TEACHING ACCOUNTING ETHICS: A PROBLEM-BASED LEARNING APPROACH

Miriam Gerstein
Brooklyn College

Esther Winter
Rutgers, The State University of New Jersey

Sarah Hertz
Empire State College

Key Words: Problem-based learning, ethics, collaborative learning, self-directed learning

JEL Classification(s): M41

Abstract

Research has shown problem-based learning (PBL) to be an effective learning method in a variety of ways. This paper discusses the merits of implementing PBL in college accounting classrooms to teach ethics effectively. This paper reviews literature on the use of PBL in business and non-business areas and discusses how these research findings can be used to adapt the PBL pedagogy to successfully inculcate ethics into the mindset of accounting students. We found that many of the skills imparted by the PBL process, such as flexible thinking, problem solving, self-directed learning, collaboration, and intrinsic motivation, are crucial to the acquisition of ethical values. Although PBL with regard to mature learners has been studied extensively and a few papers have discussed the merits of implementing PBL in the college accounting classroom, no research has been conducted to date that has focused specifically on how it can best be adapted to effectively teach ethics in the accounting classroom. By using PBL

to make the learning of business ethics more interesting and relevant to students, we educators hope to optimally influence and educate the next generation of accountants to make ethical decisions in their professional practices.

.

INTRODUCTION

When teaching an introductory accounting class, one of the authors of this article had the following experience. She devotes a substantial part of the first lecture to accounting ethics and continue to stress the importance of the ethical imperative to accounting practice throughout the term. In the course of a discussion of bank errors a few weeks into a recent semester, she mentioned a pertinent news item that had caught her attention. A bank error allowed an individual who had intended to withdraw a small sum from his bank to walk off with 100 times the intended amount. Rather than reporting the error, the person gave up his rented apartment, moved to another state, bought a condo and went on to spend the remaining cash. The news item she had seen reported the FBI catching up with him a few years after he had absconded with the money. A student in the back of the classroom raised his hand and said, "Boy was that guy dumb, why didn't he run with the money to Pakistan!" That student had the good fortune that her class consisted of ninety students and she did not yet know his name. But it did drive home to her the fact that her lecturing students on the importance of ethics had failed to inculcate them with a moral imperative and that a different pedagogical approach is urgently needed to instill this value into the minds and hearts of future accountants. Although the question of how to best teach morality in any venue has been an age old dilemma of mankind, this paper argues that the traditional lecture must be exchanged for a problem-based learning approach if we are to impress accounting students with the huge significance of the morality of their accounting activities and decisions. Such an approach would be far more effective in engaging the thoughts and

emotions of would-be accountants and achieving their buy-in into the moral pursuit of their profession.

Research has shown problem-based learning (PBL) to be an effective method of learning in many ways (Derry, Siegel, & Stampen, 2002; Dods, 1997; Gallagher & Stepien, 1996; Hmelo, 1998; Hmelo et al., 1995; Schmidt et al., 1996). But although PBL has been studied extensively with mature learners, and a few papers have discussed the merits of implementing PBL in college accounting classrooms (Dockter, 2012; Hansen, 2006; Milne & McConnell, 2001; Stanley & Marsden, 2012), no research has been conducted to date that has focused specifically on how it can be used effectively to teach ethics in the accounting classroom.

Researchers have argued that due to the many ideas and assumptions built into a typical business curriculum, students leave college with the pernicious notion that unethical activities and decisions are a *sine qua non* for success in business and will therefore act accordingly (Kumar, Borycki, Nonis & Yauger, 1991). This may be due in a large part to the emphasis on maximizing shareholder wealth (Cagle and Baucus, 2006; Friedman & Hertz, 2015; Gardiner, 2010; Korn 2013; Mangan, 2006). Yet others posit that ethics cannot be taught in the classroom (Altmyer, Yang, Schallenkamp, and DeBeaumont, 2011; MacDonald, 2007; Friedman, Fogel, and Friedman, 2005; Etzioni, 2002; Stape, 2002). Critics of business ethics education claim that it is very hard to change personal values and morals in a few class sessions (Mathiason, 1988; Ritter, 2006). We contend that ethics can be taught effectively in the college classroom by using a PBL approach and by giving students real-life scenarios and ethical dilemmas to consider. This paper will discuss the benefits of a problem-based learning method for the teaching of accounting and business ethics and show how such an approach can be successfully implemented in the accounting classroom.

PBL OVERVIEW

The constructivist theory of learning is grounded in the belief that learning is an active process of building meaning. A large body of research has shown that students build deeper understanding and are better able to use their knowledge when they are actively engaged in constructing their knowledge and building meaning (Boaler, 2008; Davis & Maher, 1996; Glaser, 1991; Harris & Alexander, 1998; Huntley, Rasmussen, Villarubi, Sangtong, & Fey, 2000; Riordan & Noyce, 2001). Grounded in constructivist principles, PBL is an experiential method of learning in which students collaboratively investigate and solve complex, real-world problems which are meaningful to them (Hmelo-Silver, 2004). These tasks are typically ill-structured and do not have a single solution which is correct. PBL is an active form of learning which promotes the development of lifelong learning skills (Torp & Sage, 1998). Students assume responsibility for their learning and develop learning strategies as they construct content knowledge (Collins, Brown, & Newman, 1989). The knowledge developed during PBL is flexible and transferable (Hmelo-Silver, 2004). PBL also has been found to improve knowledge retention, self-directed learning skills, interest in subject matter, and constructive, collaborative learning (Norman & Schmidt, 1992; Yew & Schmidt, 2009).

PBL allows students to learn by actively engaging in problem solving activities. The students learn to develop strategies as well as build on their content knowledge. The primary goals of PBL are to help students develop flexible knowledge, problem solving capability, critical reasoning skills, and collaboration skills as well as to cultivate intrinsic motivation through self-directed learning.

THEORETICAL FRAMEWORK AND EXTANT RESEARCH

Foundations of Problem-Based Learning

Hmelo-Silver and Barrows (2008) describe PBL as "an active learning method based on the use of complex, ill-structured problems as a stimulus for collaborative learning" (p. 55). In a PBL environment, students take responsibility for their learning and together with their peers keep abreast of their progress. Rooted in constructivist thought, PBL idealizes collaboration and self-directed learning. This is usually accomplished by having small groups of students work together under the guidance of a facilitator.

