Learning the “Craft of Auditing”: Applications of the Cognitive Apprenticeship Framework

Kimberly D. Westermann

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Learning the “Craft of Auditing”:
Applications of the Cognitive Apprenticeship Framework

Kimberly D. Westermann

A dissertation
submitted in partial fulfillment of the
requirements for the degree of

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DEDICATION

To my wonderful parents Mom and Pops Westermann
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With gratitude and love ~ Kim Westermann 3/23/11
ABSTRACT

Learning the “Craft of Auditing”:
Applications of the Cognitive Apprenticeship Framework

Kimberly D. Westermann

Chair of the Supervisory Committee:
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This dissertation consists of three studies examining component(s) of the cognitive apprenticeship (CA) model applied to on-the-job learning in auditing. This abstract summarizes each study, including purpose, methodology, and findings.

The first study provides descriptive evidence on the importance and pervasiveness of CA as a model of on-the-job learning (OTJL) in auditing, investigates changes in its use over time, and assesses factors that promote or hinder auditors’ learning through apprenticeship. We conducted semi-structured interviews with 30 relatively new and more experienced audit partners at a Big 4 firm, seeking their impressions about past and current OTJL practices in public accounting. Results show that apprenticeship is considered a key component of OTJL, but partners vary in beliefs about the levels in which it is currently practiced. Mapping partner responses to the CA model shows that apprenticeship as practiced in auditing may be incomplete, suggesting benefits to learning if additional elements were stressed by firms. We also identify characteristics of auditors and the professional environment that enhance and/or reduce the effectiveness of OTJL, including technology, time/work demands, feedback practices and reward systems.

My first study shows that partners are concerned that novice auditors require extensive “hand-holding” during OTJL. My second study addresses this issue through an experiment examining how awareness of availability of repeated task instruction, the
learners’ choice to repeat instruction, and task-specific knowledge affect performance in a semi-structured substantive audit task. Results suggest that when lower-knowledge auditors are aware that repeated modeling is not available: their performance is indistinguishable from higher-knowledge auditors. However, when novice auditors are aware that repeated instruction is available, performance of lower-knowledge auditors is reduced. Also, I find that receiving more than a single instruction does not improve performance, regardless of learner knowledge.

The third study is a literature review examining how CA, as a framework of effective learning environments, is applicable to auditing. Tracing its components to the auditing literature, I identify opportunities for future research and for improvements in audit learning environments with respect to reflection, exploration, intrinsic motivation, and cooperation among learners.
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Part One

Learning the “Craft of Auditing”:
Partner Perspectives on Apprenticeship and On-the-Job Learning
INTRODUCTION

Today’s auditors require continuous learning to meet demands of the changing regulatory and economic environment. Thus, it is important to study how individual auditors acquire the knowledge needed to understand the “craft of auditing;” i.e., what types of audit procedures to perform, why they are being performed, and when and how to perform them. Anecdotal evidence suggests that in public accounting, much of this knowledge is acquired during engagements, when more experienced auditors explain the specifics of audit tasks and provide later feedback and/or review comments, rather than in formal (classroom) training. This process of knowledge acquisition and guidance by more experienced individuals is generally referred to as the “apprenticeship model” of professional development. Apprenticeship has been practiced throughout history in a variety of fields, and recent research considers its role in professional knowledge development, such as in medicine (e.g., Stalmeijer et al. 2009).

The purpose of this study is to understand the importance and pervasiveness of apprenticeship as a model of on-the-job learning (OTJL) in auditing, and to investigate factors that promote or hinder learning using this model. While research in other professional contexts examines learning through apprenticeship, research in auditing has not specifically investigated this model. Research on learning in auditing generally uses the experimental paradigm, examining whether auditors’ acquisition or use of knowledge differs based on variation in specific individual characteristics, learning techniques, or environmental factors (for a recent comprehensive review, see Bonner 2008). We adopt a different method, instead investigating the views of audit partners through semi-structured

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1 The earliest research on apprenticeship considers the practices of tailoring and midwifery (Lave 1977; Lave 1997; Lave and Wenger 1991).
interviews. As such, this paper resembles early research on mentoring in public accounting by Dirsmith and Covaleski (1985), who note that qualitative interview studies are appropriate when the researcher wishes to elicit views and experiences of individuals, as a means of exploring topics on which little is known. We solicited the perspectives of audit partners because achievement of partner status indicates that the individual has negotiated the hierarchy through successful learning of professional requirements. Further, due to the many changes in the professional environment over the past decades, we sought a perspective that spans generations of practitioners (i.e., some relatively new and some more experienced). We developed specific questions for our interviews based on the academic literatures in auditing, psychology, and education/training relating to professional development, and sought guidance from current practitioners on interview questions. The instrument contains ten questions about the current and past status of OTJL\(^2\) and apprenticeship in public accounting, and factors that might advance or hinder learning.

This research provides high-level insight into partners’ opinions about past and current on-the-job learning practices in public accounting. Our interviews confirm that most partners believe that an apprenticeship model is currently practiced in public accounting. The majority of partners also recall their own learning in a manner consistent with the apprenticeship model, in terms of receiving formal/informal guidance from a supervisor and/or from observing an auditor(s) in a supervisory role. This suggests that one-on-one interaction in the context of working on engagements is instrumental for auditing professionals to achieve success. To provide a view of the form in which apprenticeship is

\(^2\) We define “on-the-job learning” as all ways that auditors learn in their working environment about how to appropriately perform their professional roles. This includes both formal learning practices and opportunities (e.g., classroom training, e-learns, formal supervisory review) and informal learning through discussion with supervisors and peers.
practiced in the auditing profession, we coded interview data against the methods of the theoretical model of cognitive apprenticeship (CA), which defines steps needed to acquire expertise in performance of knowledge tasks (Collins et al. 1989). This coding reveals that while some steps of the model are well represented, others are infrequently mentioned. This finding suggests the possibility of more directed future research that would investigate whether the phases of the CA model that are under-represented in our data are less practiced today, and if so whether greater focus on them would provide opportunities to improve auditor learning during and following engagements.

We also find that partners identify some factors of people and the environment as enhancing or inhibiting the relative success of OTJL and apprenticeship. Regarding characteristics of learners, interview results show positive views of the capabilities of new hires, with some evidence of concern that new hires may lack commitment to the profession and/or the motivation to engage in a deep level of learning (i.e., understanding the “why” of auditing as opposed to “how” to audit). This lack of motivation may affect whether they continue in public accounting for the long term, or if they do continue, whether they have the ability to effectively train other auditors in the future. Partners also note concern that the complexity of standards and the regulatory environment limit the ability of supervisors to provide adequate coaching to subordinates.

Partner responses also suggest that some environmental factors are considered positive in promoting OTJL (e.g., supervisory practices), some are predominately negative (time/work demands), while others have mixed effects (IT, feedback practices, diversity, reward systems). Our results also highlight that in most cases, new and experienced partners share similar beliefs about OTJL and apprenticeship, but there are a few notable differences.
Relative to experienced partners, newer partners are more likely to emphasize factors such as the firm’s emphasis on coaching, timeliness of feedback, the work ethic of new staff, the flexibility and influence of IT on coaching, the link between rewards and OTJL, and diversity of individuals on engagements. Relative to new partners, experienced partners are more likely to recall that they learned the craft of auditing through personal initiative.

This exploratory study contributes to both audit research and audit practice. While the apprenticeship model has been applied in other professional contexts, there are features of the auditing environment that differentiate it from other professional service firms such as engineering and law (e.g., the nature of knowledge deployed, geographical jurisdiction, frequency of face-to-face interaction with clients, and extent to which the client can control/influence the service provided) (Malhorta and Morris 2009). Thus, our results provide new insights on professional development in large professional service firms. Our descriptive findings of current and past audit practices can be used as a baseline of information for academics on factors that promote or hinder an apprenticeship model of professional development. Our results should be of practical use to individual auditors and to professional services firms, in providing information about how firms and individual partners can improve learning at work through apprenticeship (e.g., increase face-to-face interactions, emphasize coaching, encourage the delivery of candid feedback). If auditors at all levels of the organization receive more focused on the job training, they may experience more meaningful careers, leading to improvements in job satisfaction, retention, and performance.

This paper is organized into four remaining sections. Section II reviews the theoretical concepts of apprenticeship, mentoring, and knowledge sharing across
psychology, education, and accounting literatures. Section III describes our research methods while Section IV contains results of our qualitative analysis. In Section V, we discuss the study’s limitations and develop questions for future research.

**PROFESSIONAL CONTEXT AND THEORETICAL FOUNDATION**

Performing an effective and efficient audit is a complex task, requiring knowledge and skills that are developed through years of professional experience. In order to guide new professionals in learning how to audit, firms should develop practices and processes that promote knowledge transfer from more experienced professionals. For instance, the 2010 Transparency Report of Deloitte LLP indicates that professional development and education are top priorities at the firm. “All professionals, especially partners and senior managers, are encouraged to ‘live in the field,’ so they are available to interact with, train and coach the professional staff. This creates a culture of continuous learning and development and provides our professionals the support and supervision needed to achieve audit quality and to advance in their careers” (Deloitte 2010, 20). This description of Deloitte’s practices emphasizes OTJL and is consistent with the apprenticeship model. However, despite the benefits of OTJL and the firms’ stated commitment to promoting professional development, previous research has not addressed the effectiveness of OTJL or apprenticeship in public accounting firms. Thus, it is unclear whether apprenticeship as practiced in public accounting is consistent with models in the education and training literatures, and whether apprenticeship as practiced has been effective.

**Relevant Theory in Cognitive Science and Auditing**

To inform this study of OTJL models and practices, we reviewed the theoretical concepts of apprenticeship (traditional and cognitive), knowledge sharing, and mentoring,
across the psychology, education, and auditing/accounting literatures. In the next paragraphs, we define each theoretical concept and briefly discuss overlap among them.

**Traditional Apprenticeship**

The basic notion of apprenticeship is that an experienced master shows apprentices how to perform a task and then guides them in performing it, with the goal of transferring “complex interrelated knowledge” (Lave 1977). In traditional apprenticeship, apprentices inductively learn through a combination of methods including repeated observation, coaching and practice; masters teach through a combination of methods including modeling, coaching/scaffolding and fading, as defined below (Lave 1977; Collins et al. 1989). It is not uncommon in traditional apprenticeship that an apprentice has multiple masters and that a master has multiple apprentices. An apprentice with multiple masters learns that there are multiple ways to carry out a task and that there are a variety of approaches towards expertise.

*Modeling* consists of the master executing a task for the apprentice to observe. This helps the apprentice build a conceptual model of the process required to accomplish the task successfully. *Coaching* involves the master observing and offering guidance as the apprentice attempts to execute the task. A key provision of coaching is support from the master offered in the form of hints/clues, reminders, feedback, and/or demonstrations. *Scaffolding* refers to the support provided to help the apprentice perform the task, which may include the master carrying out parts of the task that the apprentice cannot yet manage. Once the apprentice has a grasp of the task, the master gradually removes support, providing only limited hints or refinements to the apprentice with the intention that the apprentice will learn to perform the task autonomously. This is known as *fading*. The interaction among observation, coaching and increasingly independent practice assists apprentices in developing essential self-
monitoring and correction skills. These steps also act to integrate the acquired skills and knowledge into a given task that are necessary to achieve expert practice (Collins et al. 1989).

**Cognitive Apprenticeship**

Developed as a framework of instructional design, cognitive apprenticeship incorporates the foundation of apprenticeship and traditional schooling for the teaching and learning of cognitive skills in order to “make thinking visible” (Collins et al. 1991). This concept rests on learning cognitive and meta-cognitive skills and processes through guided experience, requiring the experts to externalize or verbalize their cognitive processes to learners, so that learners can understand processes that are typically only carried out internally by experts. Cognitive apprenticeship extends the model of traditional apprenticeship (modeling, coaching and scaffolding/fading) by specifying three additional teaching methods: articulation, reflection, and exploration. Articulation is when learners are required to explain what they are thinking related to their acquired knowledge, problem solving, or reasoning (i.e., critique or monitor someone else and explain why it is good/poor). Reflection encourages learners to think about improving their performance by replaying and comparing their way of thinking to others on similar tasks. Articulation and reflection both aim to consciously focus learners on their own problem solving strategies. Exploration encourages learners to try out different hypotheses, methods, strategies (Collins 1989) in order to encourage learner autonomy. Through these steps, learners are encouraged to become increasingly skilled and independent in performance of cognitive tasks.

**Knowledge Sharing**

Knowledge sharing involves disseminating information/knowledge among employees and is the primary source of intangible competitive advantage, economic growth
and corporate value for most companies (Vera-Muñoz et al. 2006). In auditing, OTJL and apprenticeship are likely to be a main means of knowledge sharing, contributing to the success of public accounting firms. Waller and Felix (1984) suggest that there are three types of content knowledge that the auditor learns through experience: (1) technical knowledge of Generally Accepted Accounting Principles (GAAP) measurement and disclosure rules; (2) knowledge of professional standards for performing an audit (i.e., Generally Accepted Auditing Standards (GAAS), the firm’s audit methodology, AICPA practice rules); (3) knowledge of the client environment, including: the client’s economic setting, industry, methods of operation, competence and ethics, and accounting systems.

While some knowledge of the first two (GAAP and GAAS) is gained in formal training at the university level and within the firm, all three types of knowledge are transferred on engagements. Auditors are normally assigned to a variety of client engagements that may vary by industry and level of complexity, as well as in fellow audit team members and other dynamics. Audit team members routinely share their knowledge of accounting, auditing, regulatory, and industry issues that may impact the planning and execution of the audit. “The ability of [CPA] firms to leverage the skills, knowledge, and best practices of their professional staff, to capture knowledge for reuse, and to minimize information overload will determine the quality, effectiveness, and efficiency of their audit and attestation services.” (Vera-Muñoz et al. 2006, 134).

**Mentoring**

Several studies have examined the related practice of mentoring in public accounting firms (e.g., Viator 1999; Scandura and Viator 1994; Viator and Scandura 1991; Dirsmith and Covaleski 1985), and it is important to differentiate this concept from apprenticeship. A
mentoring relationship is similar to that of a master-apprentice relationship in that a more experienced individual (mentor) advises, counsels, and enhances the career development of a less experienced colleague (protégé) (Kram 1983; Hunt and Michael 1983). Due to their surface similarity, the terms mentoring and apprenticeship are often used interchangeably by audit practitioners. One reason for this may be that formal firm initiatives are “labeled” using terminology that may not be consistent with academic literature. However, when juxtaposed theoretically, mentoring and apprenticeship have similarities and differences. Both concepts involve knowledge sharing from the more experienced individual to the less experienced individual; however, the knowledge objectives for and the functional role of the expert are characterized differently. Apprenticeship is characterized by a skilled expert helping a learner acquire skills and knowledge to perform a task within an “authentic culture of practice” (Billett 1994). In contrast, mentoring is focused on the protégé’s career promotion within their organization (Olian et al. 1988). Dirsmith and Covaleski (1985) suggest that the primary purpose of mentoring in public accounting is career advancement at the partner-manager level. In contrast, they assert that the primary purpose of a guide-protégé relationship in auditing (essentially the apprenticeship model) is directed towards audit tasks occurring at the senior-staff level.

METHOD

Participants

To investigate the on-the-job learning and apprenticeship as a model of OTJL in auditing, we conducted individual interviews with 30 practicing audit partners from one Big
As shown in Table 1.1, participants comprise 14 experienced partners (with a mean of 32.9 years of audit experience) and 16 new partners (mean of 15.4 years). Experienced partners were admitted to the partnership between 1983 and 1993, and the new partners between 2005 and 2008. While 93 percent of experienced partners are male, 56 percent of new partners are female. The participants represent a range of geographical locations and industry specializations. Obtaining the perspective of audit partners for this study is valuable for three reasons. First, due to their longevity with the firm, partners have the most informed perspective on characteristics required for professional success within the firm. Second, partners have had opportunities over the course of their career to experience apprenticeship from both perspectives (coach and learner) and at several professional levels. Third, engagement partners set the “tone at the top” for each audit engagement, and their values regarding apprenticeship learning and mentoring will be expected to filter down through the other levels of employees within the firm. Gaining the perspectives of both newly minted and more experienced partners provided a variety of generational experiences, enabling a view of professional practice that spans several decades.

[INSERT TABLE 1.1 HERE]

**Development of the Instrument and Procedures for Data Collection and Analysis**

We selected a qualitative, semi-structured interview approach because this method is commonly used and advocated during the exploratory phases of research (Miles and

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3 A National Director at one Big 4 Firm selected the participants based on the research team’s criteria (diversity in levels of experience, gender, current office location, starting office location/country, starting “legacy firm” prior to merger(s), and industry group), and the partners’ ability and willingness to participate within the study’s time frame. We stratify our analysis by length of partner experience in order to facilitate comparisons between new and experienced partner perspectives.
Huberman 1994). The advantages\(^4\) of using a qualitative, semi-structured interview method lie in its “inherent flexibility” (data collection/methods can be varied as the study proceeds) and in the richness of detailed, descriptive information, with strong ability to reveal complexities (Miles and Huberman 1994, 10) that are less likely to be captured via quantitative methods.

**Pilot Test and Revision of the Instrument**

We first developed a trial version of the instrument based on the prior literature and insights from audit practice described in the previous section. We then piloted the instrument with a retired partner from a large audit firm and subsequently modified our interview questions for completeness and clarity.\(^5\) The post-pilot instrument consists of ten semi-structured interview questions (with some questions containing multiple parts) about the current and past status of on-the-job and apprenticeship in public accounting, and factors that advance or hinder learning in this environment. The final version of the instrument is provided in Appendix A.\(^6\)

\(^4\) There are also limitations to qualitative research. Radcliffe (2010) outlines the topical limitations of qualitative research in auditing (treatment of qualitative data, matters of interpretation and technique, and understanding the narrative) and offers ways in which qualitative researchers can address these limitations. In the following paragraphs we address Radcliffe’s concerns in conjunction with the development of the instrument and the data collection process.

\(^5\) As a result of pilot testing, we made several changes to the instrument. First, in the pilot version, we did not define the terms “on-the-job learning” and “apprenticeship”, in order to elicit the pilot partner’s definition. Because the pilot partner defined on-the-job learning solely as formal training mechanisms (i.e., classroom training), we revised the instrument to specifically note that our research concerns all forms of OTJL, both formal and informal. Second, the pilot instrument asked the effectiveness of OTJL. The response of the pilot partner led us to believe that participants might avoid saying that their Firm’s procedures are ineffective. Thus, we revised the instrument to ask “what could be done better” as opposed to “what is not working.” Third, the pilot version included an open-ended request for factors impacting OTJL. Because few factors were elicited, we revised the instrument to provide participants with a list of organizational factors to consider, and to solicit their opinions of each factor.

\(^6\) We asked questions about OTJL in general and apprenticeship in particular. Because over 90 percent of participants believe that apprenticeship is commonly practiced in auditing firms as a means of OTJL, and there were few differences in responses between questions addressing apprenticeship and OTJL, we combine these responses for analysis. Our instrument also contains more questions than are addressed in this paper. We chose to focus on those that are most interesting in the insights they provide.
It is important to note that our semi-structured instrument evolved over the series of interviews (see also Hirst and Koonce 1996). After each series of interviews (approximately every three interviews) we reviewed and re-evaluated our questions. Our re-evaluation process led us to add additional sub-questions to our instrument, which addressed common topics that arose during the interviews.

