significant differences between the two groups, except that the experimental group made altogether, less qualitative and quantitative mistakes in the development of the computer program.
Crawford et al.	2011	SCAM: Design of a learning and teaching resource.	U.K.	SCAM Program (computing application - simulation, which uses real data from a supermarket chain in England)	The effectiveness of the tool is still under study. Positive preliminary findings.

## 5. Discussion and Conclusions

Despite that the conventional methods of teaching have been more or less similar around the world, the adaptation of teaching strategies and styles to different social, economical and educational contexts has been always an issue for consideration. The tremendous growth of technology and computer applications affected almost every aspect of everyday life, worldwide. This is also the case in the field of education; the latter has changed dramatically by endorsing applications that help students improve their written and verbal abilities as well as help them develop new skills that broaden their potentials.

The literature review presented in this paper shows that the process of learning in a virtual environment has contributed significantly towards a social change in higher education; this is achieved through the provision of new media allowing access to new knowledge, promoting dialogue among teachers and students and also, among students themselves (Donnelly & O'Rourke, 2007; Potter & Johnston, 2006; Zane & Muilenburg, 2000). In general, it is not an overstatement to claim that the internet has strongly affected education including the dynamics and speed of learning while electronic learning (e-learning) has also placed new challenges to the design of the relative curricula (Liaw & Huang, 2000; Livingston & Condie, 2006; Love & Fry, 2006).

The main methods of contemporary teaching include video watching and role playing, while students are encouraged to attend and participate in lectures via interactive whiteboards, too (Cottel & Millis, 1993; Bonner, 1999). Different functions of the virtual learning environment such as chat rooms and self-assessment encourage essential communication skills and interaction among members of the digital educational environment. Indeed, the application of technology creates a virtual environment that, according to Love & Fry (2006) and Potter & Johnston (2006), has the potential to motivate students by allowing mutual learning and facilitating cooperation.

The respective literature suggests the use of a plethora of instruments, both conventional and modern, for the teaching of accounting courses internationally. Technology of information and communication are the new dominant tools for teaching such courses, effectively. This is in line with Beattie et al. (1997) who for instance, argued for the importance of “in-depth learning” in any given academic subject as opposed to superficial knowledge or learning offered by different education providers, worldwide.

Traditional teaching methods including case studies, group quizzes, lectures and –more recently- collaborative teaching, homework, use of blackboard and –even more recently- computer programs and other techniques like the pause method, allow student participation in lectures while providing them with the opportunity to select their own learning process. Modern teaching methods, on the other hand, including

contemporary software programs, distance-learning and hybrid teaching methods aim for the same end.

It should be noted however that, students' background knowledge, academic performance and learning abilities need to be taken into consideration for the selection of the most suitable teaching method and combination of teaching applications (Bonner, 1999). By implication, teaching curricula and academic goals should be formed according to the needs, demands and ambitions of a given student population and educational context in order to strengthen students' motives and ensure active participation in the learning process.

In the field of accounting, a wide range of software programs could be applied, according to each academic subject's structure, goals and requirements. These programs may include quizzes, simulation games and multiple choice questions, which provide feedback and promote students' analytical skills and self-monitoring abilities. Bear in mind however, that such practices need to be implemented carefully, so that they do not lead to "coded" and superficial learning styles (Boyce, 1999).

Distance-learning programs in accounting may include interactive multimedia CDs containing case studies and tele-education via interactive television. Furthermore, distance-learning programs may provide virtual learning environment via the internet and interactive whiteboards, which have proven to be quite popular among students, although traditional teaching methods are still preferred by a great number of students (Dunbar, 2004). Indeed, it should be mentioned in this context, that students have been found to prefer traditional teaching and learning that facilitates student interaction and student-teacher interaction, despite that all students' exam performance in that particular study (see Halabi et al., 2002; Halabi, 2005) was satisfactory, irrespective of the learning method used.

Another popular distance learning application, especially among male students, is teaching through the use of Information and Communication Technologies (ICT). Research however, has also shown that students prefer ICT applications as a supplementary rather than the main teaching method (De lange et al., 2003). A similar method is the online Tool Blackboard, also preferred among students as an auxiliary strategy, which –according to them– should not completely replace traditional teaching (Wells et al., 2008).

Hybrid teaching models include both traditional face-to-face interaction among students and teachers and alternative teaching methods. They seem to be quite popular, especially among female students (Dowling et al., 2003). Such programs, which have been effectively applied in student populations are the Business Planning Model (Bersky & Catanach, 2005), which is based on case study simulations and the SCAM Accounting Program (Crawford et al., 2011) based on real company data. Other hybrid

teaching models applicable in the real business world are “Creating Financial Models and Calculation of costs by using Spread-sheet” (Beamen et al., 2005) and “Teaching Through the use of Low-Income Taxpayer Clinics” (Anderson & Bauman, 2004) that seem to be useful as secondary learning tools.

Assessing the effect of modern teaching methods in Greek universities, Spathis found that such methods are extremely popular among male students primarily and they should be better integrated in the teaching process. Koukoufiki (2009) found that an asynchronous e-learning platform of “Course Management Platform of Universities” was quite effective according to teachers and students, while Tyrovouzis (2006) found that the implementation of a virtual software environment called “infonomics” was widely accepted by students of Economics, too. However, the students’ exam performance did not seem to be significantly affected by the use of the former program, a finding that contradicts with the effectiveness of a virtual learning environment for Macroeconomics students (Sidiropoulos, 2008).

To conclude, it could be claimed that, although different studies have looked into student responses towards modern teaching tools and their effectiveness measured in terms of student performance in final exams, there are issues pertaining to such tools that are still unclear. It is noticeable that many students report preference for personalized teacher-centered teaching methods and suggest the use of the above modern teaching tools and practices as ancillary tools, only. In light of the above, it could be argued that modern teaching methods, strategies and tools should adopt and integrate Information and Communication Technologies on the premise that the latter are adapted to each student population’s interests, abilities and ambitions. Individual differences should always be taken into account while student-teacher interaction needs to be encouraged in all cases. By doing so, the learning process becomes more effective and interesting while students will be able to broaden their knowledge, develop key skills and competencies to remain competitive in the market place as well as meet industry demands for well trained, creative and productive employees.

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