PBL is based on "four modern insights on learning: constructive, self-directed, collaborative and contextual learning" (Dolmans, De Grave, Wolfhagen, & Van der Vleuten, 2005). Constructive learning implies that students are actively engaged in the learning process, where they relate new information to previously acquired knowledge and construct interpretations based on individual experiences. Constructivism implies that knowledge "is a function of how the individual creates meaning from his or her own experiences" (Jonassen 1991, p. 10) and that knowledge is not abstract but rather situated in context and students create meaning from the personal experiences and interaction that they bring to the context (Ertmer & Newby, 1993). Self-directed learning theory emphasizes that students are active in the different stages of learning including planning, monitoring, and evaluating. Students set goals and devise strategies to best meet those goals (Ertmer, Newby, & MacDougall, 1996). They continuously monitor and reflect upon their progress in achieving their set goals (Hmelo-Silver, 2004) and then evaluate whether the process of achieving their goal has been successfully navigated and whether the outcome was favorable as well (Ertmer et al., 1996). According to Zimmerman (2002), students that demonstrate self-directed learning not only set goals, but plan and utilize their time accordingly. Motivation is a key aspect in self-regulated learning (Pintrich 1999). Collaboration entails sharing responsibility for the task and constructive interaction among peers to reach a mutually accepted conclusion (Dillenbourg, Baker, Blaye, and O'Malley,

1996) and distributes the cognitive load among group members (Hmelo-Silver, 2004). It also allows for the students to become "experts" in their particular area (Hmelo-Silver 2004).

Research has shown a strong correlation between self-regulatory and collaborative practices and academic achievement (Zimmerman, 1990, Webb, 1991) and that collaboration yields a positive effect on critical thinking skills and drives students to deeper analysis and higher order thinking (Hmelo-Silver 2004). A study performed by Van den Hurk, Dolmans, Wolfhagen, and van der Vleuten (2001) demonstrated higher achievement by students who had invested more into reporting their findings by writing up summaries and explaining their understanding of the concepts in great depth to their peers. PBL principles further emphasize that learning should take place in context, and that allowing students to approach content multiple times from a variety of perspectives and angles enhances the learning process and transfer of knowledge (Bransford and Schwartz 1999).

The PBL Tutorial Process

A PBL cycle is known as the PBL tutorial process (Hmelo-Silver, 2004). The process begins with the facilitator presenting a group of student with a problem scenario. The problem scenario provides a minimal amount of information upfront, requiring the students to either question the facilitator or conduct research to find out more about the situation (Barrows, 2000; Torp & Sage, 1998). The students analyze the problem in order to understand the problem and identify the given facts. By discussing the problem, students access prior knowledge, making it easier for them to process any new information that they learn (Schmidt, De Volder, De Grave, Moust, & Patel, 1989). Students then hypothesize about possible solutions and identify learning issues, or areas which need further study (Hmelo-Silver, 2004). Based on the identified learning issues, students develop action plans which they can divide between themselves to fill the gaps in their knowledge. To research the learning issues, students participate in self-directed

learning (SDL), where individual students take the initiative in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and implementing learning strategies and evaluating learning outcomes (Knowles, 1975). The students then regroup to share what they have learned and together attempt to solve the problem. Students check if their hypotheses were correct and reflect on what they have learned and how effective their strategies were in solving the problem. Reflection is an important component of PBL. Students reflect on their ideas, what they learned, the collaboration and SDL processes, and the strategies they used. The goal of reflection is to improve transfer, since reflection helps students connect their new learning to their prior knowledge, to abstract what they have learned, and to think about how it may apply to other problems. Throughout the PBL process, students keep track of facts, ideas, learning issues, and action plans on a whiteboard, creating columns for each category in order to make their thinking explicit (Hmelo-Silver, 2004).

The first phase in a PBL session is the "problem analysis phase" where students in small groups analyze the problem, generate conjectures, hypotheses or explanations, and pinpoint any learning issues they may have that would require additional research. Once these ideas have been identified, students divide the issues between them and disband for the "self-directed learning" phase to tackle the concepts that they are unsure about and to work to further their understanding. They subsequently regroup in what is called the "reporting phase" to share their findings with their peers and possibly revise their original hypothesis (Barrows, 1988, and Yew and Schmidt, 2009).

During these phases, students often use whiteboards on which to display and articulate their hypotheses, goals, and ideas. Through this medium the students are able to map out what they know, what they are attempting to discover, and hypotheses and potential solutions to the problem. Upon reconvening after having worked independently on the problem for some time, they will use

their new-found understanding of the problem to possibly alter their hypotheses and come up with new areas to explore which they would also delineate on the whiteboard. This display also serves as a springboard for the facilitator to question the students about what they know and what resources or approach will be used to arrive at a solution. As the facilitator encourages more thoughts on the matter, the students will continue to cover the whiteboard with additional diagrams and explanations (Hmelo-Silver 2004 and 2008). This iterative reflection is a critical component of the PBL approach (Kolodner et al., 2003).

The Role of the Facilitator

The facilitator in a PBL session serves as a role model and guide for effective questions, encourages student questions and collaboration, spurs the students to think more deeply, and keeps tabs on their progress. The PBL setting "creates a cognitive apprenticeship that acculturates students into thinking practices" (Hmelo Silver and Barrows 2006, p. 35). The facilitator models strategies of thinking about the problem, helps make students ideas visible, and aids in the creation of classroom culture and norms where individuals collaborate, justify their solutions, reject or validate other's ideas and eventually reach a consensus with their peers on the solution to the problem. Students pool their skills and expertise, decide what they need to learn, arrive at an approach to the problem while the facilitator encourages them to justify their solutions through questioning. Through discourse, questioning, and problem solving, students build knowledge, and as that occurs, the role of the facilitator lessens.

Goals of PBL

The PBL approach to learning was developed in order to promote five learning goals (Barrows & Kelson, 1995). First, PBL aims to encourage *flexible thinking* by requiring students to understand the principles of multiple domains of knowledge so that they can synthesize them in applying them to various

situations. Second, it aims to promote *problem solving* and metacognitive skills by encouraging students to use strategic reasoning and assess their progress in planning and achieving their goals. Third, PBL was designed to develop *self-directed learning* (SDL) skills by requiring students to recognize the gaps in their knowledge, identify what they need to learn, decide how to learn it, and evaluate their learning success. Fourth, PBL aims to improve *collaboration skills*. During PBL, students collaborate in small groups and must identify common ground, solve any disagreements they may have, decide on actions the group should take, share their findings with each other, and agree on their findings. These collaboration skills are foundational for good teamwork (Barron, 2000). Finally, PBL seeks to promote *intrinsic motivation* by generating interest in the subject matter and allowing students to achieve satisfaction with their work by making their success dependent on their individual understanding and performance (Ames, 1992; Bandura, 1997; Biggs, 1985; Dweck, 1991; Ramsden, 1992).

Developing Flexible Thinking. Learning is situated in context (Collins et al., 1989), and it is often difficult for learners to transfer their knowledge from one context to another (Bransford & Schwartz, 1999). To improve the flexibility with which learners can transfer knowledge that they learn in one context to a new context, researchers suggest that learning should take place in meaningful contexts and that concepts should be revisited multiple times from different perspectives. Knowledge gained from multiple contexts can be used with more flexibility since learners identify and abstract the critical features of each problem (Bransford & Schwartz, 1999; Ertmer & Newby, 1993).