**Data Collection**

All interviews took place during the period of September 2008 through January 2009. About a week before each interview, we sent the partner a personal e-mail confirming the date and time of their scheduled one-hour interview. This e-mail contained an attachment including one page containing consent and demographics, one page containing the researcher bios, and two pages listing organizational factors that the partner would refer to during interview. The interviews were semi-structured in nature. That is, if the interviewee response was interesting and relevant, we pursued this topic further before returning to our planned questions, even if it meant that a partner might not respond to all planned questions due to time constraints.

Each interview lasted approximately one hour and was conducted by phone or in person, with two researchers participating in all but one interview. All interviewees gave consent to be recorded by the interviewers. One researcher acted as the primary interviewer, while the other researcher took notes to ensure retention of data in case of poor audio recording/quality or recording failure. We first established rapport with the partners by discussing the general purpose of our research and our prior experiences as auditors. We reiterated that all responses are confidential. Most partners provided client-specific and personal examples that were both positive and negative in nature, leading us to believe that
their responses were generally candid. For the few partners whose responses seemed more “politically correct” (i.e., seemed to be reciting formal firm policy), we asked more probing follow-up questions in an attempt to elicit more candid responses. We hired professional transcribers to convert the recordings into text. During the data consolidation process, we reviewed transcripts for accuracy, noting only minor accounting terminology errors.

Data Analysis

Each of the three researchers was allocated ten of the 30 transcripts to summarize responses and highlight quotes on a per question basis. To develop the coding scheme, two researchers independently developed categorizations of responses for five questions (sub-questions). They then compared and refined categories. After agreeing on categories, two researchers independently coded the selected questions, with 90 percent inter-coder agreement. To resolve the few disagreements, the researchers referred back to the original transcript for clarification or support. The remaining questions were coded by one of two researchers and reviewed by the other two researchers. After all transcripts were coded and reviewed, we developed counts of responses on a per question basis. Using the final coding scheme, we uploaded all transcripts into NVivo software for our analysis. We report counts of responses in Appendix B. However, the value of the structured interview approach is that partners’ perceptions are revealed by the detail they provide in support of their responses. To select the quotes included in the paper, each researcher identified quotations within a particular code based on the representativeness and/or poignancy of the comment. The final selected quotes were reviewed and approved by the other researchers.

7 Both transcribers were paid a fee per transcript and both signed confidentiality agreements.
RESULTS

The Model: Apprenticeship and On-The Job Learning in Audit Practice

Our investigation first focuses on apprenticeship as a theoretically-based model of on-the-job learning in audit practice. While little research specifically addresses apprenticeship as a learning model in auditing, Dirsmith and Covaleski (1985), in an interview study conducted three decades ago, report that the formal audit program instructs the auditor what to do. However, they note that the how and why of audit tasks are primarily learned in a dyad in which a more experienced guide instructs a less experienced learner. The guide also instructs the learner as to the relative importance of particular work steps, teaches the informal mental processes (not just the “black and white”), and other “soft skills” that cannot be detailed in the audit program. To investigate the current status of apprenticeship model, we asked partners to what extent on-the-job learning in public accounting takes place today through an apprenticeship model. Virtually all these partners believe that the apprenticeship model is practiced at least “somewhat”, and about two-thirds believe that it is pervasive in public accounting today. One experienced partner responds as follows:

“Classroom training has been good in that it has made you aware of things and it has given you understanding and knowledge but the real, the real full benefit I think comes from that one-on-one guidance you get from people who have been doing it and know how to do it and can point out what you are doing right and what you are doing wrong and how to do it better.”

We also asked at what professional levels participating partners believe the apprenticeship model represents OTJL in audit practice. This question was generated from results of Dirsmith and Covaleski (1985), who indicate that the guide-learner dyad supports learning the craft of auditing at the lower levels (seniors, staff), while mentoring supports the business of auditing at the higher levels (partner, manager). While there is general agreement
among our respondents as to the applicability of the apprenticeship model, partners vary in the views regarding the levels at which it takes place. About half believe that apprenticeship takes place within all levels of the firm, but some believe that apprenticeship is only practiced with auditors below manager level (i.e., between seniors and staff), while others believe that it is only relevant above manager level (i.e., between partners and managers).

**Changes over Time**

Dirsmith and Covaleski (1985) note that the concept of a “technical apprenticeship” in auditing seemed to dissipate in the late 1970’s due to increased competition among the then-Big 8 firms, with the focus instead gravitating toward career mentoring. Subsequent to the Dirsmith and Covaleski study (1985), there have been numerous changes in the practice environment, including increased litigation pressure, greater concentration among large firms through mergers, time constraints due to increased audit testing after the passage of the Sarbanes-Oxley Act of 2002 (SOX), etc. Any of these environmental changes could affect the role of apprenticeship in OTJL. To investigate changes in learning practices over time, we asked partners about the key similarities and differences in OTJL from the start of their careers (ten to 30 years ago) to the present day. The majority of partners indicate that the most apparent similarity is related to the *use* and *quality* of coaching as a mechanism for OTJL, consistent with the apprenticeship model. However, some partners cite differences over time in *firm or individual emphasis* on coaching that have led to unintended consequences. These viewpoints are exemplified by two partners as follows:

“...is the whole concept of coaching and working as a team and people trying to work together to get to the common goal and achieve the same goal. In your first year and as you grow with the Firm; there is always someone there to help you as you are learning. There is always that coach, that mentor on the team to help you understand areas that you are not familiar with. That certainly is one area that hasn’t changed from 18 years ago to today.”
“One of the key differences is that I think we spend more time coaching staff... If someone has held your hand all along, you are not going to be thinking, you don't develop that thought process of ‘okay that didn't work’ so that is my impression... But I do worry about that learning style of holding hands.”

Partners also describe additional differences in OTJL over time. A majority of partners interviewed note use of information technology (IT) as an important difference over time (we provide further discussion of specific perceived costs/benefits of IT below), for example:

“The biggest difference is, to me, the impact of technology, ... basic computers and spreadsheets and things that are done that way, versus the old 16 and 32 and 64 column paper and the way you had to go about doing that, which impacted the amount of time, where you spent your time and, in a big way, the documentation and review of that documentation in the process.”

Other partners report that a key difference is the increased partner/manager involvement caused by greater environmental risk and accounting regulation complexities. One (experienced) partner illustrates this point:

“The amount of time that senior level engagement team members spend on each and every engagement is much more than you would have seen in the past. Now I do remember growing up... the partner never came out on the job...they stayed in their office, I don't know what they did. I am sure they reviewed stuff but they never came out on the job and I think now and there are a couple of reasons, one I think because it is so complicated that partners need to be out there and two I think there is a lot more at stake now. Now we have the PCAOB [...] and the quality program within our firm is very intense. In fact, in some situations when you get bad quality results during a yearly review, you know, you can lose [partner] shares.”

While it is evident that many partners believe that OTJL has changed over time, our results do not generally imply that these differences would result in OTJL quality being markedly improved or diminished. One exception is participants’ views of changes in formal training that take place prior to engagement-based apprenticeship, which provide a basis of knowledge on which the one-on-one interaction in engagement teams will build. About half of the partners specifically note that there have been changes in classroom training; i.e., that
formal training is significantly shorter, contains less technical information and places more emphasis on “soft skills.” One experienced partner compares new hire formal training ("audit entry") to military boot camp:

“Not only is [formal training] fundamentally different, but here’s the best way to view by analogy. Take the marines when you go to boot camp. The marines would never let someone come out of boot camp who was not ready to be a marine. The accounting firms have no problem letting individuals come out of audit entry who are not equipped to be a marine and so if you go to your audit entry---when I did audit entry, first of all it was three weeks. Secondly it was individual, it was not group; by that I mean we didn’t work in table groups and sit down. The way it worked it was just like being on a job. You had a hypothetical company. You did hypothetical work in cash and receivables---in other words the areas that you were going to be working in and you were taught by a manager and senior and your work papers were reviewed after you did your audit section just like you are going to do on the job by yourself and then you got review notes and then when you finished you received an evaluation and you either passed or you failed, and if you failed you got fired... Today, nobody gets an evaluation on audit entry [training], they work in table groups. So we had a working session [within the audit team] to try to talk about this and I asked a question ‘When you did audit entry did you do table groups?’ and she said, ‘Yes. I said. ‘Okay. So how long was audit entry for you? Three to Five days?’ Then I asked, ‘How many in your table group showed up late? How many in your table group didn’t do any work because they were hung-over?’ She said, ‘Most of the group.’ So there you have it. The root cause of all of this, I don’t think, this has ever been addressed by the accounting firms. You have to start at audit entry and you have to start by training people properly teaching them…that’s what on-the-job training is all about; it’s about reinforcing and then teaching, but you need to teach people how to do the basics, you need to teach people how to problem solve. There’s a whole bunch of things that need to be taught in audit entry and it’s not about three to five days at Disneyland.”

These comments on formal training at the entry level have implications for later apprenticeship-based learning within engagements. The formerly used training method that the partner describes is basically a mock engagement, which should mimic the apprenticeship model to which the associates will shortly be exposed. This partner’s comments imply that new associates are no longer exposed in early training to practice in how they will relate to seniors in the actual client engagement environment on the job. This implies not only that associates have one less chance to be coached, but also that the burden
on engagement seniors is greater because associates are less prepared for their first few engagements.

**Partners’ Key Learning Experiences and the CA Model**

The CA model, previously discussed, poses that successful learning of professional skills involves a number of steps performed by guides and learners. Partners participating in our study comprise a sample of individuals who have successfully navigated many hurdles on the way to reaching the top of a very hierarchical organization. Their experiences provide insight into how successful auditors learn, and form a baseline for comparisons across time. We asked partners to recall how they learned the craft of auditing, and solicited their most memorable experiences in learning. Most partners indicate that they learned through receiving both formal and informal guidance from other individuals:

“...getting out there and auditing the hell out of places. ... It was by being inside the audits, by having someone sit down and saying, ‘Here are your tasks, here’s what you are expected to do and why.’ And asking a lot of questions and having the iterative process of supervision, feedback, re-work, review notes, re-work, etc. with the next level up.”

About half of the partners specifically note learning through personal initiative (i.e., asking questions, minimal/no guidance, trial & error). One partner said he learned by:

“...What I do is a compilation of the things that I picked up from all the people that I worked with throughout my career. Then eventually you develop your own style... Did I learn things out of the classroom? Sure, but the majority of what I learned was working with other people.”

Another partner commented on the value of making mistakes:

“I haven’t had too many of them but you learn a lot from the errors and mistakes and ‘audit failures’ ... I think learning from mistakes is a powerful, powerful learning tool.”
About half of the partners also note the importance of learning through observing the behavior of others, in some cases “picking and choosing” from favorable and unfavorable qualities of their role models.

“A lot of us kind of hitch our wagon to somebody and say, ‘That’s who I want to be like, that person seems to be doing well. I think I will try to pick up as many characteristics from them as I can.’”

“What I did was I found someone who was comfortable---who I was comfortable with, who was brighter than I, (who) had been around longer -- and I would go to that person when I had questions and ask the questions and that’s how I would learn.”

“A role model is somebody you look at and you say, boy this person … is really good at this. Boy, I am just going to copy that behavior and emulate that behavior. Or, it could be, ‘God, … is terrible at doing this. I am never going to do that.’ So that is the role model, positively and negatively.”

Others report that being “challenged” in their career led to meaningful learning experiences.

“What I think made me the successful person that I am today is the really tough, challenging engagements. Either in terms of the client or the myriad of accounting or auditing issues, or the pressure and the tension of the deadline. I think that is what really teaches you about the trade or craft … the really tough situation or the tough environment.”

“By the way, when I picked the people it wouldn’t be the people that were the nicest. It was the people that I thought knew the most and the more pain I had in learning, the more I thought I was learning. The harder the person was to work for the more I wanted to work for them.”

One partner recounts a situation experienced as a manager, in which he was thrown into a challenging situation by a partner:

“[The partner said] ‘We’re going to take this other guy off. They love him. We’re going to put you in that position. Now go do it.’ He didn’t say, ‘I’m going to hold your hand and bring you out there.’ He said, ‘The CFO is not happy about the change, but we’re going to get through it and this is going to be good.’ Was I uneasy about that? Yes … (1) my experience with the client; (2) knowing they didn’t want me on the job; (3) if I screw this up, we lose a client and I will probably never get admitted either. Right? It was a challenge! It all worked out, but I think there’s a fine balance
and I think people need you to realize that your learning isn’t always that someone is going to sit you down and walk you through it. It’s going to be a lot of interactions that you get and you multiply that by hundreds and hundreds, so you’re going to know, when you get into a hard situation, you’re going to know how to deal with it.”

Some partners also explicitly discuss learning through feedback and review notes. One partner explicitly noted that guidance from the review process as follows:

“Getting review notes on what I did constantly, so this constant feedback every time you do something, … someone is looking over your shoulder and saying you did those four things wrong and you did these three things right.”

The partners’ responses of their most memorable experiences in learning the craft of auditing can be mapped into the CA framework. Table 1.2 provides some statistics on how the CA stages are represented in the partners’ comments. Fifty-three percent of partners recalled learning the craft of auditing by observing an auditor in a superior role; i.e., the modeling (observation) phase of CA. Sixty-three percent recall having a supervisor explain (or repeatedly explain) how and why a task is to be performed, consistent with the phases of observation and coaching. Fewer partners (13 percent) recounted examples consistent with scaffolding and fading. The same number recounted receiving feedback from a supervisor and subsequently re-working their assigned tasks. Re-working a task relative to expert feedback is both a component of scaffolding/fading (provision of feedback) and reflection (re-working). Only seven percent of partners suggested participating in articulation, in the form of supervisory review by face-to-face interview and only one partner cited exploration as part of his early learning in public accounting.

These results suggest that some steps in the CA model may be under-represented in audit practice, at least at the time that our participants “learned the craft”. While recognizing that partners’ responses do not reflect all of their collective experiences, these results suggest that there may be opportunities to improve OTJL in public accounting by providing specific
focus on the later stages of the model, including face-to-face feedback, articulation, and exploration. Further research could explore presentation of specific CA model steps in OTJL among less senior auditors, to obtain a more current view. Further research could also examine whether specific CA model steps such as reflection make a difference in learning, within the audit environment.

[INSERT TABLE 1.2 HERE]

The People: Characteristics of Auditors and OTJL Effectiveness

In order for OTJL to be effective, there must be willing and competent guides, as well as receptive learners who are able to understand what is being taught and apply it to practical situations. Dirsmith and Covaleski (1985) suggest that the primary purpose of a guide-learner relationship in auditing is directed towards audit tasks occurring at the senior-staff level. In Bonner’s (2008) comprehensive review of judgment and decision making in accounting, she indicates that individuals will vary with respect to a variety of personal characteristics (i.e., ability, intrinsic motivation, affect, confidence); all of which ultimately impact an individual’s judgment and decision quality. Thus, we asked partners to note their impressions of new staff (learners) and seniors (guides) in the current practice environment and also whether these impressions have changed over the course of their experience.

Many partners respond with both positive and negative comments with respect to new staff. Most have positive views about staff ability, specifically indicating that audit staff today are IT-oriented, intelligent/well qualified, and better prepared for work. Staff orientation towards IT may indicate that the information search capabilities of staff are better; as one partner suggests, “their knowledge of technology and the ways to use it, is very impressive to me.” However, several partners indicate that some staff may be unwilling to
use their ability to engage in more time-intensive research. Several partners imply that the culture of “instant gratification” leads to less patience to understand, as suggested by these quotes:

“…of course they understand technology. They have had access to far more technology than people of previous generations have had and they are able to use that and able to get very often instant answers, which is both good and bad. I mean, whether they are quite as willing to do painstaking research as others used to do because they are so frequently able to get an instant answer - that might be a point.”

"What seems to be missing in people, I think, is the curiosity about why. There is too much emphasis on, 'how do I do it?' Not, 'why do I do it?'...I don’t want to say that there are not individuals who still want to learn…‘why’ versus ‘how’, and all that, but there are less of them than there used to be."

“(t)heir work mentality is different. Not that they are not hard workers. They are less willing to put in the time to understand something. There are times where we will be sitting there learning something and if it is too long for them to get it, they get more frustrated.”

With similar conditional praise, about half of partners indicate that staff today are “very bright and eager to learn”; however, they seem less committed to a long term career with the firm. “They all want to learn; they all want to be successful, maybe not at [the firm], but they see [the firm] as a means of helping them learn and improve so that they can go on with any other pursuits that they might want to pursue in the future.” “Are they as willing to learn to sacrifice to do whatever it takes to get the job done? I don’t think so.”

Nearly half of partners respond negatively to staff motivation, explaining that new staff have a lower “work ethic,” while others also indicate that staff have higher expectations of what the firm should be providing (i.e., training, work-life balance). Decreased intrinsic motivation (e.g., need for advancement) may lead to less than optimal learning and performance on staff level tasks.

“It doesn’t seem like they bring the same level of work ethic to the table and I think a lot of that is what I saw, the big shift... go back to the internet boom...if you had
to wear anything but jeans to work that wasn’t a good thing to have on the job description and you don’t give out free coffee and lattes? I think we do so many more great things from a benefits perspective today. We’re kinder and gentler and want to make sure everyone feels good about things and I think, to some extent, it’s taken for granted a little bit because sometimes you just want to say, ‘Listen, that’s why it’s called work for a reason, that’s why we pay you, now go do it.’ That doesn’t go over well [with new staff].”

This finding is consistent with recent reports on the state of the accounting profession. For example, in a study of “accounting talent” (corporate finance professionals with ten or more years of experience), Grant Thornton (2010) similarly reports that seasoned accounting professionals in industry are also concerned with workload and lifestyle, contributing to corporations’ inability to attract and retain quality accounting personnel. This report further suggests: “… individuals choosing a career in finance and accounting today are aware of the work-life balance issues associated with such roles. However, the past decade has witnessed significant changes in the responsibilities and workload associated with these jobs changes which may drive existing talent away from this career path.”(Grant Thornton 2010, 7) This sentiment by more seasoned professionals in industry is consistent with what new graduates experience in public accounting. Lower commitments to the accounting profession may have negative consequences for the future of auditing firms if it results in less interest in developing a deep understanding of audit issues, and less interest in coaching and developing others.

With respect to audit seniors, a majority of partners indicate that continuous change and increased complexity of the accounting standards and regulations has, in fact, changed the role of the senior. Partner focus on this area with respect to developing auditors is not surprising given that standards and regulations are one of the defining characteristics of the accounting environment; and violation of standards and regulations has the potential for
serious consequences. Some partners are concerned that because of the increased complexity, audit seniors today are given less technical responsibility on-the-job. They spend more time in an administrative capacity, and thus do not have sufficient opportunity to develop technical audit maturity. The relationship between increased complexity and changing role of the senior is depicted among the following partner viewpoints:

“At some point it’s just like ‘I just learned this stuff and it’s changing again.’ Changing, constant changing.”

“I mean [accounting standards are] so complex that there are many partners that don’t understand... It wasn’t like that years ago, I don’t believe when I was a senior that there was an accounting pronouncement that I couldn’t comprehend.”

“Well [seniors] have a harder job now… More complicated world. More GAAP to know. More technology. Certainly I would put a senior today up against a senior from 20 years ago.”

Some partners explicitly state that seniors have less exposure to technical accounting because the more complex work is being performed more often and the higher levels (manager, senior manager).

“I think the complexity of technical issues has [changed the role of the senior] because I don’t see those issues getting down to the senior levels as much as they have been in the past. The complex issues are more so handled by the managers and the partners. And I think the issues are more complex today than they had been previously.”

“The accounting rules are very complicated. [Regulators] come out with some [rules] that you wonder sometimes, ‘who thought this up?’ I can’t, as somebody who is a partner - I read [the rule and think] ‘this isn’t English’ – let alone my senior who has got three or four years experience is going to understand how to apply this [rule] or be able to identify that this [rule] is something that could be applicable [to a client]. It is very complicated, which is why partners and managers are more on-the-job than I think they were [in the past] because there is more complexity that needs to be dealt with.”

One likely reason the shift of work has occurred is to reduce potential risk exposures. Thus, increased partner/manager involvement is not surprising, given that the
primary risk of loss lies at the partner level. Those (partners) who violate standards or regulations may lose their job and/or license to audit public clients or may be subject to fines or jail time (Bonner 2008). In their study of more seasoned accounting professionals, Grant Thornton (2010) also note a similar concern regarding accountants in industry, with CFOs expressing concern with their staffs’ inability to understand and apply increasingly complex accounting standards.

**The Environment: Organizational Factors Enhancing/Inhibiting OTJL Effectiveness**

In order for OTJL to be effective, there must also be an environment conducive to learning. We next investigate organizational factors that might hinder or promote OTJL (and apprenticeship) in public accounting firms. While these factors are not unique to accounting settings, understanding their impact with respect to OTJL is important. To accomplish this goal, we sought possible factors influencing this practice from several sources, including the academic literature, opinions from two senior level practitioners from Big 4 firms, our own prior experiences from years as practicing auditors, and our current experiences in training entry-level auditors in university and firm training settings. Thus, some of our questions are grounded in prior literature, while other questions are more of an exploratory nature. In the following paragraphs, we present prior literature and anecdotal evidence from audit practice supporting inclusion of the specific organization factors considered in the study. For each organizational factor, we report partners’ beliefs regarding how the factor impacts OTJL. In

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8 In their review of knowledge sharing within public accounting firms, Vera-Muñoz et al. (2006) systematically examine the effects that information technology, interactions among auditors, and reward systems have on encouraging or hindering auditor knowledge sharing. Their analysis was influential in identifying organizational factors considered in this study.
most cases, we were able to classify their responses as positive, negative, or neutral (i.e., no net impact on OTJL).

**Factor 1: Information Technology.**

One pervasive factor likely to affect OTJL in general, and apprenticeship in particular, is the increasing use of IT in professional practice. IT is likely to impact learning in two ways. First, on a general level, technology has dramatically altered the way individuals communicate with one another. Standard communication technologies such as e-mail, teleconferencing, and instant messaging have become ubiquitous in audit practice as in other business environments. These standard communication technologies have enabled more flexibility and timeliness of communication, often at the cost of interpersonal contact and development of social relationships (Middleton and Cukier 2006). Not only does IT reduce within-team face-to-face communication, Markus (1994) suggests that users select IT deliberately when they wish to avoid interacting with others. We would expect that the availability of numerous communication devices such as cell phones and smartphones (i.e., iPhone and Blackberry-type devices) and the habits individuals develop related to these devices (such as texting rather than calling, e-mailing rather than stopping by) to impact auditors’ interpersonal communication skills, which would therefore have an impact on OTJL.

The second way in which technology is expected to impact OTJL is through the provision of IT resources provided by auditing firms. The large audit firms have developed

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9 Prior literature across business disciplines regarding the effects of electronic communication in the work environment is widely researched (e.g., Culnan and Markus 1987, Markus 1994). A comprehensive review of this literature lies outside the scope of this paper; therefore we present audit partner perspectives, with respect to the effects of IT on learning on-the-job in auditing, which are consistent with findings revealed in previous studies.
and maintained technologies that provide a platform for audit workpapers (Winograd et al. 2000; Bierstaker et al. 2001; Bedard et al. 2007; Dowling 2009), whereby both the gathering of audit evidence and audit review are often executed without face-to-face interaction. Large audit firms have also developed knowledge management systems (Morris and Empson 1998; Vera Muñoz et al. 2006) to facilitate professionals’ access to internal and external expertise, and provide a timely repository of best practices. Some firms have also implemented technological solutions in support of specific phases of the audit such as client acceptance (e.g., Winograd et al. 2000; Bell et al. 2002) and risk assessment (e.g., Shelton et al. 2001). While the literature notes benefits to IT applications in auditing, some reservations have been noted. Vera Muñoz et al. (2006) suggest that IT improvements may lead to information overload and disguise the gap between methodology and actual work practices. Further, automation often makes processes and tasks invisible (“black box”) to users, which prior research notes can inhibit learning (Billett 1994). For example, in the specific context of auditing, studies find that the quality of judgments of both workpaper preparers and reviewers is lower when using electronic systems than with face-to-face review, consistent with lower task effort (Brazel et al. 2004; Agoglia et al. 2009). If learning is less effective without close personal contact, then opportunities to train and acculturate newly hired personnel may be missed. Thus, related literature to date suggests both benefits and costs of IT in audit practice. Our focus is particularly on how IT influences opportunities for professionals to learn on the job in their day-to-day working environment.

We asked participating partners how IT affects on-the-job learning. On the positive side, partners cite numerous benefits of IT. They note that technology improves the quality of available information on several dimensions, including: (1) breadth (“the ability to broadly
find a lot of information that helps to ‘educate’ you in a lot of different topics”; “staff have such a wide range of resources at their fingertips”; “virtually all our internal guidance as well as nearly every piece of professional guidance available to us online”, “it makes a lot of the stuff richer”); (2) depth (“you get the information you need … very specifically”, “ability to provide spot-on information for somebody who’s in the process of trying to learn”); (3) consistency (“the organization of the working papers and the … consistency that generates”; and (4) dependability (“we can rely a lot more on [audit] system(s) today than we could ten years ago”).

Many partners also mention the speed with which information can be accessed and processed. “It is real time. It’s right there … ever present.” “IT is extraordinarily important… the speed with which we can get an answer is vastly improved because of the quality of the IT support that we have.” Further, a number of partners note the benefits to efficiency enabled by flexibility of access, as communication is released from the bounds of time and space:

“…before, when you had a big issue, you had to run up to [the firm’s headquarters] to talk to someone. Now we get on a conference call … five people can sit in a room for an hour and listen.”

Some partners specifically mention benefits of the firm’s “e-learning” tool, including both consistency of training (“in theory at least, [you] have a more consistent standard of the education when you do it through e-learning because it is not so dependent on the quality of the individual instructor”) as well as efficiency (“overall it has been beneficial in terms of getting learning out to a bigger group of people, at a uniform standard, less expensively”).

In addition to more formal training mechanisms, some partners also note the nature of the specific engagement tasks in which IT is valuable. These include development of
industry knowledge (data on companies or industry challenges”), researching professional pronouncements (“… those tools are critical to how I stay alert, stay aware”), audit testing (“Now a person can walk in and list out every revenue in excess of a certain amount … [or] everything that was sold in China”), engagement review and performance feedback, documentation of audit tasks, and storage of workpapers. Particularly relevant to OTJL, some partners referenced the key role of IT in providing information for learning:

“… 20 years ago you couldn’t go to a database and punch into a search engine a topic and find 12 different things on it as opposed to now when you can. So, it is just a different environment and the environment really dictates the types of learning opportunities that are out there.”

“… every consulting memo that anybody writes gets put on some place and we all can look at it.”

Partners also note that IT is particularly helpful in enabling/facilitating interaction of groups of auditors, not only within engagement teams, but also across service lines and geographical regions. Partners noted the value of IT for sharing best practices across the firm:

“… [IT] is overwhelmingly positive in terms of being able to share information very quickly across different lines of service, across different industry groups. We didn’t have that same learning in the past as well as being able to share information across geographies, meaning if there is something to be learned by a client in Boston, e.g., it can quickly be shared with a team in Seattle.”

While partners cite numerous benefits of IT, several drawbacks are also mentioned. Most frequent is the concern that IT reduces human interaction, which has a number of potential consequences for OTJL and audit quality. As auditors focus more on the computer interface (“hide behind their computers”, “stuck to their laptops”), verbal interchange is reduced both between auditors and client personnel, and among engagement team members. Partners express concern that both effects reduce learning opportunities.
The transition of client communication from verbal to electronic is frequently noted as cause for concern. The implication for learning is expressed by one partner as follows:

“I also think you learn by talking to your client. I was shocked one day a number of years ago to find out that the staff was emailing the controller questions. I just never thought of it. Of course you know there was no email when I was doing that stuff and so if you needed information the only way you got it was to talk to them. They knew that too and it was pretty widely accepted that you had an open door you just kind of walked by and if they were there, you would ask them the question. Or in some cases you stored your questions up and you had a certain time every day that you went by and went through these things. I may be wrong but I don’t think you learn as well through electronic communication with your client. You learn through conversation.”

Another partner’s statement draws implications for auditor skepticism:

"The part I don’t like [about IT] is where the staff or senior sits there with an IPod...and they e-mail their questions to the client about what they want or don’t understand and the client e-mails back to them and they are about eight feet away from each other. This face-to-face probing discussion skepticism that needs to be in the auditor's mindset when he or she is conducting the audit, I think you lose a lot of that."

Supporting this concern, another partner notes that valuable information on the client is lost when the auditor cannot “see the person’s reaction and look them in the eye.” Another emphasizes the importance of this issue by noting: “we talk to people about that the whole time so I think that is a really negative impact.” One partner also notes that reliance on electronic communication with the client has another detrimental effect: “you are not building the relationship with the client by sending e-mails”. If so, both audit quality and client retention could be threatened.

Regarding reduction in engagement team interactions in the IT-enabled environment, one noted effect of IT is reduced presence of higher-ranked audit personnel at the client location. “I really remember I was in an audit room one time and I was looking at ten people in the room and no one was talking to each other. I thought maybe we have lost
some of this coaching;” “it isn’t as often the case that you are all in the one place for a significant period of time;” “don’t have the physical presence with the team and that takes away from coaching.” In contrast, one partner recalls that in the prior paper-based environment:

“Everything was hard copy and the audit partner basically was there in the field reviewing hard copy and he would give you your 35 pages of review notes on a piece of paper, standing right in front of you and you would need to go through them all and clear them all, with him there and deal with all of that stuff.”

This partner goes on to say that delivering extensive review points in person is “less harsh” and that remote review “at times may not get the message or the learning experience that we wanted”. There are also hints that the nature of the feedback differs in electronic environments: “sometimes when you type that ‘cell I32 does not make sense’, I am not sure that really is good coaching.” This concern about reduced opportunity for observation and feedback extends to the manager level as well:

"I could have a team doing an audit and I could probably do everything from here and never have to go out there to see my client and they’d get no feedback and read on my managers to---are they messy or are they neat? I mean all I see is a database. I have no idea as to “Are you organized or are you not?” I just see a step and it’s signed off and as long as what you said in there makes sense. I have no sense as to …when I see them talking to a client am I comfortable with that?"

Some partners specifically note that this reduction of coaching opportunities in the computer-mediated interface has consequences not only for learning, but for audit quality as well: “a lot of the education is from interacting”; “there is just less of the opportunity for some of that osmosis to happen that used to exist”; “the opportunity for … the ‘informal question’ or the ‘casual comment’ … one wouldn't ask or make if you are reviewing electronically.”
Specifically regarding staff development, some partners expressed concern that excessive reliance on email and instant messaging has reduced communication skills of young auditors:

“...they communicate by basically taking their phone and they text everything and that’s how they communicate in person, that’s how they write. They don’t write, they communicate with three letter things. … that level of communication and learning how to communicate and write and deliver the tough message? It’s gone.”

Beyond difficulties with client and team interaction, several partners referred to the level of distraction associated with IT in the audit workplace: “our people as a general comment think they can do all of that multitasking and I am not sure we are very good at that.” Other partners express similar concerns with respect to distraction and infringement on-the-job:

“A lot of us would blow up [instant messaging] if we could. In some cases we've seen it and in other cases we just suspect it - if someone is sitting at the client for eight or nine hours it seems like half of their day was spent on [instant messaging] and was not collaboratively working.”

“As technology and other things have changed over [time]...there is much more fluidity in the audit room, many more distractions, such as e-mail, voice mail messages, cell phones, having to connect to here - to connect to there - to feel we are fully connected the whole time. It creates, in my mind, a very significant disruption set to how the learning process operates.”

While as noted above, the partners recognize and value e-learning opportunities for the flexibility they provide, one partner discussed a downside related to distractions:

“What happens with e-learning is that people don’t learn because what they do is they multi-task and they just do it and kind of flip through it and don’t pay much attention to anything. You have to get the right balance between e-learning and the classroom training.”

In summary, positive perspectives offered by partners on IT relate to efficiencies gained (e.g., accessibility of information, timeliness of information, flexibility, facilitation of training and learning) and negative perspectives offered by partners on IT relate to
consequences and changes in organizational relationships (e.g., minimizes human interaction, reduces the ability to coach and provide feedback, and creates distraction).

**Factor 2: Supervisory and Feedback Practices.**

Vera-Muñoz et al. (2006) note that supervision typically connotes downward communication in the form of advice about task-related matters, such as task instructions, objectives, constructive assessments of preliminary plans and the results of past decisions (see also Hall 1996), and provision of feedback. *Feedback* is information given to an individual after a task has been performed which may help that individual acquire knowledge and lead to improved judgment/decision making quality (Bonner 2008). Supervisory review is required by GAAS, is considered part of the subordinate’s on the job training, and is empirically linked to important factors for job satisfaction, career development and turnover intentions (Vera-Muñoz et al. 2006). Studies examining the work-paper review process also support the importance of supervisory and feedback practices in OTJL (Fargher et al. 2005; Brazel et al. 2004; Gibbins and Trotman 2002). For example, Gibbins and Trotman (2002) ask managers to identify the qualities of a good reviewer. Respondents praise supervisors who provide clear, complete, and timely feedback and those who provide on-the-job training. Bonner (2008) summarizes current research suggesting positive effects of feedback on judgment/decision making quality, noting that certain dimensions may lessen its positive effect, including lack of timeliness, incomplete feedback, poor quality, and diminished frequency. Thus, we include supervision and feedback among the organizational factors considered in this study.

Although partners were asked to comment on the effects of both supervision and feedback on OTJL, most of the partners interviewed focused their responses on the role of
feedback. Of those who commented on supervision of OTJL, most felt that supervision has improved over the years. However, some note that it requires face-to-face interaction to be effective, and there is variability in the quality of supervision. For example:

“The senior will review that person and go through and say, ‘Okay, what did you do here and how did you do it?’ And then they’ll get the review and get an understanding of whether or not the work was done properly and the staff (or whoever it is) will get an understanding of what’s important or why this was done or if it was done incorrectly, how to get it done correctly.”

“I think there is more of a connection to people so I think the supervisory and feedback is more real time because you feel more comfortable with the people and you know them better.”

One partner was critical of the firm’s supervisory practices, noting that some auditors who are placed in a supervisory role do not have adequate supervision themselves, and therefore they aren’t good supervisors:

“I think you have some folks who supervise very well and there are some that do not… remember you went through a long period of time when you didn’t have any supervisory practices and so there are a lot of people that really don’t know how to supervise because they were never supervised.”

The topic of feedback elicited strong reactions by partners, and there was consensus that the timeliness and quality of feedback has a dramatic impact on auditors’ ability to learn. This is not surprising, since feedback has been identified in the literature as essential to learning in general. As summarized by Bonner (2008), various dimensions of feedback (timeliness, completeness, quality and frequency) can moderate its effectiveness. We organize our analysis of partner responses on these four dimensions. Also, some partners differentiated between formal feedback, which occurs as part of the firm’s documented semi-annual evaluation process, and informal feedback, which is viewed as more immediate, occurring in real time, on-the-job settings.
With respect to formal feedback, some partners feel that the formal process enables learners to receive more timely feedback than in the past, as indicated by the following examples. “We give more formal feedback more often so I think that plays a very critical role…there is more rigor in the process.” “We’ve got our [evaluation form] and that puts formality into the process and I think we’ve come a long way on that [process].” “[The firm] has put better controls in place to make sure [formal feedback] happening more timely…good process getting a lot better.”

Others discuss the benefits of informal feedback, noting that it tends to be more timely and can be more candid because it is not documented, as is the formal feedback process. The following quote illustrates this point:

“Real time feedback - because you are not writing it down, somebody isn’t looking over your shoulder and saying ‘what did he mean by this’ - You can be a bit more specific. You can maybe be a bit more critical. I think that in the formal written feedback, you worry about every word that goes into the feedback because it is going to be read by somebody who has absolutely no knowledge of the job or the job specifics and they could easily misconstrue what is being said.”

The majority of partners were highly critical about the effects of feedback practices on OTJL. Some were concerned that formal feedback was not occurring on a timely basis (despite the improvements over the former process noted above). One experienced and one new partner respond as follows:

“By the time those forms are done, if the person hadn’t gotten that feedback, that open honest feedback while he or she was doing the work, it is almost meaningless…because [the work] is not fresh in anybody’s mind.”

“Unfortunately, we all get so busy and we throw the formal feedback onto the back burner until it’s absolutely due as part of the summary review, and that’s something we are horrible at, and we’ve always been horrible at, and we need to get better at it.”

Other partners felt that because supervisors are reluctant to give negative feedback, both formal and informal feedback processes are ineffective because they are too “soft” to
result in learning, as indicated by several partners: “[supervisors are] less willing to be forthright face-to-face with people in terms of what they need to do to improve their performance;” “we have trouble being critical and so we are not critical face-to-face;” “people struggle to give a tough message;” “we tend to shy away from giving people negative feedback verbally.” One experienced partner gives a more curt view:

“Our people do not understand the role of on-the-job training, constructive feedback, which can be negative, by the way. It is not always positive and this becomes a generational issue where everyone wants a trophy.”

Several partners blamed the lack of candor in feedback on the fact that the firm has an upward feedback process, whereby subordinates evaluate their supervisors as part of formal feedback. The feeling is that the supervisors want to get positive comments from the subordinates, so they provide only positive comments when evaluating the subordinates. If there is a failure in learning on the subordinate’s part, some supervisors will take the blame for the lack of learning, sometimes inappropriately. The following powerful quotes sum up this problem:

“What happens is even negative feedback becomes positive feedback. So here’s what happens. Imagine somebody does something and they don’t do it well. Rather than someone saying to the person, ‘You didn’t do this very well and let me tell you what you could’ve done.’ The way it now gets delivered would be, ‘How did I fail you? What did I, as a supervisor, do to not properly supervise you, whereby you were not able to do this to your potential?’ It’s that culture that has become embedded that has made everything ineffective because people will not, or if they do, they get bad upward feedback, which then comes back to them through their compensation, their performance evaluation when, in fact, the person is trying to give somebody on-the-job training.”

“People wanting reassurance and acting perhaps a little irrationally to constructive criticism complicates some of the concepts of an apprenticeship… the expectation should be, perhaps, that you are going to make mistakes and you have got a lot to learn. I don’t think organizations need to apologize for, in the appropriate manner, pointing that out and bringing a little, dare one say, humility to the proceedings sometimes.”
Other partners blame the lack of candor on the fact that the firm, at one time, was afraid to lose employees.

“We were probably afraid that individuals would leave and we really couldn’t afford that five years ago. I think that over time, we just really haven’t gotten out of that mentality.”

Because of the lack of candor and reluctance to give negative feedback, employees who are not adequately learning may not realize there is a problem until it is too late.

“There is certainly sometimes a gap between what [a supervisor] will say on a [formal evaluation] about another person and then what they will say when they are talking with their peers or talking with a review committee or something like that...[a supervisor] goes into this evaluation meeting at the end of six month period and they say, ‘Bob is really struggling.’ And [the review committee] says, ‘It’s funny that not one of his personal evaluations mentions that.’”