Developing Problem Solving Skills. Research has shown that several conditions enhance the development of problem-solving skills (Francisco & Maher, 2005). Although even rudimentary accounting ideas can be challenging for students and encourage the development of problem solving skills, presenting complex tasks without first scaffolding the task with simpler tasks

can further encourage problem solving. This is because students need to make sense of the problem by decomposing it into its parts on their own, which leads them to build more durable understanding. Instead of providing scaffolding, students can be supported in overcoming cognitive challenges by working on a strand of related tasks and gaining understanding about one task through thinking about the problem in another related context. Furthermore, granting students ownership over their solutions and ideas, encouraging them to justify their solutions in order to convince others of their solutions, and allowing them to collaborate with each other to think of and refine ideas, all promote the development of problem solving skills and meaningful understanding.

Developing Self-Directed Learning Skills. Self-directed learning occurs when learners take part in *planning*, *monitoring*, and *evaluating* their learning (Dolmans, De Grave, Wolfhagen, & Van Der Vlueuten, 2005). In planning their learning, learners identify what needs to be learned and how they will accomplish their goals. Students monitor their learning by evaluating their learning and calculating what still needs to be learned. At the end of the learning process, students evaluate the strategies they used and the content they have learned. In order for self-directed learning to be successful, learners must be motivated. Additionally, tasks must take into account learners' prior knowledge so that learners can plan their learning goals using their understanding of the situation based on knowledge they have already acquired.

Collaboration. Collaboration is a foundation of PBL which enables group members to solve problems that may be too hard for any one member to solve alone (Pea, 1993; Salomon, 1993). Successful collaboration should include the involvement of all members in the interaction and members should all be responsible for and work towards the same goal. Students learn by asking and answering questions, by explaining their thoughts to each other, and by linking new knowledge to previous knowledge. It is

important for group members to prepare independently before reporting to the group and to report extensively to other members (Van den Hurk, Dolmans, Wolfhagen, Muijtjens, & Van der Vleuten, 1999; Van den Hurk, Dolmans, Wolfhagen, & Van der Vleuten, 2001). Research has also shown that learning is enhanced through collaboration in which members elaborately verbalize their thinking (Van der Linden, Erkens, Schmidt, & Renshaw, 2000). Explaining concepts to other group members and engaging in group discussions improves understanding by prompting cognitive conflict which leads to conceptual change (De Grave, Boshuizen, & Schmidt, 1996). Research has shown that PBL students collaborate in order to provide explanations (Hmelo-Silver, 2002). Small group collaboration in the framework of PBL has been shown to promote higher order thinking and the joint construction of knowledge (Blumenfeld, Marx, Soloway, & Krajcik, 1996; Brown, 1994).

Intrinsic Motivation. In order to maintain intrinsic motivation, PBL facilitators must provide problems which are interesting, meaningful, and which strike a good balance between being stimulating without being overly challenging (Ferrari & Mahalingham, 1998; Leontiv, 1978).

RESEARCH OBJECTIVE

Research to Date in Non-business Areas

Research conducted with medical, undergraduate, and gifted high school students has shown that PBL students gain flexible knowledge which they are more accurately able to apply to problem solving contexts and are better able to retain than comparison students in regular classes (Derry et al., 2002; Dods, 1997; Gallagher & Stepien, 1996; Schmidt et al., 1996). PBL students are also better able to generate hypotheses and explanations and transfer knowledge to new problems (Hmelo, 1998). Undergraduates in a PBL program were also found to have

increased content knowledge and problem solving skills (Hmelo et al., 1995).

Hung, Jonassen, and Liu (2008) wrote a comprehensive book chapter on the review of research on PBL. Calling it "perhaps the most innovative instructional method conceived in the history of education" (p. 486), Hung et al. review the history of PBL from the first implementation in medical history in the 1950's to the current and widespread implementation of PBL in higher education and K-12 education. Hung et al. assert that the most "consistent finding from PBL research is the superiority of PBL-trained learners in life-long learning" (p. 488). They emphasize that PBL has theoretical underpinnings in situated learning which promotes the idea that learning is best accomplished when it is placed in authentic tasks. In addition, the knowledge built when solving the problems resulted in rich epistemological and phenomenological knowledge. Hung et al. acknowledge that PBL research in non-medical fields is relatively scarce compared to PBL research in the field of medicine.

Goldie (2000) reports that there has been an increase in the implementation of PBL in medical ethics education. According to Parker (1995), PBL is very suitable for ethical inquiry since ethics, even in its more abstract forms, is based on real-life situations and dilemmas. Parker stresses that PBL recognizes uncertainty and therefore is compatible with the discipline of ethics which by its very nature is predicated upon dilemmas, doubts, and uncertainty. In addition, PBL is also an appropriate means of learning about ethics since it includes group discussion which allows for differing perspectives and stimulates curiosity and research which is essential in the development of reflective practitioners.

Throughout medical ethics literature there is the consensus that ethics should be integrated horizontally and vertically in the medical curriculum (Miles, Lane, Bickel, Walker, & Cassel, 1989; Fox, Arnold & Brody, 1995). Fox et al. state that the "purpose of integration is to demonstrate the ubiquitous nature of ethical issues and to convey the message that competence in medical ethics is

central to being a doctor" (p. 764). Similarly, accounting students must be cognizant that business ethics is central to being a good accountant.

Extant PBL Research in Accounting

In a theoretical paper, Johnstone and Biggs (1998) posit that PBL can be implemented only after students have acquired a basic working knowledge of accounting. In another theoretical paper on PBL and its implementation in accounting education, Milne and McConnell (2001) acknowledge that accounting educators may have to overcome challenges to successfully implement PBL in the accounting classroom but posit that it does have potential to "bridge the gap between tertiary education and life as professional" and therefore "seems to be too great an opportunity not to experiment with" (p. 78).

Breton (1999) emphasizes the scarcity of PBL literature in accounting up to the date of his publication. In an empirical study, Breton compares traditional teaching with PBL in an accounting classroom. Over a four year period Breton taught half his student his accounting theory classes using a traditional approach and half his students using PBL. He found that the PBL group's scores exceeded the traditional group. He also found that the PBL students believed that the knowledge that they had gained would be long lasting. This is consistent with Stepien and Gallagher (1993) who posit that through collaboration students can expand their knowledge base and store their new-found knowledge in long term memory which promotes transfer to new problems. Breton emphasizes that it is essential for students not only to learn from textbooks but to learn to use other resources before entering the profession. He acknowledges that PBL affords students the opportunity to use tools that would be important to them beyond college rather than spoon feed them limited amounts information with the risk that such information may become irrelevant or even obsolete in the future.

In another empirical study, Heagy and Lehman (2005) studied the effects of the implementation of PBL in a graduate and undergraduate Accounting Information System (AIS). They found that PBL did not have a negative effect on the amount of knowledge acquired and did have a positive effect on student satisfaction.