The following story illustrates when one partner intervened to provide candid feedback to an employee who was struggling:

“I recall early on when I...started working with her and pulled her aside and really said, ‘Your feedback forms haven’t reflected it, but you have this reputation and I can see it myself, that you need to work on these things and do more research and execute more care,’ and I recall her saying to me that she always thought something wasn’t right; she kind of had this feeling, but that nobody said anything and she really appreciated that I gave her the feedback because that gave her some things she knew she was falling behind her peers on and was able to work on.”

Finally, one criticism of the formal feedback process is that evaluation forms do not really measure OTJL. The following quotes illustrate this criticism. “I think our formal feedback is a bunch of stuff that really isn’t grounded in reality of what we do for a living.”

“Some of the hand written, more free-form evaluations I received years ago were probably more effective than some of the 17 boxes and the ways some of them are structured now by HR professionals and consultants. So I think we can almost over-do it so it becomes less effective.”
**Factor 3: Time and Work Demands.**

Various forms of time and work demands have been shown to inhibit successful OTJL. Time pressure (e.g., time budgets and deadlines) has been cited as one of the most challenging environmental factors faced by auditors (Bonner 2008). In their 1985 study, Dirsmith and Covaleski note that some seniors report believing that the role of guide is important and they sometimes perform this function; however, they feel that time constraints inhibit effectiveness. Fargher et al. (2005) conclude that the time spent training (auditor) subordinates is lower when time pressure is high. Mentoring studies also show that time constraints (Allen et al. 1997), competition, and stressful environments (Dalton et al. 1997) hinder mentoring relationships. The negative results with respect to time pressure in mentoring are consistent with studies finding negative impacts on decision quality (McDaniel 1990; Choo and Firth 1998).\(^{10}\)

Based on the cited literature and concern from audit practice, we also include time and work demands in the set of factors we consider.

Consistent with the above cited literature, the majority of partners feel that time and work demands have a negative impact on OTJL. Specifically, most felt that budget pressures create an environment where supervisors feel there just isn’t time to be a proper coach. The following partners capture this sentiment:

“When we hear about why people aren’t coaches, the biggest reason is time commitments and time constraints or budgetary constraints or things like that.”

“I think that if you talk to seniors and managers they would say they would love to train their apprentice – they would love to take someone under their wing, but they just don’t have the time.”

\(^{10}\) Also, one practitioner with whom we spoke in developing our instrument said that given demands on partners’ time in the current audit environment, he wondered if they have sufficient time to develop the staff below them.
“Maybe at times people are hard pressed for spending an extra half hour or whatever explaining to somebody why what they are doing isn’t quite right.”

One partner noted that in high time pressure situations, the review process suffers:

“What happens is when you get busy you start reviewing by review notes as opposed to in advance, talking with people and explaining what they’re supposed to do and that type of thing.”

Other comments describing the negative impact of time and work demands reflect more of a trade-off between competing factors, such as work-life balance or juggling different tasks. Such comments indicate that coaching is often not given priority over other competing demands on time, as captured by the following quotes:

“You are trying to get things done as efficiently as you can and you are working long hours and you have work-life strains you are trying to balance and it’s easy to let the on-the-job training go and not focus on that when you are trying to get something done yourself.”

“The times where I have a balanced work schedule, I really can devote the right time to my people and you could see the people grow and it really makes a huge impact and then the times where I am put on too many jobs or initial public offerings are popping up left and right and the first thing to go is on-the-job training.”

“Because, and I have to admit it, sometimes when I have an extra hour in my day, do I really want to spend it talking with someone or could I actually catch up on email. So you have to force yourself to do that. It is hard sometimes.”

Although there was general agreement that time and work demands often have a negative impact on learning, some partners noted that strong supervisors are somehow able to fully develop their staff despite those demands:

“I think the good seniors realize that they have staff on their job with varying levels of ability. A little bit of time invested up front goes a long way in saving time on the back end.”

“Those that are the absolute best on-the-job training work the most hours, yet they do seem to find time to train people.”
Finally, several partners believe that time and work demands could have a positive impact on OTJL. For example, in the view of these partners, high-pressure environments accelerate the pace of learning. Therefore, the process becomes more efficient and streamlined, since information can’t be given more than once. This result is consistent with McDaniel (1990), who found a positive effect of time pressure on audit efficiency.

“(t)hings are being thrown at you constantly that I think really help accelerate our young people in terms of their understanding of business and of people and of all the kind of components that it takes to bring success.”

“I don’t necessarily think the ‘old way’ was the way to do it, but I learned a lot in situations that were stressful and demanding and part of it was when you reflect back afterwards and think, ‘Wow. We did a lot in a short time and I learned a lot from the people that were there with me.”

Others note that in situations of high time and work demands, there is a certain intensity that increases the bond between auditors and may actually increase the desire of supervisors to invest time in coaching junior auditors as captured in the following quote:

“Because you do work so closely together and perhaps for a very long period of time and it could be an intense period of time, in some ways I think that creates a situation or people invest heavily in you. They take a real keen interest in you. Even, in my example, it may be 10 o’clock at night, somebody will take the effort to teach you a task or a project or a skill because they do want you to be successful.”

**Factor 4: Diversity of Workforce.**

Prior literature in apprenticeship suggests that selecting a model that is similar in age, cultural background and outlook is important to the success of the master-apprentice relationship in the domain of continuing education (Farmer et al. 1992). In addition, prior literature in mentoring suggests that similarities/differences between supervisors and subordinates have an impact on the success of the mentoring relationship (for a recent summary of the related literature, see Reinstein et al. 2010). Diversity of the workforce references both differences in gender (male, female) and in cultural background (nation of
residence, ethnicity, race, etc.) Anecdotal evidence suggests that the representation of female and culturally diverse partners in public accounting firms is growing.\textsuperscript{11} Thus, we include diversity of the workforce among the factors that may have an impact on OTJL.

Results show that partners are mixed on their views of diversity. Many more new partners than experienced partners noted positive effects of diversity, such as the ability to expose members of the audit team to diverse ideas and life experiences. The positive impacts of diversity in terms of providing new perspectives are captured in the following quotes:

“Whether it’s age, national origin or whatever that might be, that just brings different points of views that people can share and learn from and get different perspectives. So, and I think, if we are just talking about auditing in general, I think the more diverse the work force is, the better on-the-job learning would be.”

“I think from a cultural standpoint it has made people realize people of all races, gender, etc., can contribute and contribute very well to the execution of the engagement. From my perspective, anytime that you broaden your horizons both professionally, culturally and personally, that is just a fantastic situation.”

Others note specifically that diversity is helpful because it challenges auditors to think more creatively about their work, as noted in the following quote:

“You have to be adaptable. I don’t see that as a drawback. I think it can be more challenging for the coach because I think it is easier for that coach to take that cookie cutter mentality, but when you have a diverse group of individuals on a team; it certainly broadens the team and brings many different, more unique perspectives. I think it is helpful to the learning process.”

Despite the benefits of diversity, several auditors noted that greater diversity also has its challenges. One reason for this is that training cannot be provided in a “one size fits all”

\textsuperscript{11} In its 2010 Transparency Report, Deloitte reported that about 24 percent of their US partners/principals/directors are women and ten percent are minorities, while 44 percent of their US client service personnel are women and 32 percent are minorities. Deloitte also maintains that they “proactively seek diversity among new employees because [they] believe that a variety of backgrounds and perspectives enhances audit quality” (2010, 19).
fashion. The lack of homogeneity is seen by some as a drawback, as noted in the following quotes:

“I expect that some people find it more difficult to give on-the-job training to certain groups and at the same time certain groups find it more difficult to receive on-the-job training than others do. That probably makes it more difficult because one size doesn’t fit all.”

“When you have got a lot of diversity, it can mean that you accept diverse opinions and diverse views and diverse ways of doing things when actually some of those aren’t the best ways to do things. So, there is actually a point at which unless you said it has to operate within a certain framework, that begins to detract from the learning experience because it confuses people.”

Others noted that another challenge of diversity is that when the supervisors are different from associates, the associates may have difficulty relating to their supervisors:

“I think part of the issue is you may have supervisors and partners and managers who are less diverse than the associates and if you have associates that don’t look up and see people that like them, they may not have the same connection with the firm as others.”

Several partners noted challenges specifically with firm employees from other countries who rotate in for temporary assignments from overseas. Some felt that the language barrier or lack of knowledge of U.S. GAAP was a problem, while others felt that the turnover issues caused supervisors to not want to invest in these people. There were several concerns about integrating these employees into the fabric of the US firm, as captured in the following quote:

“I think that it in many cases they come in with a lack of knowledge of generally accepted accounting principles in the US and they need to get up to speed very quickly in order to be able to function in a US environment and I think that lack of knowledge strains the on-the-job learning somewhat, at least that’s been my experience.”
Other partners expressed that while diversity is not negative, it presents a challenge in that coaches need to be prepared to adapt their teaching style to their audience. This is captured in the following quotes:

“I guess we coach differently depending on the person and their background. So I guess, in essence, if you are saying you’re coached differently that is communicating. On-the-job training has to be a little bit different too.”

“I think there are definitely different styles of learning from female versus male. There are different styles within each gender and I think you see that in the workplace on how you encourage and how you provide constructive feedback. So I think that has impact and I think you just adjust your style just as you would for anything else.”

Despite the positive and negative comments regarding diversity, many partners (about 40 percent) took a neutral position on diversity, and either felt there was no impact of diversity on OTJL, or expressed that the firm should hire the best candidates, no matter what their ethnic background, gender, or nationality as captured in the following quote:

“Just give me the best people to do the job. Give me people that want to learn and are bright and we’ll mold them from there.”

**Factor 5: Reward Systems.** Vera-Muñoz et al. (2006) suggest that extrinsic rewards (e.g., monetary compensation) tend to lead to knowledge hoarding as a source of power for job security. However, Vera Muñoz et al. (2006) also maintain that team-based structures that foster development of personal relationships, like those found in public accounting firms, may internally motivate others to share knowledge. In practice, engaging in coaching activities (e.g., leading formal training sessions, actively communicating with teams/office members) continuous learning, and improvement of technical and auditing skills is “rewarded” directly via office/firm recognition (i.e., “Coach of the Month” award) and indirectly via the performance appraisal process; this process is used as the primary basis for
promotions and compensation adjustments (Deloitte 2010). We also include audit firms’ reward systems among the factors considered in the study.

One way in which firms can focus the attention of busy professionals on OTJL is through specific inclusion of this activity in their professional reward systems. While we asked, “what impact do rewards have on on-the-job learning?”, most partner responses address a different question: “does on-the-job coaching lead to rewards?” Addressing this question, partners generally cited one of three formal reward systems within the firm: promotion, monetary (i.e., raise or bonus), and office/firm recognition. Some partners believe that on-the-job coaching indirectly leads to rewards, whereby engaging in coaching activities is one part of the formal evaluation process (i.e., positive/negative marks are a factor when determining promotions/raises). However, others feel that there is no direct or indirect relationship between on-the-job coaching and rewards. A view shared by several partners is that helping a subordinate learn is the reward itself:

"I don’t personally feel that people are thinking about ‘I am going to get a bonus for this, I am going to get extra money for that’ … so I am going to invest more time in coaching and teaching people. I think you do it because it is part of our culture and if you don’t, then the person is going to make the same mistakes again and again. I guess the overall reward is the ultimate advancement and clearly people’s views of how well you mentor and how well you teach are a factor in getting promoted."

“The reward is not monetary. The reward is the learner learns more, but the teacher gets a much better professional with which to work on future audits or with which to deploy into the firm …so that is kind of the reward and I think too often people at the firm don’t see that reward.”

“I think if you look at evaluation plans from partner down to a senior. One of the things is coaching and development. Who are you developing? Who are your mentees? My own partner plan has certain people that are assigned to me that I am responsible for developing… I think when we look at evaluating people yearly; seniors, associates and go through the year, people who are good coaches and they are getting very positive feedback and people enjoy working with them are going to be highly rated and paid more than people who may be very smart technically, but
can’t coach people, no one likes working for them, negative in the audit room. It’s going to affect them negatively.”

Several partners also mentioned that there is difficulty in measuring how well someone coaches/learns on the job without direct observation. Because activities that are not measured cannot be well incorporated into formal reward structures, this implies that supervisors focused on extrinsic rewards will downplay coaching in favor of other activities that are easier to measure.

Differences in Perspectives Based on Partner Experience

The public accounting profession has undergone profound changes over the past two decades. For example, through the 1990’s many firms experienced the dramatic growth of their consulting practices as well as a shift in audit methodologies to embrace a business risk-based approach (e.g., the Strategic Systems Auditing approach described by Bell et al. 1997). In the early 2000’s, challenges to the profession brought on by accounting scandals such as the collapse of Enron and Arthur Andersen, led to the passage of SOX in 2002. Restrictions imposed by SOX and subsequent regulations resulted in reduction of the extent of auditor/client consulting relationships. Also, the focus on internal controls testing required by SOX Section 404 brought about a fundamental change in the nature of audits of large U.S. public companies. Thus, audit partners whose careers were formed from 1990 on (i.e., those admitted to the partnership in the mid 2000’s) might have different perspectives on OTJL than partners who had achieved partnership status prior to the mid-1990’s. To investigate whether there are “generational” differences in perspectives, we compare responses of relatively new versus seasoned partners throughout our discussion of results, finding several notable differences between groups.
With respect to similarities and differences in OTJL (apprenticeship) and characteristics of new staff and seniors over time, there are three main differences between new and experienced partners. First, new partners more frequently cite greater differences in firm/individual emphasis on coaching relative to experienced partners. Second, new partners feel more strongly that that new staff have a lower level of commitment to the profession (and/or staying long term with the Firm), relative to experienced partners. Third, relative to experienced partners, new partners indicate more frequently that seniors have less exposure to technical accounting, as this work is being performed more often and at the higher levels (manager, senior manager). Some of these findings suggest a more negative view by newer partners, perhaps due to the recency of their own passage through the difficult period preceding attainment of partner status.

We note four main differences between new and experienced partners relating to the impact of organizational factors on OTJL. First, relative to experienced partners, new partners feel more strongly that IT enhances flexibility, but reduces the ability to coach and reduces human interaction. This suggests a greater awareness of some negative and positive effects of IT by newer partners, perhaps because they are more likely have “grown up” using these technologies themselves. Second, with respect to supervisory and feedback practices, new partners are more likely to indicate that the timeliness of feedback is important and that feedback is less effective when not given in real time. Third, when discussing diversity, about half of all partners indicated that the main benefits of diversity are related to the varying life perspectives and experiences that diverse individuals bring to the table. It is notable that 63 percent of new partners share this perspective, relative to only 29 percent of experienced
partners. Fourth, more new partners than experienced partners believe that good coaching is rewarded as a part of the firm’s (annual) evaluation process.

CONCLUSIONS, LIMITATIONS, AND FUTURE RESEARCH

This study reports results of interviews with 30 highly accomplished audit partners on the topic of on-the-job learning in general, and learning through apprenticeship specifically. While there are many specific results, we discuss here several overall patterns in the findings, and note future research opportunities arising from them. Overall, our results affirm the importance of OTJL in audit practice. The partners we interviewed generally perceive that the “craft of auditing” (i.e., the technical knowledge and skills necessary for good performance) is primarily learned while working within engagement teams, where subordinates observe and are coached by superiors. These methods, modeling (observation) and coaching, are two components of the CA model, which suggests that apprenticeship is present in public accounting firms. The partners we study generally affirm that an apprenticeship model is a key component of OTJL, but they vary somewhat in beliefs regarding its levels of application (e.g., between partner and manager, between senior and staff). Variance in responses implies that apprenticeship may be inconsistently applied, and so its use could potentially be expanded within auditing firms. Future research could explore whether increased emphasis on apprenticeship at all levels in firms would be beneficial for auditor development.

While our results show that the apprenticeship model of development exists in public accounting, we also provide evidence on how apprenticeship functions and on factors affecting its success in promoting auditor learning. For apprenticeship to be effective, three principal elements are necessary: the learner, the guide, and the practice environment. We
asked for partners’ views about the application and effectiveness of OTJL and apprenticeship in terms of characteristics of the people involved and the organizational context in which it takes place. Our results generally show that these elements are present, but we identify some challenges in all three areas.

Although most partners perceive that an apprenticeship model in some form is currently practiced in auditing, our results based on partner recollections suggest while some parts of the theoretical CA model are often present in practice (modeling and coaching), other parts are not as apparent (including scaffolding, articulation, reflection and exploration). We recognize that current partners’ recollections may not validly represent the experience of all individuals in current audit practice, both because of environmental change, and because individuals who have “made it” in the system may have had different experiences than those who did not. Future research could examine whether these phases are currently under-represented, from the perspective of associates and seniors. Research could also explicitly study whether these under-represented phases actually result in better learning in the auditing environment. For example, the CA step of reflection on one’s performance is infrequently mentioned, yet one audit firm incorporates reflection as an element of its workpaper documentation process. Another example is the provision of feedback, a key intrinsic element of coaching (and scaffolding). Our results show that partners believe that good coaching is frequently hampered by unwillingness to give candid feedback. Future research may examine how firms can improve the delivery of constructive yet candid feedback.

In order for learning to be effective, there must be *willing and competent* coaches as well as *receptive* learners who are able to understand what is being taught and apply it to practical
situations. In terms of the qualities of learners, we find that partners’ views vary regarding how audit staff members have changed over the past ten to 30 years. They note positive aspects of the new staff such as intelligence, preparation and IT skills. However, they also cite concerns about the commitment of new staff to the accounting profession, and their expectations about what the firm will do for them rather than what they will do for the firm. We also observe some concerns regarding the lack of motivation of new staff to engage in activities leading to a deep level of understanding about the craft of auditing. Many partners recall that their own learning was enhanced by personal initiative, selecting appropriate role models and responding to challenges. Therefore, given the importance these partners ascribe to their own initiative and observation of others when learning auditing, an apparent lack of motivation of some staff is a concern for the future. The question arises as to how firms can foster these traits among new auditors, e.g., through differential selection or training. Interestingly, these concerns are not voiced by partners when discussing seniors. This suggests that individuals with low motivation may be leaving the firm before being promoted to the level of senior.

The CA model also indicates that the environmental context in which learning takes place is important. Most partners indicate that the increasing complexity of standards is a key challenge in today’s audits. These complexities are especially challenging for seniors as both coaches and learners because many technical aspects of the senior’s role are being pushed up to the manager level, potentially delaying their technical maturity and hence their ability to coach newer staff.

When asked about organizational factors influencing the relative success of OTJL and apprenticeship through time. Technology is seen as beneficial but a price is paid in loss
of human interaction, which is a necessary component of effective apprenticeship. Additionally, work demands are high at all levels, which most partners fear prevents adequate time to coach and learn. One potential remedy would be to implement a reward structure that more strongly recognizes the long-term value of effective coaching to audit quality. However, partners note that there are challenges in measuring effectiveness in this context. While our interviews contain a number of insights regarding the qualities and activities of auditors engaged in coaching and learning, several partners commented that it is difficult to discern how good people are at these activities unless they are observed. Our results on the effects of technology imply that opportunities are increasingly limited for direct observation by partners of the interaction between managers/seniors and seniors/staff as they coach and learn. Further research could identify ways in which firms could more adequately measure the effectiveness of coaching and learning on the job, in a technologically advanced environment. Also, our data suggest some concern that formal feedback has changed over time to emphasize “softer” measures rather than more technical aspects of auditing. Future research could examine whether this tendency is observed across the profession, and if so, what are its effects?

In addition to the research issues noted above that arise from our main conclusions, several specific future research questions arise from the limitations of our research design. First, conclusions based on qualitative inquiry always involve researcher interpretation. All of the researchers on this paper have prior experience in public accounting, which may bias the conclusions in a more favorable or unfavorable manner. Second, some of our questions asked partners to recall past events. Those responses may be subject to recall bias. Third, we interviewed partners from the U.S. practice of a single Big 4 firm. Thus, the extent to which
our results generalize to auditors in smaller firms and in other countries is unknown. Also, responses of successful partners may not represent the experiences of individuals who have left the firm before attaining partner. Some of those individuals may have left due to inadequate training. Future research could examine whether there is an association among effective apprenticeship, job satisfaction, and auditor retention rates. Fourth, our data are limited to impressions of partners. Because prior research (Dirsmith and Covaleski 1985) shows rank-associated differences in opinions of firm practices related to mentoring, research should also examine perspectives of current audit associates and seniors, who are currently learning the craft of auditing.
Part Two

The Effects of Modeling Availability and Repetition on Task Performance
INTRODUCTION

Audit firms regularly engage in and develop a variety of methods that support task performance quality. For example, audit firm guidance is continually offered via formal training programs (i.e., live and virtual classrooms), the audit work program, peer discussions, supervisory review, and on-the-job experience. In Part One of this dissertation, Westermann, Bedard and Earley (2011) find that a majority of Big 4 audit partners interviewed believe that the primary means in which auditors acquire expertise is through guidance received on-the-job from a more experienced auditor(s). This is consistent with one Firm’s initiative of promoting a culture of “continuous coaching.” Continuous coaching is deemed an important initiative yet previous literature has not yet studied the effects of having continuous task-specific guidance available.

This study investigates whether awareness of having available repeated guidance (in the form of task modeling) from a more experienced auditor, the learner’s choice to repeat task modeling when available, and prior task-specific knowledge improve task performance in auditing. Studying the effects on task performance is important because if extensive availability hinders learning, then a supervisor who is continuously available may ultimately spend too much time instructing staff and may suffer economic costs related to over-instruction; however if extensive availability of modeling facilitates learning, then a supervisor who spends minimal time instructing staff may suffer economic costs related to insufficient instruction. Additionally, if higher/ lower knowledge learners react differently to availability of and repeated task modeling, then a supervisor should be able to adjust his/her availability for guidance on-the-job accordingly.
Consistent with Westermann et al. (2011), I apply a model of on-the-job learning, Cognitive Apprenticeship (CA), to the auditing literature. Originally developed as a framework of instructional design, CA incorporates the foundation of apprenticeship and traditional schooling for the teaching and learning of cognitive skills, and has promising features to examine within the audit judgment literature. This framework identifies modeling as one method of effective promotion of learning. Modeling is a type of instruction in which an expert (model) externalizes his/her internal thought processes and activities to a learner. The learner, through observation, sees how the expert deals with a variety of authentic problems, which allows the learner to observe what processes are occurring and hear why they are occurring, facilitating a deeper understanding of the process (Collins et al. 1989). The idea of an expert modeling a task to a learner has been described as an essential component of several learning theories (e.g., Bandura 1977 – Social Learning Theory; Lave and Wenger 1991 – Situated Learning Theory; Collins et al. 1989 – Cognitive Apprenticeship). Because modeling serves as a fundamental component of several learning theories, and is a frequent feature of learning in professional environments, it is important to study factors that affect modeling effectiveness. This study examines availability of modeling, which is particularly applicable to the professional context of auditing, but has not been specifically tested by prior research.12

12 Prior research in auditing has not directly examined modeling; however some studies address related topics such as content of instruction (i.e., how-to rules, understanding rules), generally finding that instruction leads to declarative knowledge acquisition, and some combination of practice and feedback leads to procedural knowledge acquisition, which ultimately leads to improved performance (e.g., Bonner 1990; Libby and Luft 1993). The concept of modeling necessarily includes how-to and understanding rules, but goes beyond mere rule provision by providing instruction while actively carrying out the task to be learned. In audit practice as well as in other professional contexts, supervisors routinely model audit procedures to subordinates through discussion and demonstration. My study differs from previous studies on instruction in that I provide all learners with a combination of discussion and demonstration using an audio-visual medium as opposed to
In this study, I manipulate the availability of task modeling. Specifically, I assess whether awareness of task modeling availability (repetition not allowed, repetition allowed) ultimately improves task performance. Those learners who have access to repeated modeling will not necessarily choose to receive repeated modeling; therefore I separate learners who are assigned to the repetition available condition into two categories, those who choose: (a) to engage in repeated task modeling (watch [parts of] the video more than once); or (b) not to engage in repeated task modeling (watch the video only once). Because I do not have the ability to control this decision, I record the amount and content of task modeling actually received and subsequently measure whether receiving repeated task modeling improves task performance. I also measure the learner’s prior task-specific knowledge which prior research suggests is a moderating variable associated with learning and performance.

For those learners who choose to repeatedly observe modeled behavior, there is theoretical tension as to whether repeatedly observing modeled behavior improves performance. On the one hand, Westermann et al. (2011) find that in audit practice, work demands often compete with time devoted to instructing and coaching less experienced auditors. Specifically, partners report that novice auditors are effort-averse and expect constant guidance about task performance (i.e., “hand-holding”). Thus, receiving repeated task modeling may hinder attention directed towards learning, in effect leading the learner to become reliant on the model and shortcutting the need for task learning (i.e., Lindquist and Olsen 2007). If extensive availability indeed hinders learning, then a supervisor who spends too much time instructing staff may suffer economic costs related to over-instruction. In this merely providing written instruction, enabling me to examine the effects of audio-visual modeling as opposed to written instructions.
case, learning may be more efficient and effective if the learner is aware in advance that only limited task modeling will be available, thus encouraging attention. In contrast, it may be that more observation yields better outcomes. That is, greater opportunity to observe modeled behaviors may result in better understanding and retention of material [i.e., Bandura 1977 – Social Learning Theory]. In practice, if extensive availability of modeling facilitates learning, then a supervisor who spends minimal time instructing staff may suffer economic costs related to insufficient instruction. Additionally, too little observation might mean that only highly capable learners perform well (Freitag and Sullivan 1995). Prior task knowledge of the learner is shown to be an important moderator of task performance (i.e., higher-knowledge learners tend to acquire more knowledge and outperform lower-knowledge learners; Bonner 2008), therefore paying attention to and repeating task modeling may be particularly important for lower-knowledge learners.

My first hypothesis predicts that lower-knowledge learners who do not have recurring access to repeated modeling are likely to pay more attention and will therefore outperform lower-knowledge learners who have recurring access to modeling but who choose not repeat. My results suggest that lower-knowledge learners perform better when they are aware that repeated modeling is not available, supporting my first hypothesis. With respect to repeated modeling, my second hypothesis predicts that lower-knowledge learners who have repeated exposure to modeling have greater opportunities to encode information and will perform better, relative to those who do not engage in repeated modeling. My findings suggest that receiving any amount of repeated modeling has no effect on performance, regardless of learner knowledge, in contrast to the predictions of my second hypothesis. These results are important because it appears that making coaching more
available to lower-knowledge auditors actually reduces the effectiveness of coaching, which may ultimately impair audit quality with respect to performance of substantive detail testing.

Examining substantive tests of details as an experimental task contributes to current literature. Extant literature on expertise development in auditing focuses on less structured tasks (i.e., going concern analysis, analytical procedures), which tend to be tasks performed by more experienced audit team members, as opposed to novice auditors. My study focuses on performance of a relatively more structured audit task, a search for unrecorded liabilities, which is a procedure routinely assigned to novice auditors in practice, and thus appropriate for my study on novice auditor learning. To my knowledge, there is little research that has explicit alignment of task materials with (audit) learner experience and little research using performance of a substantive test of details as an experimental task.13 Studies examining substantive tests of details are also important because performing substantive tests of details are the primary means where auditors detect misstatements in financial information (Hylas and Ashton 1982; Austen et al. 2004)14 and failure to detect misstated liabilities is one

13 Previous studies in auditing examine substantive analytical procedures, which are more ill-structured and judgment oriented relative to substantive tests of details (i.e., Abdolmohammadi 1999; Nelson and Tan 2005). Much of the novice research conducted uses tasks that are, in practice, designated for more experienced auditors (i.e., preliminary analytical procedures, going concern assessment) who have greater industry and client-specific knowledge. The task I use is structured in nature requiring little/no client-specific knowledge and a moderate level of judgment based on interpretation of audit evidence (i.e., supporting documentation) alone (Abdolmohammadi 1999). In their examination of the effects of experience on audit decisions, Abdolmohammadi and Wright (1987) suggest that junior auditors or accounting students are questionable surrogates for CPA’s in complex decision settings which further strengthens the decision of this paper to use a true novice task with novice subjects.

14 Hylas and Ashton (1982) find that 47.3% of errors requiring financial statement adjustments were found via substantive tests of detail procedures (analysis and review 17.4%, obtaining evidence 26.7%, and scanning 3.4%). Austen et al. (2004) also find that a majority (61.9%) of identified misstatements were identified using a form of substantive tests of details.
primary cause of alleged audit failures (Casterella et al. 2009). Despite their importance, research examining substantive tests of details is understudied.

The rest of the paper is organized as follows. Section two presents background information and hypotheses. Section three outlines the research method and section four discusses my results. The final section discusses limitations, future research and implications on the audit practice.

**BACKGROUND**

Modeling is a type of instruction in which an expert (model) externalizes his/her internal thought processes and activities to a learner. The learner, through observation, sees how the expert deals with a variety of authentic problems, which allows the learner to observe what processes are occurring and hear why they are occurring, facilitating a deeper understanding of the process (Collins et al. 1989). The roots of CA modeling lie in traditional apprenticeship and in social learning theories. According to Bandura’s Social Learning Theory (1977), modeling influences learning through its informative function in which the learner acquires “mainly symbolic representations of the modeled activities which serve as guides for appropriate performances” (24). Bandura suggests that observational learning is governed by four component processes: (1) attention processes; (2) retention processes; (3) motor reproduction processes; and (4) motivational processes. Social Learning

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15 Casterella et al. (2009) report one of the highest concentrations of alleged audit failures involve failure to detect misstatements in liabilities. There are several substantive auditing procedures that an auditor undertakes to assess the completeness of a company’s liabilities. Search for unrecorded liabilities testing includes: client inquiry, reviewing accounts payable source (subsequent cash disbursements) transactions after year end r, and examining unpaid/unmatched invoices, unmatched receiving reports, open purchase orders to determine that liabilities are properly recorded (Louwers et al. 2011). I use only subsequent cash disbursements testing to test for unrecorded liabilities in my experiment.
Theory was developed as theory to explain human behavior and Bandura’s exposition on learning through modeling is applicable across disciplines, including auditing.

In auditing, practitioners are found in group and individual learning environments both on and outside client engagements. In a group learning environment, an auditor typically learns in the presence of peers within and outside his/her immediate audit team, which includes instructor-led formal training and simulations. In an individual learning environment, an auditor is learning on his/her own, from sources such as electronic learning, e-mail updates, and research guides (i.e., databases housing accounting/auditing and/or firm standards). In a client (on-the-job) learning environment, an auditor is learning in the presence of his/her audit team, which includes review of prior year work-papers, discussion with peers, discussions with clients, coaching and review by supervisors, observing audit team and client meetings, and performing assigned tasks. These activities represent the first three phases of the cognitive apprenticeship model: modeling, coaching and scaffolding (support from supervisor guiding task performance).

Prior accounting literature has examined the effects of instruction in the form of how-to and understanding rules provided by the experimenter, which combined are similar to but distinct from the concept of modeling. How-to rules are a list of steps or procedures that should be followed when performing a task; understanding rules extend how-to rules by providing further information about why steps are performed. Using a ratio analysis task, Bonner and Walker (1994) find that providing understanding rules in combination with practice and outcome feedback lead to procedural knowledge acquisition. Wynder and Luckett (1999) use a performance evaluation task and find that understanding rules alone lead to increased task performance through procedural knowledge acquisition. In an
accounting classroom, Herz and Schultz (1999) find that students gain declarative knowledge from listening to lectures, however procedural knowledge is gained only through practice and feedback. Thus, prior accounting studies provide some evidence that instruction alone yields declarative knowledge acquisition and in combination with some form of practice yields both procedural knowledge acquisition and improved task performance.

I examine three questions related to instruction in the form of modeling: First, “does advance awareness of task modeling availability impact performance?” Second, “does receiving repeated task modeling impact performance?” Third, “does learner knowledge moderate the effects of modeling on performance?” These questions are important in the current audit environment for several reasons. First, while supervisors in audit practice often model tasks for subordinates, the time they have to spend on modeling varies, as does their personal approach to modeling. An interview study of audit partners (Westermann et al. 2011) shows that today’s partners are concerned that audit seniors are spending too much time “hand-holding,” and not allowing subordinates to learn how to get the benefit of instruction in a single sitting. But if extensive availability of modeling facilitates learning, then a supervisor who spends minimal time instructing staff may suffer economic costs related to insufficient instruction (e.g., poor performance of staff leading to more exceptions found in the review process). If extensive modeling actually hinders performance then a supervisor who spends too much time instructing staff may suffer economic costs related to over-instruction (e.g., budget overruns, staff able to imitate in the short term but unable to retain information over time). Second, this is important to the current audit environment because there may be added benefits of making available instructional videos to supplement current on-the-job learning practices (i.e., face-to-face coaching, audit program). Videos may
be used to compensate for “poor seniors” or inconsistent training, maximize effectiveness of
time spent coaching staff, or provide additional guidance for those less experienced auditors
that need more time and instruction to understand tasks. Third, the psychology and
accounting literatures indicate that instruction, feedback, and practice are all components of
learning. Feedback is a well-studied concept, and research indicates that type of, quality of
and frequency of feedback are important mechanisms in the learning process. The practice
effect is well documented, and consistently indicates the positive relationship between
practice and learning. However, feedback and practice aside, little research (e.g., Freitag and
Sullivan 1995) examines the amount of instruction necessary for optimal performance.

In sum, while the effect of availability of task modeling and repeated task modeling
are important issues to learning theory, and to auditing research and practice, research has
not studied them. Further, their likely effects are not clear. In the following paragraphs, I cite
several theories that provide support for both positive and negative effects of greater
availability of modeling.

HYPOTHESIS DEVELOPMENT

Awareness of Modeling Availability

Social learning theory states that individuals cannot learn much from observing a
modeled behavior unless they pay attention and perceive accurately the features of the
modeled behavior. Bandura’s (1977) model suggest that if a learner pays attention and
perceives accurately significant features of the modeled behavior, then repeated exposure to
modeling stimuli will promote lasting retrievable images of the modeled performance. This
should serve to improve retention of that information, which later will serve as a guide for
performance. In this study I manipulate awareness of modeling availability which has a likely effect on attention. See Figure 2.1 for an overview of the experimental conditions.

One reason that a learner may fail to adequately perform the modeled behavior is because he/she inadequately codes information. Coding of information in memory may be inhibited by inadequate attention to instructions. Thus, it seems likely that a learner who is aware that he/she will not have repeated modeling available (Figure 2.1, Cell A) will pay more attention because he/she does not have the option to gain additional instruction. It is also likely that a learner who is aware that he/she has repeated modeling available (Figure 2.1, Cells B and C), may pay less attention to the model. Learners who have repeated modeling available will self-select whether they view additional modeling. A learner may choose not to engage in repeated modeling (Figure 2.1, Cell B) because he/she has confidence in his/her knowledge and ability to perform the task after minimal instruction or, on the contrary, may choose to exert less effort in overall learning (Clark 1984). A learner may simply rely on imitation when performing a task in the short term (Figure 2.1, Cell C).

To isolate the effect of availability of task modeling, I compare learners in the repetition available condition (Figure 2.1 Cell A), to learners in the repetition not available condition who choose not to receive additional task modeling (Figure 2.1 Cell B). These groups ultimately receive the same amount of information; therefore any differences between groups would not be associated with repeating the video and thus are due to the awareness of modeling availability. When the amount of views is held constant, it is likely that learners who paid more attention, suggested by Social Learning Theory, will perform better. I also compare learners with higher/lower prior (task-specific) knowledge which is previously
shown to moderate the effects of performance. Bonner (2008) suggests that learners with stronger task-specific knowledge are more likely to retrieve that knowledge and be able to use it when performing the associated task, leading to higher performance relative to those with weaker task-specific knowledge. I expect differences consistent with prior literature and I condition each hypothesis on task-specific knowledge of the learner (higher/lower). Therefore, I suggest that lower-knowledge learners in the repetition not available condition are likely to perform well because they are aware that they will not have recurring access to instruction, while lower-knowledge learners in the repetition available condition (who do not repeat instructions) will perform less well as they will rely on the training video. However, I expect that learners with higher task-specific knowledge will perform well regardless of availability of instruction. As depicted in Figure 2.2 Panel A, I expect lower-knowledge learners in the repetition not available condition to exhibit greater performance scores.

**H1: The performance of lower knowledge learners will be higher when repeated modeling is not available. Higher knowledge learners will perform better, regardless of awareness of the availability of repeated modeling.**

[INSERT FIGURE 2.2]

**Repetition of Modeling - Is more, better?**

The next question I address is whether receiving repetitive modeling (multiple views) yields better task performance relative to not repeating modeling (single view). There are several reasons why the old adage “more is better” may hold, suggesting that more (of the

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16 Previous studies have found moderating effects of (high/low) domain knowledge on knowledge acquisition (i.e., Kalyuga et al. 2001). Bonner and Lewis (1990) find that knowledge content is related to auditor judgment quality if knowledge is relevant to the task itself, identifying knowledge and ability as antecedents to performance. Similarly, Herz and Schultz (1999) find that students with higher content-specific knowledge about converting cash-based income to accrual-based income perform better at this specific task. Based on prior studies such as these, Bonner (2008) suggests that learners with stronger task-specific knowledge are more likely to retrieve that knowledge and be able to use it when performing the associated task, leading to higher performance relative to those with weaker task-specific knowledge. I expect differences consistent with prior literature and I condition each hypothesis on task-specific knowledge of the learner (higher/lower).
same) instruction yields better outcomes. Newell and Simon (1972) indicate that learning requires successful transfer of new information in short term memory (limited in capacity and duration) to long term memory. Subsequently, other works (e.g., Anderson 1982, 1983) suggest that increasing the quantity of instruction facilitates learning and retention of information. Therefore, a learner who receives repeated modeling may show improved learning because he/she has had more opportunities to link new information and prior knowledge. Greater opportunity to observe instruction may also result in better understanding and retention of material. Social Learning Theory (Bandura 1977) suggests that repeated exposure to instruction produces lasting retrievable images of the modeled performance, which will be retained and learned the most thoroughly.

Prior auditing research has revealed the importance of instruction in the learning process, and has empirically tested the effects of instruction in combination with feedback and/or practice (e.g., Waller and Felix 1984; Bonner and Walker 1994; Wynder and Luckett 1999; Earley 2001). These studies generally find that instruction leads to declarative knowledge acquisition, and some combination of practice and feedback leads to procedural knowledge acquisition, which ultimately leads to improved performance (e.g., Bonner 1990; Libby and Luft 1993). Bonner and Pennington (1991) find in general, there is a positive relationship between amount of instruction and expert task performance. Bonner (2008) further indicates that instructional activities that do not involve practice (e.g., reading text, listening to lectures, watching demonstrations) aid in declarative knowledge acquisition and that repetition of this information may also increase the strength of declarative knowledge in memory; however acquiring declarative knowledge alone may not be sufficient for improved task performance. The potential effect of repeated instruction on task performance has yet
to be studied in auditing. In summary, prior literature in both psychology and accounting find that passive instruction methods lead to declarative knowledge acquisition but may not necessarily lead to improved task performance.