Hansen (2006) discusses how end-of-chapter problems in accounting can be converted to a PBL problem. He points out that if questions are structured as a real-world problem, they can serve to stimulate student inquiry and team work as students work to identify issues and research the underlying principles and concepts. He stresses that although PBL has been used in many medical schools and colleges, PBL has not been used that extensively in accounting education. He cites the Accounting Education Change Commission (AECC) of 1990 that stated that

Students should be taught the skills and strategies that help them learn throughout their lifetimes. Students must be active participants in the learning process, not passive recipients of information. They should identify and solve unstructured problems that require use of multiple information sources. Learning by doing should be emphasized. Working in groups should be encouraged (AECC, 1990, p. 309).

Duch (2001) categorizes problems as either Level 1, 2 or 3. Level 1 refers to end-of-chapter questions that simply test students' understanding of the chapter's content and concepts. Level 2 adds in a storyline to make it more appealing but the necessary information and concepts to solve the questions are still embedded in the chapter. Level 3 questions would be used in a PBL environment. These real-world questions would require analysis, synthesis, and evaluation. Students would need to research and investigate the topic and would not be able to rely solely on information provided to them in the textbook's chapter. Such problems would require the students to make judgments and would often have more than one acceptable answer.

Dockter (2012) extols the advantages of using PBL in the accounting classroom. He cites examples of cap-stone courses from many colleges and universities that help students apply what they have learned in previous courses in accounting and related disciplines. Handal, Wood, and Muchatuta (2011) describe PBL as being an effective means of helping students apply their skills while concurrently widening their knowledge base.

Hansen (2006) writes that according to Duch, Groh, and Allen (2001) the goals of PBL are:

to help students (a) think critically, analyze, and solve complex real-world problems;

(b) find, evaluate, and use learning resources;

(c) work cooperatively in teams;

(d) demonstrate effective communication skills; and

(e) use content knowledge and intellectual skills to become continual learners.

Hansen describes a PBL approach integrated into accounting where students approach a problem in groups, identify issues and concepts that they are unfamiliar with, ask questions and use resources available to them to research the problem. Students then discuss their findings with their classmates. Hansen asserts that student work should be critiqued and reviewed in a manner similar to how a senior auditor would scrutinize a staff auditor's documentation. Students should be questioned as to why they chose a particular approach to solve the problem and ways that they could have enhanced the process. Hansen concludes that PBL "can foster students to think critically and solve complex problems, find and use learning resources, work in teams, use effective communication skills, and become continual learners" (p. 223).

Stanley and Marsden (2012) describe the outcomes of a university capstone course developed to include aspects of PBL. Students worked in groups on solving unstructured real-world accounting problems. They found that one of the most significant benefits of implementing PBL was the increase in student

questioning which is often underemphasized in accounting education. Their finding confirmed those of Tan (2003) who asserts that PBL enriches students' learning experiences by introducing dialogue and collaboration, inquiry and self-directed learning. Stanley et al. do acknowledge that PBL does require a greater investment of time which often is not feasible in some accounting programs. They also emphasize the need for support from all levels of the college administration.

Current Teaching Practices in Ethics Education

Some business programs offer courses dedicated solely to the subject of business ethics but these courses are often elective rather than required courses. Others incorporate ethics education throughout the curriculum while still others relegate the responsibility for teaching ethics to the philosophy department. (McWilliams & Nahavandi, 2006; McDonald 2004; Sims and Brinkman, 2003) The typical business ethics course is primarily a blend of lecture and case studies, which usually include the analysis of major ethical scandals such as Enron and WorldCom.

Cagle et al. (2006) encourage the integration of ethics in other courses and specifically advocate for the students to research and present their own cases on ethical scandals. Laditka et al. (2006) describe how their students developed their own cases drawn from personal work experience and shared those experiences with their classmates. They found this to be an effective way of engaging students in ethical discussions. (This of course would only be effective if the student body had prior work experience to share.).

Baetz and Sharp (2004) found that when ethics is embedded into core business courses rather than taught as a separate course, faculty often do not have sufficient training to teach the subject effectively. Baetz et al. analyzed case studies used in such curricula and found that although they cover a large range of issues and have potential to stimulate rich discussion, they are covered very superficially. Moreover, there is little guidance

provided with the material and therefore faculty who are inexperienced in teaching ethics may not be able to use it effectively.

Friedman and Gerstein (2015) posit that teaching about the causes and far-reaching consequences of major disasters can be an effective tool to properly teach and convey ethics. By presenting ethical dilemmas that will promote ethical discourse, students will examine the terrible consequences and the impact on multiple stakeholders that can occur when companies focus merely on their bottom line. Students will become cognizant of the fact that decisions made by accountants can result in the loss of jobs, pensions, or homes of multitudes.

Falkenberg and Woiceshyn, (2008) write how the current business ethics cases that are available are often short scenarios that are brought to emphasize a specific principle and therefore do not reflect accurately the complexity of actual business decisions. Although some cases are written in a realistic manner, they are often written from the perspective of a CEO or other executive. Falkenberg et al. posit that although they are well written, many students will not rise to such positions on the corporate ladder and therefore more cases should be written to reflect the actual scenarios that might be faced by mid-level managers or other company personnel. Falkenberg et al. also claim that business ethics cases are often oversimplified, so that students are led to the 'right' answer. They contend that case studies often identify the wrongdoers and blame them for the effects of the fraud rather than allowing students to analyze the reasons for a specific decision. Some case studies may be lengthy but provide many insignificant details that do not have any implications for ethics. Falkenberg et al. also posit that most case studies available are structured to develop deductive reasoning skills rather than inductive and critical reasoning skills.

Some educators believe that the goal of ethics education is to teach moral reasoning. Others say that the objective is to provide an ethical framework for students. Other educators say that

the goal of ethics education is to raise awareness of ethical issues (Falkenberg et al., 2008). According to Rossouw (2002) it is essential that students gain three competencies through their ethics studies: a) Moral awareness b) moral understanding c) moral reasoning. Moral awareness is defined as "developing an awareness of the ethical dimensions of business." Moral understanding means "acquiring the intellectual tools to get a handle on ethical matters in business." Moral reasoning connotes: "cultivating the ability to compare, weigh, and evaluate different ethical perspectives" (p. 412). We believe that the types of exercises currently used to teach and promote ethics are insufficient. Although it is beneficial for students to review cases of fraud and discuss their implications, students need to develop additional competencies in order to deal with ethical uncertainty that may come their way in the future. By implementing PBL to teach ethics, students can gain the three competencies discussed by Rossouw that may not be gained through the typical blend of lecture and case study.

Applying PBL to Accounting Ethics

AACSB in the 'Assurance of Learning' standards require learning experiences in ethical understanding and reasoning in undergraduate programs and social and ethical responsibilities in society and organizations in graduate programs (AACSB International 2013). Further they require that programs demonstrate that instructors are using active learning techniques to effectively engage students in learning.

Many aspects of the experiential method of PBL as applied to business ethics can help support the development of ethical and moral awareness, understanding, and reasoning. Experiential learning can help students understand ethical situations they might face in the workplace (Brinkmann and Sims, 2001). Laditka and Houck (2006) posit that the classroom environment is a safe place for students to "evaluate their own value systems" (p. 158) and discuss questions and conflicts that they would possibly feel

uncomfortable discussing with work colleagues. Thus, teachers can play an important role in creating a safe classroom environment where students' opinions are valued and students feel comfortable sharing their questions (Sims, 2002).

After being introduced to the problem, PBL students analyze the problem, hypothesize about possible solutions, and create action plans. By working on realistic problems, students are encouraged to decontextualize and contextualize problem features, to use accounting knowledge and ethical awareness to solve everyday problems, and to use appropriate tools to help them work on the problem. After working on the problem, PBL students collaborate and share their ideas with others. The reflection process may encourage PBL students to develop habituation of finding areas of ethical uncertainty and learning how to share their ethical dilemmas with peers or colleagues. Thus, the PBL tutorial process is a valuable method in promoting students' ethical awareness and requiring students to verbalize thorny dilemmas that may arise in accounting practice.

Need for Further Research

Little research has investigated how PBL can be successfully implemented with accounting college students, particularly in the domain of ethics. More research is needed to study what factors contribute towards the success of PBL, how implementation issues can be handled, and when self-directed learning is effective. Given the recognized benefits of the PBL approach and the potential value of implementing PBL-based curricula in college accounting programs, research is needed to investigate the effects of PBL in teaching ethics to college accounting students. However, poor implementation of PBL hinders constructive, collaborative learning (Dolman et al., 2005), so it is crucial to consider professional development as an integral component of PBL research. Therefore, this paper proposes that any study of the effects of PBL instruction on the teaching of ethics to college accounting students must be coupled with

professional development interventions. Further research is needed to answer the following research questions.

1. To what extent can accounting students participate in the PBL tutorial process to raise ethical awareness?
2. To what extent are the goals of PBL achieved with college accounting students?
3. What is the effect of the inclusion of PBL techniques on accounting students learning of ethics?
4. To what extent are students who participate in PBL proficient in ethics standards and the AICPA Code of Professional Conduct?
5. How do differences in PBL implementation affect students' proficiency?
6. How should professional development be designed to prepare teachers to institute the most effective aspects of PBL into their teaching techniques?

Creating Tasks. Arts, Gijselaers, and Segers (2002) found that learning outcomes for PBL groups who worked on tasks that were ill-structured, realistic, and complex had enhanced learning outcomes compared to standard PBL groups. Tasks that are ill-structured encourage the development of more than one interpretation and discussion about multiple interpretations and their implications. Gijselaers & Schmidt (1990) found that the quality of the problem is a crucial component in the success of PBL.

In order to implement PBL as an effective means of teaching business ethics, strands of tasks need to be created based on the PBL principles of task design. The tasks should either be new or adapted from those described by previous research. The tasks should be ill-structured, complex, open-ended, and should have more than one possible solution path in order to promote flexible thinking, motivate and challenge students to build new knowledge, and elicit argumentation, justification, and conjecture (Barrows & Kelson, 1995). It is important that they be realistic, meaningful, and interesting for college students, depicting

situations that elicit explanation, so that students are intrinsically motivated to solve them. The tasks will require students to use accounting knowledge, reasoning skills, and ethical awareness in order to solve them. The same ethical concepts should be revisited multiple times in multiple forms throughout different problem contexts, building on previous knowledge and requiring students to extend their knowledge in order to solve the problem. This will enable students to connect new knowledge to prior knowledge. Additionally, when possible, problems should be multidisciplinary so that students are encouraged to connect their knowledge from multiple domains, promoting the construction of flexible knowledge (Derry et al., 2002; Dolmans et al. 2005; Hmelo-Silver, 2004).

Facilitating PBL in the Ethics Classroom. The role of the teacher in a PBL classroom is different than the traditional role of a teacher (Barrows, 1998; De Grave, Dolmans, & van der Vleuten, 1999; Hmelo-Silver, 2004). Instead of transmitting knowledge, the teacher acts as a facilitator, guiding students through the learning process and monitoring their progress in order to help them advance through the stages of PBL. The teacher also models learning strategies, helping students develop problem solving skills. Using open-ended questioning techniques, the teacher encourages students to make their thinking explicit by asking them to justify and elaborate on their thinking about ethical dilemmas. To ensure successful collaboration, the teacher sees to it that all students are involved in all stages of the process. The teacher also encourages students to engage in reflection. Over time, as learners become more experienced, they may adopt the facilitator's scaffolding roles.

PBL was designed for small groups of 7 or 8 students (Kolodner et al., 2003). In large classrooms where there are multiple small groups with only one or two teachers to act as facilitators, Hmelo-Silver (2000) advocates that the teacher adopt a *wandering* facilitation model, where the facilitator circulates among the groups by rotating between groups and assessing

progress from students' written work. Additionally, it is beneficial for teachers to conduct whole-class discussions in addition to facilitating group work to ensure that all groups stay on track (Kolodner et al., 2003). The facilitator can thus listen to the students discussing the ethical dilemmas involved in the problem and use questioning to guide students to deeper thinking and to make their thinking more explicit.

An integral role of the teacher in PBL is to facilitate collaboration. In a large classroom, the teacher may not be able to facilitate such collaboration effectively. Additionally, the facilitator acts as the primary motivator of reflection. When the teacher is unable to devote the time needed for each group's reflection process, students should instead be encouraged to use journals or diaries for reflection (Hmelo-Silver, 2000; Puntambekar & Kolodner, 1998). Such PBL pedagogy will equip students to confront and morally resolve real-life ethical dilemmas in their future work by training them to work out ethical uncertainties in collaboration with their colleagues.

Research has found that when implementing PBL with students who have low levels of prior knowledge, it is important for facilitators to have expert content knowledge (Schmidt, 1994). Likewise, when students are not productively engaged in PBL, is it important for facilitators to intervene more closely (Dolmans, Wolfhagen, Hoogenboom, van der Vleuten, 1999). Students who have no or little prior experience with the PBL process may not be prepared to plan efficiently to solve a large problem or to apply their prior knowledge to the given problem, so they are in greater need of scaffolding in these areas as well (Kolodner, et al., 2003). Additionally, Kolodner et al. found that teachers needed direction in order to allocate sufficient time for discussion of what had been learned. Thus when implementing PBL to teach business ethics, it is vital to provide guidance to both students and facilitators, who are often unfamiliar with the PBL process, to ensure that students will gain as much as possible from such sessions.