In contrast to “more instruction is better,” Westermann et al. (2011) find that in audit practice, work demands of more experienced auditors often compete with time devoted to instructing less experienced auditors. Specifically, partners report that novice auditors expect too much instruction regarding a task (i.e., “hand-holding”). Psychology literature about the frequency of feedback on practice has suggested “hand-holding” is beneficial to practice performance, however it may be detrimental to learning that endures over time (Goodman 1998). This same concept may also apply to instruction, in that providing too much instruction may impede the learning process, leading new auditors to become reliant on repeated instruction. Lindquist and Olsen (2007) study how much assistance should be provided to accounting students in a homework task. They hypothesize that too much assistance will have negative effects on student learning and attitude because too much assistance: serves as an impediment to “learning by doing;” may lead students to become reliant on the provided assistance; and may lead students to have an inflated perception of their own understanding. Those learners with stronger prior task-specific knowledge are more likely to retrieve and use that knowledge when performing the associated task, regardless of the amount of modeling received. Consistent with H1, I condition each hypothesis on task-specific knowledge of the learner (higher/lower). In this

17 The authors measure how assistance on a homework problem (no solution, check figure, full solution) affects student knowledge acquisition (differences in improvement between experimental pre-and post-test), satisfaction, frustration, and perceived post-test performance. This paper discusses “amount of assistance” (more similar to type of feedback provided, either outcome feedback or a worked example). However, the background literature gets at how much effort is needed by the student to perform well.
study, learners who choose to repeat have access to instruction prior to and during task performance of Company A. If a learner chooses to repeat the video while performing the task, he/she can simply imitate instructions during task performance. Thus, in accordance with extant learning theory, I predict that learners who engage in repeated modeling will perform better, relative to those who do not engage in repeated modeling (See Figure 2.2 Panel B).

**H2: The performance of lower knowledge learners will be higher when modeling is repeated. Higher knowledge learners will perform better, regardless of modeling repetition.**

**METHOD**

**Participants**

I obtained 149 participants from three sources: (1) 121 senior accounting students currently enrolled in *Financial Statement Auditing* at two universities in the northeastern U.S. (“in-class exercise”); (2) 27 newly hired auditors from international, regional, and local accounting firms (“employer request”); and (3) 15 paid volunteers comprising of master’s accounting students from one university in the North-East (“paid”).¹⁸ Senior undergraduate and master’s accounting students are appropriate participants for this study because they represent the pool of new hires recruited by public accounting firms (novice auditors). Fifty-six percent of participants are female, 70 percent are undergraduate seniors, 33 percent have previously held an accounting related internship (of these, 13 percent have previously performed a search for unrecorded liabilities), and 90 percent of participants speak English as their first language. The mean GPA for all participants is 3.44. I randomly assigned

¹⁸ Learners in the “paid” condition were paid $40 gift certificates for completion of all experimental materials. These learners were also told that the top 20 performers would be entered into a lottery for two $200 gift certificates. I distributed the lottery prizes in December 2010.
participants between the two manipulated conditions (repetition available, repetition not available.) Analysis of the demographic characteristics of participants indicates no significant difference among the experimental conditions. I eliminated a total of 22 participants who did not provide consent, watched less than 75 percent of the instructional video, did not complete the knowledge pre-test, or did not complete task performance. Data analysis in the next section is based on the final sample of 127 participants.

**Experimental Task**

The task employed in the study requires participants to perform a search for unrecorded liabilities test for a fictitious company “Company A.” A search for unrecorded liabilities is a substantive test of detail performed subsequent to year-end and is typically assigned to less experienced auditors. The search for unrecorded liabilities test involves reviewing cash disbursement records after the balance sheet date and examining supporting evidence (e.g., invoices or contracts, purchase order, shipping documents) to determine which accounting period the liability should be recorded in. See Figure 2.3 for a review of the search for unrecorded liabilities task.

![INSERT FIGURE 2.3 HERE]

Participants are told to assume that they are a new associate working for an international public accounting firm. To simulate a client engagement, “Company A,” participants are given a cash disbursements listing for the period 12/31/20X1 to 1/15/20X2 and asked to review all transactions greater than a specified dollar amount (scope) for appropriate disclosure or lack thereof in the company’s year-end balance sheet. Participants

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19 The experimental task is designed to represent actual practice circumstances. To develop the task, I reviewed examples from professional materials, and seeded errors into the documentation. The task was piloted on two separate occasions at a university in the northeast U.S., and subsequently revised for accuracy.
are provided with all necessary financial statement ledgers and supporting evidence to determine: (1) the appropriate accounting period of the liability related to the cash disbursement; and (2) whether the company has appropriately accounted for the transaction.

**Experimental Design**

I manipulate availability of modeling (repetition not available, repetition available). As previously described, modeling in both traditional and cognitive apprenticeship literature occurs when the more experienced master models a task and the thought process underlying performance while the less experienced apprentice observes. In my study, modeling is delivered online through a training video. In the video, the model (a more experienced auditor) delivers a list of procedures accompanied by simultaneous demonstration, visually showing the participant (a less experienced auditor) how to perform a search for unrecorded liabilities. The model also discusses background information and why this audit test is important. I developed knowledge elements in the video from a publicly available Big 4 Firm audit work program/new hire training program. Thus, the modeling I provide to participants in this study mirrors instruction currently provided by at least one Big 4 firm.

Modeling is provided to all participants subsequent to the knowledge pre-test but prior to task performance for Company A. Those participants who have access to repeated modeling are able to watch the video repeatedly prior to and during task performance for Company A. Overall, participants engage in the following five steps: (1) written instruction about the experiment; (2) knowledge pre-test and demographic questions; (3) search for

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20 This study does not focus on modality of instructional delivery (i.e., written versus oral/visual). Prior literature in accounting has examined written how-to and understanding, rules which is consistent with a written audit program. Modeling using an audio-visual medium is consistent with instruction on-the-job from a supervisor, which has not been studied in accounting. The concept of face-to-face “coaching” is a strong initiative currently being promoted by at least one Big 4 firm.
unrecorded liabilities instructions (on-line training video); (4) task performance; and (5) manipulation checks and debriefing questions. The knowledge test and task performance steps are identical for all participant groups. See Figure 2.3 for the Experimental Timeline.

Variable Definitions

**Dependent and Independent Variables**

The dependent variable for performance (\(Numb\_Corr\)) is the number of correct answers recorded in the participant’s completed documentation of the unrecorded liabilities test for Company A (score out of 24.5). See Appendix C for scoring rules. The independent variable for the assigned condition (manipulation) of modeling availability (\(Assigned\_Cond\)) equals 1 if the participant was assigned to “repetition available,” and 0 if the participant was assigned to “no repetition available.” The independent variable for modeling repetition is composed of three separate dichotomous variables. (\(S\_S\))\(^{21}\) equals 1 if the participant was assigned to the “no repetition available” condition, therefore only watched the training video once, and 0 otherwise. (\(M\_S\)) equals 1 if the participant was assigned to the “repetition available” condition and chose to watch the training video only once, and 0 otherwise. (\(M\_M\)) equals 1 if the participant was assigned to the repetition available condition and chose to watch (parts of)\(^{22}\) the training video more than once, and 0 otherwise.

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\(^{21}\) With respect to independent variables, the first letter represents the assigned condition (“S” indicates that only a single view of the training video is available to the learner and “M” indicates multiple views available) while the second letter represents the amount of times the video was repeated (“S” indicates a single viewing of the video and “M” indicates multiple views of the video).

\(^{22}\) As part of the manipulation check questions, learners were asked to self-report the number of times that they viewed each chapter in the training video. If the learner responded to having viewed at least one chapter more than once, then the learner was coded “1” for repeated task modeling (M-M). I used on-line survey software which records the amount of time spent on each Chapter “page.” By dividing the amount of time spent on an individual page by chapter length, I was able to confirm the self-reported responses of each learner. For example, Chapter 6 is 70 seconds long. If a learner recorded one view of Chapter 6 and the software recorded a web page time of 79 seconds) I can reasonably confirm that a learner only viewed Chapter 6 once (79 seconds/70 seconds = 1.12). The minimal difference in time (9 seconds) may be due to delay in finishing the video and clicking on the “next” button in order to proceed forward in the task materials.
The independent variable to measure task-specific knowledge (\textit{PreTestScore\_HL}) is based on knowledge pre-test score (\textit{PreTestScore}), as a measure of knowledge about transactions and accounts impacting liabilities (i.e., accounts payable). Appendix D contains the knowledge test. Based on a median split of participant pre-test scores, I construct the variable \textit{PreTestScore\_HL}, which equals 1 (“higher-knowledge”) for participants with pre-test scores > 10, and 0 (“lower-knowledge”) otherwise.

\textit{Control Variables}

The models control for (undergraduate) grade point average (\textit{GPA}) as a proxy for general knowledge, perceived level of task difficulty (\textit{Difficulty}), need for cognition (\textit{NFC\_Score}), and participant incentive (\textit{Incentive\_Class}, \textit{Incentive\_Paid}, and \textit{Incentive\_Employer}).

\textit{Data Collection and Task Performance Scoring}

Research materials were available on-line and were delivered electronically to all participants. On average, participants took approximately 75 minutes to complete materials provided, however there were no time limits imposed. Observed participants appeared to be

23 The knowledge test contains 12 questions, with a total scoring value of 16 points, which are both multiple choice and short answer in nature. The order of presentation of questions and answers was randomized across learners. Approximately half of the questions were reproduced from CPA exam study material and the remaining questions were developed by the author based on accounting and auditing textbooks.

24 Task complexity may be a moderator to knowledge acquisition (Bonner 2008), which is an antecedent of task performance. The task needs to be sufficiently complex to challenge learners but not so complex as to overwhelm them. I pre-tested the task to ensure that the task was not so easy that a learner can complete and document the task accurately without any form of instruction, but not so difficult that it cannot be completed without some level of guidance. The task includes some transactions that are more difficult in nature. I measure learner perception of task difficulty for Company A by asking participants to “Please rate the level of difficulty of performing URL for [Company A]” on a scale (1 = Very Easy to 7 = Very Difficult).

25 Prior literature shows that learners high in need for achievement better acquire knowledge from instruction (Bonner 2008). Intrinsic motivation may also derive from learner “need for cognition” (Cacioppo et al. 1984), which represents the extent to which learners enjoy and engage in effortful cognitive activities. Learners may have high (low) need for cognition, thus may (not) want to engage in effortful processing of the task, thus increasing (decreasing) attention (Ford 2006). Learners high in the need for cognition are more likely to form attitudes by paying attention to central arguments of a task, while learners low in the need for cognition are more likely to use peripheral cues when completing tasks. The Need for Cognition Scale consists of 18 questions asking for Likert scale responses (1 = extremely uncharacteristic of me to 5 = extremely characteristic of me). Higher scores indicate higher need for cognition.
highly motivated and worked diligently for the entire period. Scoring for the knowledge pre-
test is objective (i.e., multiple choice questions and short answer questions requiring either
one word responses or journal entries), as is scoring for the Company A task. See Appendix
D and Appendix C for scoring rules for knowledge and performance, respectively.

RESULTS

Descriptive Statistics

Table 2.1 Panel A presents descriptive statistics, including mean comparisons
between higher and lower-knowledge participants. Overall, higher-knowledge participants
have greater (p < 0.001) performance scores relative to lower-knowledge participants,
validating the knowledge test as including information relevant to the task.

[INSERT TABLE 2.1 HERE]

Awareness of Availability of Modeling

H1 predicts that higher-knowledge participants will perform better, regardless of
awareness of modeling availability, and that performance of lower-knowledge participants
will be higher when repeated modeling is not available (See Figure 2.2). To test these
hypotheses, I compare performance of participants in the repetition not available condition
(Figure 2.1, Cell A) to those in the repetition available condition, holding constant the
amount of instruction received by including only those who viewed the video once (Figure
2.1, Cell B) and controlling for motivation, general knowledge, and perceived difficulty.\(^{26}\)

Performance means are reported in Table 2.1 Panel B. I test H1 with a linear contrast of cell

\(^{26}\) Table 2.2 results show that participant incentives as a covariates are not significant so the results are not due
to the measured intrinsic and extrinsic motivating factors (i.e., monetary reward, grade improvement, need for
cognition). Although GPA and perceived task difficulty covariates are significant (p = 0.004 and p = 0.006,
respectively), indicating that higher general knowledge is associated with higher task performance and that
lower perceived task difficulty is associated with higher task performance, I still obtained significant results on
the manipulated variables.
means, using contrast weights of -3 for \{repeated modeling available, lower-knowledge\}; and +1 for \{repeated modeling not available, lower-knowledge\}, \{repeated modeling available, higher-knowledge\}, and \{repeated modeling not available, higher-knowledge\}.\textsuperscript{27}

A traditional ANCOVA model is provided in Panel A of Table 2.2, the test of H1 using the above contrast weights is shown in Panel B, and simple effects of awareness of modeling availability are provided in Panel C. The hypothesis test in Panel B is statistically significant (p = 0.003, one tailed), supporting H1. Tests of simple effects in Panel C show that modeling availability is not significant (F = 0.003, p = 0.960, two-tailed) for higher-knowledge participants, as predicted. However, the simple effect test shows that modeling availability is significant (F = 6.938, p = 0.006, one-tailed) for lower-knowledge participants. The pattern of marginal means in Figure 2.4 Panel A suggests that when the amount of modeling is held constant (single view), performance of lower-knowledge participants with limited modeling availability is equivalent to that of higher-knowledge participants.\textsuperscript{28}

[INSERT TABLE 2.2 AND FIGURE 2.4 HERE]

Repeated Task Modeling

H2 examines whether the effect of repeated task modeling will differ as a function of participant knowledge. To isolate the effects of repeated task modeling for these tests, I

\footnotesize{\textsuperscript{27} Contrast analysis does not take into consideration relevant covariates, which are highly significant in this analysis. In order to account for covariates in my contrast analysis, I first perform a regression with the dependent variable as a function of covariates (excluding the independent variables of knowledge and modeling availability). I then perform the contrast analysis using the unstandardized residual of the regression model.

\textsuperscript{28} While the above test compares performance across availability conditions while holding constant the amount of learning, I also tested H1 using the overall experimental manipulation, comparing learners in the repetition not available condition (Figure 2.1, Cell A) to those in the repetition available condition, regardless of choice to repeat (Figure 2.1, Cell B and Cell C). Traditional ANCOVA results show a significant main effect of modeling availability (F = 3.999, p = 0.048) and a significant positive interaction (F = 2.749, p = 0.100) for awareness of modeling availability and knowledge (\textit{Assigned_X_PreTestHL}). Consistent with H1, this pattern of results implies that when repeated modeling is not available (i.e., no “hand-holding”), lower-knowledge learners pay greater attention to the provided instructions leading to higher performance, consistent with higher-knowledge learners.}
compare participants in the repetition available condition who choose to receive additional task modeling (Figure 2.1, Cell C) to participants in the repetition available condition who choose not to receive additional task modeling (Figure 2.1, Cell B). To test the predictions that higher-knowledge participants will perform better regardless of repeated modeling, whereas lower-knowledge participants who receive repeated modeling will have better performance than those who do not receive repeated modeling when available, I use contrast weights of +1 for \{repeated modeling, lower-knowledge\}, -3 for \{repeated modeling available but not taken, lower-knowledge\}, and +1 for both of the higher-knowledge conditions.

Panel A of Table 2.3 reports a traditional ANCOVA model for performance (H2), Panel B reports results of the test of H2 using the above contrast weights, and Panel C shows tests of simple effects of modeling repetition. The test of H2 is statistically significant (p = 0.012, one tailed). This result supports H2. In addition, the main effect for knowledge is significant (F = 4.098, p = 0.048.) However, the simple effects tests for modeling availability in Panel C are not significant in either the higher or lower-knowledge groups (F = 0.143, p = 0.708, and F = 0.012, p = 0.915, respectively, both two-tailed). To investigate why the interaction of knowledge and repeated modeling is significant, but the tabled simple effects show no differences, I also tested simple effects of knowledge within each modeling condition. Results show that high knowledge participants outperform low knowledge participants who choose to view the modeling video a single time (t = 3.917, p< 0.001), as well as when repeated modeling is chosen (t = 2.768, p = 0.011). Combined with the significant ANCOVA main effect for knowledge, results of this analysis imply that when
repeated modeling is available, better performance is more determined by the knowledge that participant auditors bring to the task, rather than by repeated instruction.

[INSERT TABLE 2.3 HERE]

Additional Analysis

_**Characteristics of Participants who Choose to Repeat Modeling**_

In order to answer the question “which participants choose to repeat modeling, when given the option?” I examined four participant characteristics for both higher and lower-knowledge participants: pre-test score, GPA, need for cognition score, and perceived level of task difficulty task. Not surprisingly, for higher-knowledge participants, t-test scores show no difference between participants who chose to repeat and participants who choose not to repeat. For lower-knowledge participants, those who choose to repeat have lower GPA’s (M = 3.06, sd = 0.324) relative to those participants who chose not to repeat (M = 3.46, sd = 0.250; t = 3.873, p = 0.000, one-tailed). Low knowledge participants who chose to repeat also perceived task difficulty to be higher (M = 5.50, sd = 1.087) relative to those participants who chose not to repeat (M = 4.90, sd = 0.852; t = -1.793, p = 0.046, one-tailed). Among the low knowledge participants, those in the repetition available condition who chose not to repeat have higher task-specific knowledge, suggesting that they should also have better performance, relative to those low knowledge participants in the repetition not available condition. On the contrary, my results for H1 show that lower-knowledge individuals who choose not to repeat performed _less well_ on average than those for whom repetition was not available.


**Effect of Repeated Task Modeling of Specific Instructional Content**

The training video contains six chapters differing in length containing different information with respect to the search for unrecorded liabilities (URL): Chapter 1 (103 seconds) discusses background knowledge on definitions related to accounts payable; Chapter 2 (142 seconds) discusses background knowledge on “what is a URL?”; Chapter 3 (120 seconds) discusses preparation and execution of a URL; Chapter 4 (139 seconds) discusses “determining whether the payable is properly recorded”; Chapter 5, (234 seconds) provides two examples; and Chapter 6, (70 seconds) provides an overall summary. In conjunction with the knowledge test, Appendix D contains written excerpts of the training video. To determine whether repeating specific chapters is associated with performance, I performed a more granular analysis, examining the main effects of repeating specific chapters on performance. Similar to my expectation in H2, I expect that repeated views containing specific instruction on how to execute the task (Chapters 3 and 4) to be positively associated with performance. Consistent with H2, an ANCOVA simple effects test shows that the main effect of self reported Chapter 3 views on performance is not significant (p = 0.446, two-tailed) and the main effect of self reported Chapter 4 views is not significant (p = 0.421, two-tailed); however results indicate that higher-knowledge participants consistently outperform lower-knowledge participants (p = 0.001, one-tailed).

**LIMITATIONS**

There are two notable limitations related to my experiment. First, the learners in this study were motivated in different ways to encourage participation. While I controlled for incentive (paid, employer request, in-class exercise), it is possible that learner performance could also have been impacted by other, unmeasured variables, such as affect, fatigue, or
perceived time pressure. Second, the measure for repeated task modeling is assessed using self-reported figures. The on-line software I use captures the amount of time spent on each web page associated with the training video chapters, however it does not discern whether the learner watched (parts of) the video multiple times or whether time was elapsing for other reasons (i.e., learner took a break, learner was taking notes prior to moving to the next Chapter).