Implementation. When implementing PBL in the college accounting classroom, the students should be arranged in small groups. After a task has been presented, students will collaboratively analyze the problem to ensure that they understand it and can identify its pertinent features. They will discuss what they know and what they have to figure out. They will then create initial hypotheses about possible solutions and plan methods and strategies for solving the problem. Students will track the identified facts, their ideas, and strategy plans. Students in each group will collaborate with each other throughout the process and agree on solutions, recording their solutions as they progress. Once the groups have agreed on their solutions, the teachers will conduct a whole class sharing session in which students will share their group's solutions with the whole class and discuss them. The teachers will then lead the class in a reflection process, discussing the accuracy of their initial hypotheses, their strategies in solving the problem, and the ideas that they have learned. They will discuss which strategies worked and which did not. This process will support students in connecting their new knowledge to prior knowledge, to abstract what they have learned, and to think about how the problem may connect to other problems. Students will record their reflections in order to track the success and outcomes of their strategies. Additionally, online forums can be created so that students can reflect on their thought processes and decisions after the session is over. The teachers or facilitators will also be able to discuss the session in the online forum and think about ways in which the sessions can be improved in the future.

Summary: Supporting the Goals and Process of PBL. Interventions can be created to promote the goals of PBL by creating ethics tasks based on the principles of PBL task design and by training teachers to use the PBL tutorial process in the classroom. Task strand can be developed to support many of the goals of PBL learning. By incorporating fundamental concepts multiple times throughout the strand and enabling the use of multiple solution paths, the tasks will encourage the development

of *flexible learning*. The tasks will be ill-structured, complex, and open-end, promoting the development of reasoning and *problem solving* skills. To encourage *intrinsic motivation*, the tasks will also be realistic and meaningful. In addition the task strands will help promote many aspects of the PBL *self-directed learning* process, such as planning, conjecture, *collaborative problem solving*, and reflection. These vital skills will be beneficial to students as they enter the workplace and are faced with ethical dilemmas. They will have the necessary skills to research the problem, collaborate with peers and others in the position to provide guidance, and use creativity in dealing with uncertainty in their professional work.

Coupled with task strands, professional development interventions can be implemented that will train teachers to facilitate the PBL process, thereby enabling them to better achieve the goals of PBL with their students. Teachers will learn effective questioning techniques to elicit student reasoning, argumentation, and justification and to promote *collaboration*. The intervention will also help teachers learn to scaffold *problem solving and self-directed learning skills* and to guide students in *collaboration* and reflection. Additionally, professional development can focus on improving teachers' understanding of content knowledge so they are better equipped to recognize and support student learning.

The design of the classroom implementation embodies the PBL tutorial process model. Students will engage in *self-directed collaborative learning*, working on tasks that develop critical reasoning and *problem solving skills* and support the construction of *flexible knowledge*. Since the process will reward individual understanding and performance and because the tasks will be meaningful, *intrinsic motivation* will be bolstered.

CONCLUSION

Many aspects of the experiential method of PBL as applied to business ethics can help support the development of ethical and moral awareness, understanding, and reasoning. Many of the skills

imparted by the PBL process, such as flexible thinking, problem solving, self-directed learning, collaboration, and intrinsic motivation, are crucial to the acquisition of ethical values. Thus, the PBL tutorial process is a valuable method in promoting students' ethical awareness and requiring students to grapple with and discuss with their peers ethical dilemmas that may arise in accounting practice.

One of the authors generally begins her introductory financial accounting class by asking "What is accounting?" One of her students answered in all seriousness, "To make the company's books look as good as possible." This paper argues that implementing PBL in the teaching of accounting will go a long way towards inculcating ethical awareness in accounting students and serve to stimulate the "moral imagination" (Pamental, 1989). By making the learning of business ethics more interesting and relevant to students, the PBL approach holds out the promise that we can produce accountants who are cognizant of the far-reaching effects of their decisions and who factor morality into their accounting practices.

REFERENCES

Accounting Education Change Commission. (1990). Objectives of education for accountants: Position statement number one. *Issues in Accounting Education*, 5(2) 307–312.

Altmyer, D., Yang, S., Schallenkamp, K., and DeBeaumont, R. (2011). Student ethical awareness and business program matriculation: Evidence from the U.S. *Business Education and Administration*, 3(1), 41-49.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of educational psychology*, *84*(3), 261.

Arts, J. A., Gijselaers, W. H., & Segers, M. S. (2002). Cognitive effects of an authentic computer-supported, problem-based learning environment. *Instructional Science*, *30*(6), 465-

495.Bandura, A. (1997). Self-efficacy: The exercise of control. Freeman, New York.

Baetz, M. C., & Sharp, D. J. (2004). Integrating ethics content into the core business curriculum: Do core teaching materials do the job? *Journal of Business Ethics*, *51*(1), 53-62.

Barron, B. (2000). Achieving coordination in collaborative problem-solving groups. *The Journal of the Learning Sciences*, *9*(4), 403-436.

Barrows, H. S. (1988). The tutorial process. Springfield Illinois: Southern Illinois University School of Medicine

Barrows, H. S. (1994). Practice-based Learning: Problem-based Learning Applied to Medical Education. Southern Illinois University, School of Medicine, PO Box 19230, Springfield, IL 62794-9230.

Barrows, H. (1996). Problem-based learning in medicine and beyond: A brief overview. New Directions for Teaching and Learning 68(3).

Barrows, H., and Kelson, A. C. (1995). *Problem-Based Learning in Secondary Education and the Problem-Based Learning Institute* (Monograph 1), Problem-Based Learning Institute, Springfield, IL.

Biggs, J. B. (1985). The role of metalearning in study processes. *British journal of educational psychology*, *55*(3), 185-212.

Blumenfeld, P. C., Marx, R. W., Soloway, E., & Krajcik, J. (1996). Learning with peers: From small group cooperation to collaborative communities. *Educational researcher*, 37-40.

Boaler, J. (2008). When politics took the place of inquiry: A response to the National Mathematics Advisory Panel's review of instructional practices. *Educational Researcher*, *37*(9), 588-594.

Bransford, J. D., & Schwartz, D. L. (1999). Rethinking transfer: A simple proposal with multiple implications. *Review of research in education*, 61-100.

Brinkmann, J., & Sims, R. R. (2001). Stakeholder-sensitive business ethics teaching. *Teaching Business Ethics*, *5*(2), 171-193.

Brown, A. L. (1994). The advancement of learning. *Educational researcher*, 4-12.

Cagle, J. A., & Baucus, M. S. (2006). Case studies of ethics scandals: Effects on ethical perceptions of finance students. *Journal of Business Ethics*, *64*(3), 213-229.

Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. *Knowing, learning, and instruction: Essays in honor of Robert Glaser*, *487*.

Davis, R. B. & Maher, C. A. (1996). A new view of the goals and means for school mathematics. In M. C. Pugach & C. L. Warger (Eds.), *Curriculum Trends, Special Education, and Reform: Refocusing the Conversation.*

Derry, S. J., Siegel, M., & Stampen, J. (2002). The STEP system for collaborative case-based teacher education: Design, evaluation & future directions. In *Proceedings of the Conference on Computer Support for Collaborative Learning: Foundations for a CSCL Community* (pp. 209-216). International Society of the Learning Sciences.

De Grave, W. S., Boshuizen, H. P. A., & Schmidt, H. G. (1996). Problem based learning: Cognitive and metacognitive processes during problem analysis. *Instructional science*, *24*(5), 321-341.

De Grave, W. S., Dolmans, D. H., & Van Der Vleuten, C. P. (1999). Profiles of effective tutors in problem-based learning: scaffolding student learning. *Medical Education*, *33*(12), 901-906.

Dillenbourg, P., Baker, M. J., Blaye, A., & O'Malley, C. (1995). The evolution of research on collaborative learning. *Learning in Humans and Machine: Towards an interdisciplinary learning science*, 189-211.

Dockter, D. L. (2012). Problem-Based Learning in Accounting. *American Journal of Business Education (AJBE)*, *5*(5), 547-554.

Dods, R. F. (1997). An Action Research Study of the Effectiveness of Problem-Based Learning in Promoting the Acquisition and Retention of Knowledge. *Journal for the Education of the Gifted*, *20*(4), 423-37.

Dolmans, D. H., De Grave, W., Wolfhagen, I. H., & Van Der Vleuten, C. P. (2005). Problem-based learning: Future challenges for educational practice and research. *Medical education*, *39*(7), 732-741.

Dolmans, D. H., Wolfhagen, I. H., Hoogenboom, R. J., & van der Vleuten, C. P. (1999). Is Tutor performance dependent on the tutorial group's productivity? Toward further resolving of inconsistencies in tutor performance. *Teaching and Learning in Medicine*, *11*(4), 186-191.

Duch, B. (2001). Writing problems for deeper understanding. In B. Duch, S. Groh, & D. Allen (Eds.), The power of problem-based learning (pp. 47–53). Sterling, VA: Stylus Publishing.

Duch, B., Groh, S., & Allen, D. (2001). Why problem-based learning? In B. Duch, S. Groh, & D. Allen (Eds.), *The power of problem-based learning* (pp. 3–11). Sterling, VA: Stylus Publishing

Dweck, C. S. (1991, January). Self-theories and goals: Their role in motivation, personality, and development. In *Nebraska symposium on motivation* (Vol. 38, No. 3, pp. 199-235). Lincoln, NE: University of Nebraska Press.

Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance improvement quarterly*, *6*(4), 50-72.

Ertmer, P. A., Newby, T. J., & MacDougall, M. (1996). Students' responses and approaches to case-based instruction: The role of reflective self-regulation. *American Educational Research Journal*, *33*(3), 719-752.

Etzioni, A. (2002). When it comes to ethics, B-schools get an F. *The Washington Post*, *4*(August 4).

Falkenberg, L., & Woiceshyn, J. (2008). Enhancing business ethics: Using cases to teach moral reasoning. *Journal of Business Ethics*, *79*(3), 213-217

Ferrari, M., & Mahalingam, R. (1998). Personal cognitive development and its implications for teaching and learning. *Educational Psychologist*, *33*(1), 35-44.

Fox, E. Arnold, R.M., Brody, B. Medical Ethics Education. Past, Present, Future. Acad Med 70: 761-9.

Francisco, J. M., & Maher, C. A. (2005). Conditions for promoting reasoning in problem solving: Insights from a longitudinal study. *The Journal of Mathematical Behavior*, *24*(3), 361-372.

Friedman, H. H., Fogel, J., and Friedman, L. W. (2005). Student perceptions of the ethics of professors. *Electronic Journal of Business Ethics & Organization Studies,* 10(2), 10-15.

Friedman, H.H., Gerstein, M. (2015) Using Disasters to Teach Ethics in Accounting. Manuscript submitted for publication.

Friedman, H.H. & Hertz, S. (2015) Why spirituality belongs in the accounting and finance curricula. *Journal of Accounting and Finance*, 15(5).

Gallagher, S. A., & Stepien, W. J. (1996). Content acquisition in problem-based learning: Depth versus breadth in American studies. *Journal for the Education of the Gifted*, *19*(3), 257-275.

Gardiner, B. (2010, April 15). Emphasis on ethics. *Wall Street Journal*. Retrieved from http://online.wsj.com/article/SB10001424052702304168004575178410786321340.html

Gijselaers, W. H., & Schmidt, H. G. (1990). Development and evaluation of a causal model of problem-based learning. *Innovation in medical education: An evaluation of its present status*, 95-113.

Glaser, R. (1991). The maturing of the relationship between the science of learning and cognition and educational practice. *Learning and instruction*, *1*(2), 129-144.

Goldie, J. (2000). Review of ethics curricula in undergraduate medical education. *Medical education*, *34*(2), 108-119.

Handal, B., Wood, L. & Muchatuta, M. (2011). Student's Expectations of Teaching: the Business, Accounting and Economics Experiences. E-Journal of Business Education & Scholarship of Teaching, 5(1), 1-17.

Hansen, J. D. (2006). Using problem-based learning in accounting. *Journal of Education for Business*, *81*(4), 221-224.

Harris, K. R., & Alexander, P. A. (1998). Integrated, constructivist education: Challenge and reality. *Educational Psychology Review*, *10*(2), 115-127.

Heagy, C., & Lehmann C. (2005). Is PBL an improved delivery method for the accounting curriculum? In B. Schwartz & J. Ketz (Eds.), *Advances in Accounting Education Teaching and Curriculum Innovations*, Elsevier, 221-251.

Hmelo, C. E. (1998). Problem-based learning: Effects on the early acquisition of cognitive skill in medicine. *The journal of the learning Sciences*, *7*(2), 173-208.

Hmelo, C. E., Holton, D. L., & Kolodner, J. L. (2000). Designing to learn about complex systems. *The Journal of the Learning Sciences*, *9*(3), 247-298.

Hmelo-Silver, C. E. (2002). Collaborative ways of knowing: Issues in facilitation. In *Proceedings of the Conference on Computer Support for Collaborative Learning: Foundations for a CSCL Community* (pp. 199-208). International Society of the Learning Sciences.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, *16*(3), 235-266.

Hmelo-Silver, C. E., & Barrows, H. S. (2008). Facilitating collaborative knowledge building. *Cognition and instruction*, *26*(1), 48-94.

Hmelo, C. E., Shikano, T., Realff, M., Bras, B., Mullholland, J., & Vanegas, J. A. (1995). A problem-based course in sustainable technology. In *Frontiers in Education Conference, 1995. Proceedings, 1995* (Vol. 2, pp. 4a3-1). IEEE.

Huntley, M. A., Rasmussen, C. L., Villarubi, R. S., Sangtong, J., & Fey, J. T. (2000). Effects of Standards-based mathematics education: A study of the Core-Plus Mathematics Project algebra and functions strand. *Journal for Research in Mathematics Education*, 328-361.

Hung, W., Jonassen, D. H., & Liu, R. (2008). Problem-based learning. *Handbook of research on educational communications and technology*, *3*, 485-506.