CONCLUSIONS

This study assesses whether the awareness of task modeling availability, the learner’s choice to receive repeated task modeling when available, and prior learner knowledge affect task performance in a substantive audit task. Consistent with Social Learning Theory, awareness of the amount of instruction available, does affect novice auditor performance, dependent on prior task-specific knowledge of the learner. Specifically, lower-knowledge learners perform better when they are aware that repeated modeling is not available relative to those who are aware that repeated modeling is available, regardless of the amount of modeling actually received. There are two reasons why this may occur. As suggested by Lindquist and Olsen (2007) too much assistance can lead to an inflated perception of one’s own understanding. Thus, when given the choice, lower-knowledge participants may have exhibited confidence in their task performance ability by not engaging in repeated modeling. As suggested in Freitag and Sullivan (1995), another reason may be that lower-knowledge participants tend to exert less effort in overall learning and thus, do not engage in repeated modeling. Contrary to the adage “more is better” my results suggest that the amount of instruction received, regardless of a learner’s task-specific knowledge, does not affect novice auditor performance.
The results of my study contribute to both academic literature and practice in two ways. First, my results are consistent with recent audit partner concerns that too much “hand holding” is a detriment to the current learning environment in auditing. New auditors considered “high performers” will likely always perform well and will benefit from simply knowing that coaching is available when needed. On the contrary, my results imply that being aware that guidance is limited will yield better performance from “average” or “low” performers—a likely consequence of having the motivation to pay attention when provided with instructions. Second, I developed an unrecorded liabilities task which is a substantive audit procedure routinely assigned to novice auditors in practice; learners in my study were both accounting students and new auditors thus creating an appropriate task/learner match. Extant learning studies in auditing tend to use mismatched tasks for a given experience level (i.e., going concern judgment provided to less experienced auditors), thus, providing higher external validity of my results.

In summary, the results of my study show that the effect of awareness of modeling is associated with better performance. Future research could examine the effects on long term performance. The effect of training mechanisms on long term performance is important, as new auditors are continuously rotated to new client engagements and the need to retain task performance skills is essential for gaining audit efficiencies over time.
Part Three

Examining Learning Environments in Auditing: A Perspective Using the Cognitive Apprenticeship Framework
INTRODUCTION

“Audit expertise research is important in part because we want to know why and how superior performance is attained, and the nature of an auditor’s transition from a novice to an expert. Thus, research on how novices acquire knowledge and attain superior performance is important. Despite its importance, few auditing studies focus on this issue.” (Nelson and Tan 2005, 49)

This study introduces a framework of effective learning environments, Cognitive Apprenticeship (CA), to the auditing literature, as a means to identify current areas of improvement for auditor learning. Few studies have examined apprenticeship as a model of effective learning in a professional context (e.g., Farmer et al. 1992). In this review, I examine components of the apprenticeship model specific to the learning environments within public accounting firms. There are features of the auditing environment that differentiate it from other professional service firms such as law and engineering (e.g., the type of knowledge deployed, geographical control, regularity of face-to-face interaction with clients, and extent to which the client can control/influence the service provided) (Malhorta and Morris 2009). Specific to auditing, Waller and Felix (1984) suggest that there are three types of content knowledge learned through experience: technical knowledge of Generally Accepted Accounting Principles (GAAP); knowledge of professional standards for performing an audit (e.g., audit methodology); and knowledge of the client environment (e.g., economic setting, clients methods of operation, competence and ethics of the client, accounting systems used). Vera-Munoz et al. (2006, 134) suggest that sharing this knowledge among auditors at every level is vital to the success of public accounting firms because, “the ability of CPA firms to leverage the skills, knowledge and best practices of their professional

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29 In this paper I focus my review on external audit literature in reference to audits of financial statements by external auditors. I do not include those studies related to the internal audit function.
staff, to capture knowledge for reuse, and to minimize information overload will determine the quality, effectiveness, and efficiency of their audit an attestation services.”

This paper is useful for both academics and practitioners. Knowledge acquisition is a perennially important issue, made more salient by recent upheavals of public confidence in auditors and their work in the early 2000’s. This leads me to examine how auditors acquire knowledge to meet the technical and proficiency requirements of Generally Accepted Auditing Standards (GAAS). Understanding when and how technical training and proficiency are developed is one motivation for examining the master-apprentice relationship. Audit research suggests that there are different ways that expertise may be acquired (Bonner and Pennington 1991; Bonner 2008) although the most common methods include a combination of instruction, training and extensive practice (Bédard and Chi 1993). Auditing research has previously considered the combination of instruction, training, and practice, and their resulting effects on knowledge acquisition and performance (i.e., Bonner and Walker 1994; Salterio 1994). In his discussion of Expertise in Auditing (Bédard and Chi 1993), Graham (1993) specifically states that studies examining the processes of and approaches to attaining knowledge to become an expert constitute interesting research. The contribution of this paper lies in applying extant audit research to the cognitive apprenticeship framework, identifying understudied areas with respect to the framework, and providing directions for future research. The next section presents the theoretical model of cognitive apprenticeship, which is rooted in traditional apprenticeship practice. For each domain and characteristic, I discuss the applicability to auditing, identify current literature in auditing, and suggest future directions for research.
APPRENTICESHIP

In this section, I examine literature on both traditional and cognitive apprenticeship, with an emphasis on their role in professional development. The basic notion of apprenticeship is when an experienced master shows the apprentice how to perform a task and then helps them perform it. The master helps to build the apprentice’s ability to translate knowledge into practice.

Traditional Apprenticeship

Traditional apprenticeship is a mechanism for learning knowledge, skills, and processes in their social and functional work environment. For centuries, master-apprentice relationships have been the primary way of teaching (learning) a trade prior to the introduction of formal classroom instruction. In modern times, traditional apprenticeship models have been studied in a variety of vocational contexts such as tailoring (i.e., Lave 1977), midwifery, quartermasters, and meat-cutting (i.e., Lave and Wenger 1991). In each master-apprentice relationship, the master creates transparency between the process and the end product which makes it easier for apprentices to observe and recognize problems and solutions (Collins et al. 1989). Masters select the specific knowledge, skills and processes for learning based on the demands of the authentic work environment. Initial tasks learned tend to be relatively easy and mistakes are less costly if made (Berryman 1991). The skills learned are progressive and the mastering of skills is appreciated for its immediate value of completing work as opposed to progressing towards a “symbolic goal” (e.g., a certificate).

Apprentices learn domain-specific knowledge through combinations of observation, coaching and practice; masters teach through a combination of modeling, coaching, and scaffolding (Lave 1977). There is no formal classroom component, as apprentices are
continuously engaged in learning during the due course of work by observing and practicing with their master. It is common for an apprentice to have multiple masters and for a master to have multiple apprentices. An apprentice with multiple masters learns that there are different ways to carry out a task and that there are different approaches towards obtaining expertise. During modeling, the master executes a task for the apprentice to observe, which helps the apprentice mentally construct a model of the process necessary for successful task performance. During coaching, the master observes and offers guidance and scaffolding (i.e., hints, clues, reminders, feedback, or demonstrations) as the apprentice attempts to execute the task. The master gradually removes support, providing only limited hints or refinements to the apprentice with the intention of the apprentice to perform the task without help. The interaction among observation, receiving directed guidance and increasingly independent practice helps an apprentice develop self-assessment skills (i.e., self-monitoring and self-correction). These steps also act to integrate the acquired skills and knowledge into a given task that is necessary toward achieving expertise (Collins et al. 1989).

Through a series of traditional apprenticeship studies, Lave and Wenger (1991) developed the theoretical model of traditional apprenticeship that they call Situated Learning Theory (SLT). SLT suggests that learning is unintentional and occurs within real-world activities, contexts, and cultures. The authors believe that knowledge should be presented in settings that would normally involve the knowledge being learned (authentic context) and where beliefs and behaviors to be acquired are embedded within social interactions and collaboration. In sum, there are three claims made by SLT (Leonard 2002). First, formal classroom learning is de-contextualized and irrelevant, thus when knowledge is out of context it is meaningless. Second, knowledge presented and applied in its authentic context
is the most relevant and effective way to learn. Third, learning is a social activity that requires much interaction and collaboration for knowledge transfer to occur. The “natural learning” described occurs through what Lave and Wegner (1991) coin “legitimate peripheral participation”, the social interaction between less experienced individuals and more experienced individuals within a “community of practice.” Communities of practice are essentially social learning, or “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger 2009 1). The novice slowly gains knowledge through these social interactions and collaborations and gradually moves towards the center of the community. Eventually the novice will gain enough knowledge to assume the role of expert and will initiate new individuals into the community of practice. Using SLT as a foundation, Collins et al. (1989) further developed the theory emphasizing the learning of authentic cognitive activity.

**Cognitive Apprenticeship**

Collins et al. (1989) developed cognitive apprenticeship as a framework of instructional design which incorporates the foundation of apprenticeship and traditional schooling for the teaching (learning) of cognitive skills. Traditional and cognitive apprenticeship both focus on using expert processes and learning for real-world problem solving; however “cognitive” apprenticeship emphasizes the learning of cognitive skills/processes rather than physical skills/processes. CA also focuses on guided experience, where an expert (model) “makes thinking visible” by externalizing internal cognitive processes used in problem solving and carrying out complex tasks. In contrast to traditional classroom learning, which focuses on “textbook” cases and formulas which are difficult to generalize to novice contexts, Collins et al. (1989) posit that learning knowledge situated in
the context of use, encourages deeper understanding of the conceptual and factual meanings so that it can have wider application to a variety of settings/contexts. Leonard (2002) suggests that cognitive apprenticeship is related to Situated Learning Theory (Lave and Wenger 1991) as well as Situated Cognition Theory (Collins et al. 1989)\(^{30}\), and Social Learning Theory (Bandura 1977)\(^{31}\) in that they all share the belief that learning occurs in a social context and believe learning as social interaction enhances the learner’s ability to absorb, understand, and recall knowledge.

Collins (2005) suggests that there are two major distinctions between traditional and cognitive apprenticeship. First, in traditional apprenticeship, learning occurs based on workplace demands rather than from educational concerns, therefore limiting what can be taught. In CA, tasks and methods are chosen based on the demands of changing learning environments. Second, traditional apprenticeship focuses on teaching skills in an authentic context and CA focuses on generalizing knowledge learned so that it may be used in diverse contexts.

In the next section of the paper, I focus on the four dimensions of learning environments specifically laid out in the CA framework: content, teaching methods, sequencing, and sociology. The theoretical model of apprenticeship has only recently been discussed in auditing literature (e.g., Westermann et al. 2011; Westermann 2011); however,

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\(^{30}\) Situated cognition states that learning and cognition are “situated” because individual working knowledge must be tied completely to conceptual knowledge to be meaningful (i.e., the context affects the way knowledge is understood). Situated Cognition Theory states that through mental cues, the learner must return mentally to the situation and the environment in which the knowledge was first obtained in order to successfully retrieve and reuse it for another situation.

\(^{31}\) Social Learning Theory suggests that people learn from observing, imitating, and modeling others’ behaviors, attitudes, and outcomes of those behaviors. This theory explains human behavior in terms of constant reciprocal interactions between cognitive, behavioral, and environmental influences. There are four essential conditions for effective modeling: (1) attention of the learner; (2) retention by the learner; (3) reproduction of information by the learner; and (4) motivation to learn.
specific components have been studied separately in the context of knowledge acquisition and performance towards expertise. Below I summarize individual characteristics and applicability to auditing in each of the four CA domains. (See Figure 3.1 for the Cognitive Apprenticeship framework replicated from Collins et al. 1989)

[INSERT FIGURE 3.1 HERE]

COGNITIVE APPRENTICESHIP COMPONENTS AND APPLICATION TO AUDITING

Content

Content refers not merely to facts and information, but to planning and problem solving strategies, revision management strategies, and learning strategies. Experts must incorporate strategic knowledge into problem solving activities which include: domain knowledge, heuristic strategies, control strategies, and learning strategies. “…the acquisition and use of these strategies depend crucially on interactions between the individual’s current knowledge and beliefs, the social and physical environment in which the problem solving takes place, and the local details of the problem solving as it unfolds (Collins et al. 1989 480).” Domain knowledge constitutes base knowledge (i.e., concepts, facts, processes) explicitly defined for a particular subject, but does not give the learner enough information to solve authentic problems. Heuristic strategies are generally helpful strategies, or “rules of thumb” that are learned over time by repeatedly solving problems. These “tricks of the trade” are not always effective, but tend to be useful during problem solving. Control strategies help an expert determine how to proceed on a task/problem and generally depend on assessing the present circumstances relative to specific goal(s), analysis of current difficulties and strategies

32 Collins et al. (1989) define strategic knowledge as “…the usually tacit knowledge that underlies an experts’ ability to make use of concepts, facts, and procedures as necessary to solve problems and carry out tasks.” (477)
available to deal with these difficulties (Collins 2005). Learning Strategies are those strategies used to learn domain knowledge, heuristic strategies and control strategies. Consistent with the CA model of learning, auditors are expected to use their specialized knowledge and problem solving strategies to efficiently and effectively conduct an audit. Intellectual capital is one of the largest assets that professional firms possess (Stewart and Losee 1994) and the ability of a public accounting firm to leverage this knowledge among its professionals is critical to the success of a firm (Vera-Muñoz et al. 2006). See Table 3.1 for a summary of relevant auditing literature related to the Content domain.

[INSERT TABLE 3.1 HERE]

**Content in Auditing**

The CA model indicates that having domain knowledge is a necessary but not sufficient condition for expert performance (Collins 2005). Domain knowledge necessary for auditor expertise is a widely researched topic in behavioral research (i.e., Bonner and Lewis 1990; Bonner and Pennington 1991; Bédard and Chi 1993; Tan and Libby 1997; Abdolmohammadi 1999). Specific to auditing, Bonner and Lewis (1990) describe three different types of domain knowledge relevant to performance in various auditing tasks: general accounting and auditing knowledge (i.e., GAAP and GAAS), subspecialty knowledge (i.e., client specific or industry specific knowledge) and general business knowledge (i.e., understanding management incentives). Similarly, Bédard and Chi (1993) find that to perform auditing tasks, auditors must utilize general and specialized auditing knowledge and knowledge about accounting and the client’s industry. Tan and Libby (1997) expand on knowledge relevant for expertise and discuss the role that tacit managerial knowledge (knowledge of managing oneself, managing others, managing one’s career) plays in auditing.
Abdolmohammadi (1999) documents that specific auditing tasks are assigned to auditors based on level of experience (i.e., staff, senior, manager, and partner). Empirical studies consistently suggest positive effects of relevant domain knowledge (related to the specific task being examined) on judgment and decision making quality in auditing (i.e., Frederick and Libby 1986; Bonner 1990; Bonner and Lewis 1990; Bonner and Walker 1994; Choo 1996; Thibodeau 2003; Bonner 2008; Moroney and Simnett 2009). Overall, discussion of relevant domain knowledge necessary for auditors to learn is well established both in practice via audit work programs and in academic literature.

Heuristics have been the subject of extensive study in behavioral auditing literature, most often in the context of biases created (see Shanteau 1989 for review). The CA framework focuses on heuristics acquired through experience, as a technique, or “rule of thumb,” to assist problem solving. Consistent with the goals of this study I focus on heuristic strategies in audit environments, without discussing associated cognitive biases (e.g., anchoring and adjustment, order effects) that may be the result of using heuristic strategies. Heuristic strategies used during the course of the audit may include: using percentages of a base rate (i.e., net income, total assets) to calculate materiality thresholds (Pany and Wheeler 1989; Chewning et al. 1998; Messier et al. 2005; Chen et al. 2008), investigating differences greater than a specified percentage in analytical procedures (Kinney and Felix 1980), relying on prior year adjustments/errors as an indicator of current year problems (Kinney 1979; Kinney and Felix 1980; Bedard and Wright 1994), and planning audit timing decisions based on internal controls and year-end date of the client (Kissinger 1983). This list demonstrates that heuristics are active in auditing; however, this list is likely not exhaustive, as only limited techniques have been discussed in the academic literature. In addition to using heuristics as
strategic knowledge, audit professionals also rely on a variety of controls strategies as a means to assist in problem solving.

As a learner gains knowledge he/she must learn how to select among various problem solving strategies and decide if/when to change strategies; these control strategies require reflection by the learner about the existing problem solving process to determine the appropriate course of action (Collins 2005). For example, “a simple control strategy for solving a complex problem might be to switch to a new part of a problem...Other strategies control selection of domain-specific problem-solving heuristics and strategies for carrying out parts of the task at hand” (Collins et al. 1989 479). Controls strategies in auditing may include gathering additional (complete) information about a problem (Biggs et al. 1988), distinguishing (and using) relevant information cues (Bedard and Biggs 1991; Bedard et al. 1998), or identifying relationships among financial statement items (Christ 1993; Moeckel 1991). While auditing studies show that having complete (and appropriately founded) representations are important control strategies, prior research in auditing is limited (Bonner 2008).

Learning strategies as defined by Collins (2005) are knowledge about how to learn, which include strategies for learning domain knowledge, heuristics and control strategies. For example, “if students want to learn to read better on their own, they have to know how to pick texts that expand their vocabulary but are not too demanding” (Collins et al. 1989, 480) While public accounting firms provide professionals with an abundance of tools for learning (i.e., structured training programs -live and virtual classrooms; self-study

33 Control strategies are studied in auditing literature as problem representation within the broader topic of cognitive processing. Bonner (2008) defines problem representation used in auditing literature as the mental framework that organizes a decision makers understanding of a task then provides a road map for completing the task. Problem representation involves existing knowledge, memory retrieval, and information search.
mechanisms and on-the-job training - peer discussions, supervisory review, client experience) (i.e., Salterio 1994; Bonner and Pennington 1991; Bonner 2008; Westermann et al. 2011), it is not clear whether individuals within the firms receive specific guidance about learning strategies. Learning how to learn may be an important for firms and for audit academics to investigate.

**Teaching Methods**

The CA framework details six teaching methods to make tacit knowledge/processes observable and accessible to novice users: modeling, coaching, scaffolding (fading), articulation, reflection and exploration. The first three components, modeling, coaching, and scaffolding, help learners acquire knowledge through observation and supported practice. *Modeling* is when an expert verbalizes his/her own internal thought processes and activities, allowing the learner to observe what processes is happening and hear *why* it is happening, which facilitates a deeper understanding of the process (Collins et al. 1989). As part of *coaching*, the expert provides directed hints and tips, feedback, and reminders related to specific questions or problems that arise while the learner is attempting to execute the task on his/her own. *Scaffolding* may involve the expert temporarily carrying out a part of the task the student cannot yet accomplish. The master provides as much help and encouragement as needed for the learner to complete the task, which gives the learner a sense of accomplishment (Collins et al. 1989). Eventually, the master will remove his support (i.e., fading) when it is no longer necessary - when the learner is able to complete the entire task on their own. The next two components, articulation and reflection, help learners resolve their own problem solving. *Articulation* is when learners are required to explain what they are thinking related to their acquired knowledge, problem solving, or reasoning (e.g., critique a
peer and explain why it is good/poor). Benefits of articulation include helping learners to
generalize knowledge from a specific context to other situations, making acquired knowledge
more cognitively available for use in other tasks, and by requiring explanation to others
articulation may allow the learner to see a different perspective (Collins et al. 1989). Reflection
encourages the learner to think about improving his/her performance by “replaying” and
comparing their way of thinking to other learners on similar tasks. Exploration is the final
teaching method, which encourages learner autonomy by having students to try out different
hypotheses, methods, and strategies. In this phase, experts encourage learners to generate
their own ideas (they may generate ideas that have already been examined), thus the learner
will get a sense of how ideas are generated and why they are important (Collins et al. 1989).