Johnstone, K., & Biggs, S. (1998). Problem-based learning: introduction, analysis, and accounting curricula implications. *Journal of Accounting Education*, *16*(3/4), 407-427.

Jonassen, D.H. (1991). Objectivism vs constructivism: Do we need a new philosophical paradigm. Educational Technology Research and Development, 39(3), 5–14

Knowles, M. S. (1975). Self-directed learning: A guide for learners and teachers, Prentice Hall, Englewood Cliffs, New Jersey.

Kolodner, J. L., Camp, P. J., Crismond, D., Fasse, B., Gray, J., Holbrook, J., Puntambekar, S., and Ryan, M. (2003). Problem-based learning meets case-based reasoning in the middle-school science classroom: Putting learning by Design™ into practice. *Journal of the Learning Sciences*, 12(4), 495–547.

Korn, M. (2013, February 7). Does an 'A' in ethics have any value? *Wall Street Journal*. B4.

Kumar, K., C. Borycki, S.A. Nonis and C. Yauger (1991). The Strategic Decision Framework: Effect on Students' Business Ethics, *Journal of Education for Business*, 67, 74-79.

Laditka, S. B., & Houck, M. M. (2006). Student-developed case studies: An experiential approach for teaching ethics in management. *Journal of Business Ethics*, *64*(2), 157-167.

Leontiev, A. N. (1978). *Activity, Consciousness, and Personality* (M. J. Hall, Trans.), Prentice- Hall, Englewood Cliffs, NJ.

MacDonald, G. J. (2007, March 21). Can business ethics be taught? *Christian Science Monitor*. Retrieved from http://www.csmonitor.com/2007/0321/p13s01-lire.html

Mangan, K. (2006, June 23). Agents of fortune. *Chronicle of Higher Education*, A14 - A16.

McDonald, G. M. (2004). A case example: Integrating ethics into the academic business curriculum. *Journal of Business Ethics*, *54*(4), 371-384.

McWilliams, V., & Nahavandi, A. (2006). Using live cases to teach ethics. *Journal of business ethics*, *67*(4), 421-433.

Miles, S. H., Lane, L. W., Bickel, J., Walker, R. M., & Cassel, C. K. (1989). Medical ethics education: coming of age. *Academic medicine*, *64*(12), 705-14.

Milne, Markus J. & McConnell, Philip J. (2001). Problem-based learning: a pedagogy for using case material in accounting education, *Accounting Education*, 10 (1), 61–82.

Norman, G. R., & Schmidt, H. G. (1992). The psychological basis of problem-based learning: a review of the evidence. *Academic medicine*, *67*(9), 557-65.

Pamental, G. L. (1989). The course in business ethics: Can it work? *Journal of Business Ethics*, *8*(7), 547-551.

Parker, M. (1995). Autonomy, problem-based learning, and the teaching of medical ethics. *Journal of medical ethics*, *21*(5), 305-310.

Pea, R. D. (1993). Practices of distributed intelligence and designs for education. *Distributed cognitions Psychological and educational considerations*, 47-87.

Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. International journal of educational research, 31(6), 459-470.

Ramsden, P. (1992). *Learning to Teach in Higher Education*, Routledge, New York.

Riordan, J. E., & Noyce, P. E. (2001). The impact of two standards-based mathematics curricula on student achievement in Massachusetts. *Journal for Research in Mathematics Education*, 368–398.

Rossouw, G. J. (2002). Three approaches to teaching business ethics. *Teaching Business Ethics*, *6*(4), 411-433.

Salomon, G. (1993). No distribution without individual cognition: A dynamic interactional view. In Salomon, G., and Perkins, D. (eds.), *Distributed Cognitions: Psychological and Educational Considerations*, Cambridge University Press, New York, 111–138.

Schmidt, H. G. (1994). Resolving inconsistencies in tutor expertise research: does lack of structure cause students to seek tutor guidance? *Academic Medicine*, *69*(8), 656-662.

Schmidt, H. G., De Volder, M. L., De Grave, W. S., Moust, J. H., & Patel, V. L. (1989). Explanatory models in the processing of science text: The role of prior knowledge activation through small-group discussion. *Journal of Educational Psychology*, *81*(4), 610.

Schmidt, H. G., Machiels-Bongaerts, M., Hermans, H., ten Cate, T. J., Venekamp, R., & Boshuizen, H. P. (1996). The development of diagnostic competence: comparison of a problem-based, an integrated, and a conventional medical curriculum. *Academic Medicine*, *71*(6), 658-64.

Sims, R. R. (2002). Business ethics teaching for effective learning. *Teaching Business Ethics*, *6*(4), 393-410.

Sims, R. R., & Brinkmann, J. (2003). Business ethics curriculum design: Suggestions and illustrations. *Teaching Business Ethics*, *7*(1), 69-86.

Stanley, Trevor A. & Marsden, Stephen J. (2012) Problem-based learning: Does accounting education need it? Journal of Accounting Education, 30(3/4), 267-289.

Stape, A.L. (2002, April 7). Ethics: Area business schools are not rushing to add courses on ethical behavior as a result of the Enron scandal. *Providence Journal-Bulletin*, F1.

Stepien, W. and Gallagher, S. (1993) Problem-based learning: as authentic as it gets, *Educational Leadership*, 50 (7), April, 25-28.

Tan, O. S. (2003). *Problem-Based Learning Innovation: Using Problems to Power Learning in the 21st Century*. Thompson.

The Association to Advance Collegiate Schools of Business International (AACSB International 2013) retrieved from http://www.aacsb.edu.

Torp, L., & Sage, S. (1998). P*roblems as possibilities: Problem-based learning for K-12 education*. ASCD.

Van den Hurk, M. M., Dolmans, D. H., Wolfhagen, I. H., & Van Der Vleuten, C. P. (2001). Testing a causal model for learning in a problem-based curriculum. *Advances in Health Sciences Education*, *6*(2), 141-149.

Van den Hurk, M. M., Dolmans, D. H., Wolfhagen, I. H., Muijtjens, A. M., & Van der Vleuten, C. P. (1999). Impact of individual study on tutorial group discussion. *Teaching and Learning in Medicine*, 11(4), 196-201.

Van der Linden, J., Erkens, G., Schmidt, H., & Renshaw, P. (2000). Collaborative learning. In *New learning* (37-54). Springer Netherlands.

Webb, N. M. (1991). Task-related Verbal Interaction and Mathematics Learning in Small Groups. Journal for Research in Mathematics Education, 22(5), 366–389.

Yew, E. H., & Schmidt, H. G. (2009). Evidence for constructive, self-regulatory, and collaborative processes in problem-based learning. *Advances in Health Sciences Education*, 14(2), 251-273.

Zimmerman, B. J. (1990). Self-Regulated Learning and Academic Achievement: An Overview. Educational Psychologist, 25(1), 3.

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. Theory into Practice, 41(2), 64–70.