Consistent with the teaching methods outlined above, audit practitioners’ primary
learning experience stems from working with more experienced colleagues (e.g., classroom
training and on the job). In a client (on-the-job) learning environment an auditor is learning
in the presence of his/her audit team, which includes review of prior year work-papers,
discussion with peers, discussions with clients, guidance and review by supervisors,
oberving audit team and client meetings, and performing assigned tasks. See Table 3.2 for a
summary of relevant auditing literature related to the Teaching Methods domain.

[INSERT TABLE 3.2 HERE]

**Teaching Methods in Auditing**

All auditor experts were once novices, with low levels of task-specific knowledge at
some point in their early careers (Earley 2001). To become experts, auditors learn declarative
and procedural domain knowledge from a more experienced auditor, and then further refine
knowledge through repeated practice (Bédard and Chi 1993; Thibodeau 2003). Consistent
with the CA model, it is common for an auditor to receive guidance and be accountable to multiple supervisors (Nelson and Tan 2005) between and within client assignments. All six teaching methods, described above, perhaps with the exception of exploration, are evident in public accounting firm practices.

Modeling is a type of instruction in which an expert provides active explanation and demonstration of a task. In auditing, modeling may apply to many tasks during the course of the audit (i.e., internal controls testing, analytical procedures, substantive tests of details) where a less experienced auditor observes a more experienced auditor demonstrate a task before attempting the task on his/her own. Whether modeling takes place, to what extent, and the quality with which modeling provided are dependent on individual supervisors (Bonner and Pennington 1991; Bonner 2008; Westermann et al. 2011). While instruction in the form of classroom-oriented exercises (i.e., reading text, listening to lectures, answering short objective questions, working problems, and solving cases; Bonner 2008) has been previously studied in auditing literature (e.g., Bonner and Pennington 1991; Bonner and Walker 1994), relatively little attention (e.g., Westermann 2011) has been given to the effects of modeling from a more experienced to less experienced auditor.

Coaching and scaffolding in auditing takes place when a more experienced auditor provides feedback on the work of a less experienced auditor (Bonner and Pennington 1991) for accuracy, completeness, clarity and overall quality of the documentation (see Rich et al. 1997 for a review). The provision of feedback is a key element of the audit process (Bonner 2008) and is provided to the less experienced auditor in the form of electronic and/or or face-to-face review comments (Brazel et al. 2004; Agogolia et al. 2009; Agogolia et al. 2010). The quality of the feedback provided likely varies by task, knowledge level of the supervisor,
environmental conditions (i.e., time pressure), and motivation of the superior with respect to training the individual auditor (Waller and Felix 1984; Bonner and Pennington 1991). CA prescribes that when coaching, the supervisor provides guidance while the learner is attempting to execute the task on his/her own. Similar to modeling, whether coaching takes place, to what extent, and the quality with which it is provided are dependent on individual supervisors (Bonner and Pennington 1991; Bonner 2008; Westermann et al. 2011). One noteworthy difference between the CA model and audit practice is that in CA, a master will observe the apprentice executing the task on his/her own and offer guidance during performance, gradually removing support. In auditing, dependent on the individual supervisor, the task is often initially modeled and then the learner is left on his/her own (support is immediately removed) to complete the task, receiving guidance only when sought out (i.e., the learner asks questions) or subsequent to performance during the work-paper review process (i.e., supervisor leaves review notes). In some cases, due to supervisor style or time/work pressure, less experienced auditors are not given any on-the-job modeling about a task, and thus must learn through reliance on audit work-program guidance or from prior year workpapers (Westermann et al. 2011). This suggests that coaching by some supervisors could be improved.

Supervisory review practices in auditing contain elements of both articulation and reflection. The concept of articulation is referred to as “justification” in auditing literature, which is when a learner explains his/her work, often during the review process with one’s superior. Thus, an auditor is held accountable to a supervisor34 and must be able to justify all

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34 Accountability is an extrinsic motivator of performance quality extensively researched in auditing literature (i.e., Ashton 1990; Johnson and Kaplan 1991; Glover et al. 1997; Wilks 2002) however the focus of this section
elements his/her work, although he/she may only receive review comments pertaining to a portion of his/her work (Bonner 2008). The review process can take place electronically or face-to-face, however Gibbins and Trotman (2002) suggest that good supervisors have an interpersonal style that includes face-to-face review. Face-to-face reviews are generally more interactive, involving rich discussion, because the supervisor communicates his/her review comments to the learner and the learner is expected to respond in real time to these concerns (Brazel et al. 2004). In contrast to articulation, which involves justification, reflection involves comparison. During reflection, the learner looks back on his/her performance and compares his/her performance to others’ performance or criteria (e.g., self, experts, peers, or established criteria such as GAAS). In auditing, a learner may reflect on or self-explain (counter-explain) their performance relative to professional standards (Bonner 2008), client provided plausible but incorrect explanations (Koonce 1992), client-provided documentation containing errors (Moreno et al. 2007), prior year work-paper documentation (i.e., worked example; Earley 2001), review comments containing feedback (Earley 2003; Westermann et al. 2011), evaluation criteria of good performance.

Anecdotal evidence and the literature provide no evidence that the concept of exploration as a learning method is practiced in auditing. Belkaoui and Picur (1987) concretely state that the environment at public accounting firms is not defined by personal creativity and in support of this general idea, Abdolmohammadi (1999) states that less experienced auditors are most commonly assigned structured and semi-structured tasks, which involve little (if any) judgment. While research in auditing has not specifically examined exploration as part of the learning process, it seems feasible that a novice auditor

\[\text{is on teaching methods. The CA framework does not identify extrinsic motivation as a component of effective learning environments.}\]}
would be asked or encouraged to research a specific, relevant, accounting issue (e.g., gather information regarding FAS 133). However this still differs from exploration as defined by CA, which encourages a learner to focus on his/her own topics of interest to pursue. One reason this may be the case is because exploration does not constitute billable time. Additionally, Dirsmith and Covaleski (1985) suggest that public accounting firms have a professional obligation to maintain good control over auditors because professional standards require supervision as a means to control audit quality. Hence, exploration would not be encouraged.

**Sequencing**

Collins et al. (1989) believe that experts should consider skill complexity, diversity and localization when sequencing learning activities because tasks/problems selected for learning should be staged to reflect the demands of learning. In other words, tasks/problems selected should demonstrate a particular technique or method, may be practiced in different contexts, and may gradually increase in complexity to ensure that the learner is appropriately integrating the skills and models. *Increasing complexity* refers to the construction and progression of tasks whereby a multitude of skills and tasks are necessary to achieve expertise. Efforts should be made to control task complexity for learners. Specifically, simple tasks should be given first before a learner progresses onto more difficult tasks, where more difficult tasks often build on the preceding knowledge gained. *Increasing diversity* refers to the construction and progression of tasks whereby a broader set of skills and strategies are necessary to achieve expertise. It is important for a student to engage in repeated practice of a skill and it is important that learners practice in a variety of conditions, so that learners understand when certain strategies or skills do or do not apply to a particular context.
Learning *global before local skill* allows for students to grasp a “conceptual whole” or map of the problem before having to figure out the detailed components. See Table 3.3 for a summary of relevant auditing literature related to the Sequencing domain.

[INSERT TABLE 3.3 HERE]

**Sequencing in Auditing**

“People acquire knowledge and processing strategies over time that are adapted to the tasks that they face (Bonner 2008, 157).” Current practices in auditing are consistent with the CA framework recommendation of creating a learning environment where the progression of assigned tasks requires more skills and concepts necessary for expert performance. Complexity can vary across or within tasks and can arise from characteristics of the task itself or from requirements imposed by individuals (i.e., company policy, regulators) (Bonner 2008). In auditing, Prawitt (1995) and Abdolmohammadi (1999) report that public accounting firms assign more complex ill-structured tasks to more experienced auditors and less complex structured tasks to less experienced auditors. For example, novice auditors are generally assigned performance of substantive testing tasks involving little judgment (i.e., tests of transactions and balances for each accounting cycle such as cash, fixed assets, inventory) while more experienced auditors are assigned to perform tasks involving some judgment and expertise such as orientation (i.e., understanding the client’s business, engagement risk assessment, inherent risk assessment) and internal controls assessment (Abdolmohammadi 1999).

According to CA, the assignment of different tasks and different scenarios (i.e., rotating onto different clients) is essential in helping learners develop richer strategies and contextual associations, in order to better deal with future novel problems. Salterio (1994)
indicates that auditors face constantly changing problems because no two client audits or repetitions of a judgment task are the same, which is consistent with the CA framework of structuring learning by increasing diversity.

In most cases, novice auditors are provided with up-front classroom training before being assigned to an audit engagement; however, it is unclear as to whether auditors receive global skills (i.e., overall audit methodology) before local skills (i.e., task-specific) via formal classroom training or on the job. Research has indicated that as auditors gain experience and get promoted, technical training is tailored to auditor rank (Abdolmohammadi 1999); however, accounting training manuals remain proprietary information and little (or no) research investigates this specific sequencing related to audit learning environments.35

It is clear that increasing complexity, increasing diversity, and “global before local” occur within the learning structure of audit firms; however, the two latter topics have little associated research with respect to application and effects on learning. Several partners in a study by Westermann et al. (2011) indicate that the structure and content of training has dramatically changed over time. Future research may examine the current structure of formal firm training programs, focusing on what specific skills are taught, how skills are taught (i.e., simulation based, lecture), the extent and length of the formal training provided. Similar to Dowling and Leech (2007) who examine audit support systems across firms, an analysis of training programs by level (i.e., first year training, second year training) across firms could shed light what firms consider to be important skills at specified levels.

35 Bonner and Pennington (1991) reviewed one firm’s audit training manual for purposes of categorizing the topical contents by auditor level. They do not provide information as to the sequencing of contents within the training materials.
Sociology

Lastly, the CA framework details four practice environments that Collins et al. (1989) refer to as sociology of the learning environment. The first two components, *situated learning* and *communities of practice*, derive from Social Learning Theory (Lave and Wenger 1991). *Situated learning* refers to the importance of carrying out tasks in an authentic working environment. *Communities of practice* refer to an environment where learners have the ability to communicate with and engage experts in a community to learn the skills necessary for expertise. *Intrinsic motivation* refers to the importance of creating a learning environment that promotes interesting and coherent goals so that the learner is genuinely interested in learning, as opposed to the learner being extrinsically motivated (i.e., getting a good grade). *Exploiting cooperation* promotes a learning environment where learners work together to solve problems. Cooperation may also be coupled with competition so that learners are motivated to work together to compete with others. See Table 3.4 for a summary of relevant auditing literature related to the Sociology domain.

[SINSERT TABLE 3.4 HERE]

*Sociology in Auditing*

Novice auditors regularly work iteratively with experienced auditors (seniors, managers, and partners) and other novice auditors while on a client engagement (Bonner 2008). Each member of the team is expected to engage in activities that contribute directly to completion of individual client assignments (e.g., year-end audit of financial statements, audit over internal controls), gaining knowledge and experience on individual tasks that will gradually lead to expertise. Consistent with cognitive apprenticeship, auditors learn skills/processes in context of actual practice (situated learning) in an audit engagement team.
that fosters learning and development (Westermann et al. 2011). Audit engagement teams constitute communities of practice because on-the-job is precisely where auditors actively engage in the skills desired to be acquired. In this environment, auditors have ownership over and personal investment in their assigned tasks but also have task interdependency among other audit team members (Dirsmith and Covaleski 1985). As is the case with communities of practice, once an auditor gains experience, he/she is expected, in turn, to train less experienced auditors.

Collins et al. (1989) believe that for effective learning, individuals within communities of practice should promote a learning environment where learners perform tasks which are intrinsically related to a personal goal of interest. Intrinsic motivations relevant to auditing include motives related to personal goals of achievement and competence (e.g., desire for promotion) or maintenance of one’s reputation (Bonner 2008) (e.g., within engagement team or with the client). There are few studies that examine intrinsic motivations of auditors; rather auditing research tends to focus on external motivations. “One likely reason for this is that the accounting environment contains a number of such entrenched institutional factors that create variation in motivation, and researchers may believe that the variation in motivation created by these factors is greater than the variation created by intrinsic motives” (Bonner 2008, 88). The CA framework does not discuss extrinsic motivation (i.e., earning CPA certification, monetary incentives) as a component of effective learning. However, it is important to note the prominence of extrinsic motivations (incentives) applicable in the auditing environment (i.e., accountability, monetary incentives, assigned goals, standards/regulations, time pressure, and budget pressure; Bonner 2008) that may moderate positive effects of the individual’s internal motivation for learning.
Cooperation as defined in CA is when learners work together to foster problem solving. In auditing, it is rare that two novice auditors are formally assigned to the same task (on the same client) and asked to work together to accomplish the goals of the task. However, it is likely that novice auditors informally discuss tasks among each other.\textsuperscript{36} For example, a first year auditor may seek help from the second year auditor who was responsible for performing the same task (on the same client) during the previous year. A different example of cooperation may be when a first year auditor performing a specific task seeks help from another first year auditor performing the same task for a different company. It is also likely that formal firm training encourages novice auditors in the classroom to work together for problem solving, but as indicated previously future research should examine formal training materials of firms.

CONCLUSIONS

I identify four elements of the cognitive apprenticeship framework that, anecdotally, appear to be infrequently practiced in the auditing profession and/or are under-researched. As the elements identified in the CA framework are suggested for effective learning environments, future research could examine: (1) whether each element is present in practice; (2) if the element is present, how well it is executed; (3) if the element is not present how it could be built into existing practice; and (4) whether execution of the element be effective in auditing. First, with respect to teaching methods, the CA framework suggests that having a learner reflect on performance evaluation criteria is one means to promote learning. Future research could examine whether learning and performance are improved when learners are asked to reflect on their work relative to a set of “criteria for good

\textsuperscript{36} It is more likely that two (or more) experienced auditors would work together to solve a more debatable auditing issue.
performance,” which may be provided in some audit environments. Second, the CA framework suggests that encouraging “exploration” is one means to promote learning and learner autonomy. Exploration as described is likely not practiced in current audit environments. However, one way firms can incorporate exploration is to exploit non-busy season time, when less experienced auditors have time available (i.e., not assigned to a client and required training is already completed). When auditors have “available time,” firms may encourage their staff members to engage in exploration of accounting, auditing, or industry topics that are of personal interest, which may be useful for future endeavors with the firm. Third, there is little evidence to determine whether auditors develop global (i.e., audit methodology) before local (i.e., task-specific) skills in either formal classroom training or on the job. Future research could examine the content of auditor training across firms to determine what accounting firms deem as necessary skills for a learner as he/she progresses through his/her career. Fourth, intrinsic motivation of auditors primarily rests in personal goals such as the desire for promotion. However many of these motivations are entangled with external motivators such as monetary incentives, which is associated with promotion. It may be difficult to disentangle intrinsic and extrinsic motivating factors of auditors in future research, however, intrinsic motivation is important to learning, thus attempts should be made to disentangle (effects of) intrinsic from extrinsic motivation. Fifth, cooperation between or among novice auditors to collectively solve a problem together is unlikely given resource allocations to audit teams. Researchers may identify areas in audit training or on-the-job where cooperation among same-level auditors would be the most effective and efficient means of performing work.
Figures, Tables, and Appendices
**Summary of Hypotheses**

**Awareness of Modeling Availability**
H1: The performance of lower-knowledge learners will be higher when repeated modeling is not available. Higher-knowledge learners will perform better, regardless of awareness of the availability of repeated modeling. 
\[(A.1 = B.1) > A.2 > B.2\]

**Repeated Task Modeling**
H2: The performance of lower-knowledge learners will be better when modeling is repeated. Higher-knowledge learners will perform better, regardless of modeling repetition. 
\[(B.1 = C.1) > C.2 > B.2\]
Figure 2.2: Predicted Effects of Modeling on Performance

Panel A: Predicted Effects of Awareness of Modeling Availability on Performance (H1)

Panel B: Predicted Effects of Repeated Task Modeling on Performance (H2)
Figure 2.3: Experimental Timeline

1. Receive written instructions and consent
2. Complete knowledge pre-test
   - Complete demographic questionnaire
3. Complete unrecorded liabilities search for Company A
4. Complete manipulation check and debriefing questions
5. Availability of Task Modeling
   - Watch 14 minute training video
   - One viewing prior to task completion
   - Viewing and access to repeated viewing prior to and during task completion
6. Search for Unrecorded Liabilities Process
   - Obtain information regarding cash disbursements activity subsequent to year end and Accounts Payable/Accruals detail at year end
   - Obtain supporting documentation to evaluate the substance of the transaction
   - Determine whether the client has appropriately recorded the liability/expense
   - Assess magnitude of error and propose AJE
   - Conclude whether liabilities are properly stated at year end
   - Evaluate whether the extent of audit procedure needs to be expanded
     - **YES**
     - **NO**
Figure 2.4: Significant Effects of Modeling (Awareness, Repetition) on Performance

Panel A: Interaction of Modeling Awareness and Knowledge on Performance (H1)

Panel B: Interaction of Modeling Awareness and Knowledge on Performance (H2)
<table>
<thead>
<tr>
<th>CONTENT</th>
<th>types of knowledge required for expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain knowledge</td>
<td>subject matter specific concepts, facts, and procedures</td>
</tr>
<tr>
<td>Heuristic strategies</td>
<td>generally applicable techniques for accomplishing tasks</td>
</tr>
<tr>
<td>Control strategies</td>
<td>general approaches for directing one’s solution process</td>
</tr>
<tr>
<td>Learning strategies</td>
<td>knowledge about how to learn new concepts, facts, and procedures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>METHOD</th>
<th>ways to promote the development of expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling</td>
<td>teacher performs a task so students can observe</td>
</tr>
<tr>
<td>Coaching</td>
<td>teacher observes and facilitates while students perform a task</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>teacher provides supports to help the student perform a task</td>
</tr>
<tr>
<td>Articulation</td>
<td>teacher encourages students to verbalize their knowledge and thinking</td>
</tr>
<tr>
<td>Reflection</td>
<td>teacher enables students to compare their performance with others</td>
</tr>
<tr>
<td>Exploration</td>
<td>teacher invites students to pose and solve their own problems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEQUENCING</th>
<th>keys to ordering learning activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global before local skills</td>
<td>focus on conceptualizing the whole task before executing the parts</td>
</tr>
<tr>
<td>Increasing complexity</td>
<td>meaningful tasks gradually increasing in difficulty</td>
</tr>
<tr>
<td>Increasing diversity</td>
<td>practice in a variety of situations to emphasize broad application</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOCIOLOGY</th>
<th>social characteristics of learning environments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situated learning</td>
<td>students learn in the context of working on realistic tasks</td>
</tr>
<tr>
<td>Community of practice</td>
<td>communication about different ways to accomplish meaningful tasks</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>students set personal goals to seek skills and solutions</td>
</tr>
<tr>
<td>Cooperation</td>
<td>students work together to accomplish their goals</td>
</tr>
</tbody>
</table>
### Table 1.1
Demographic Information on Participants

<table>
<thead>
<tr>
<th></th>
<th>Experienced Partners (admitted to the partnership prior to 2000)</th>
<th>New Partners (admitted to the partnership post 2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Mean Years Experience</td>
<td>32.9</td>
<td>15.4</td>
</tr>
<tr>
<td>Range of Partner Induction Years</td>
<td>1983 - 1993</td>
<td>2005-2008</td>
</tr>
<tr>
<td>Male</td>
<td>93%</td>
<td>44%</td>
</tr>
<tr>
<td>Female</td>
<td>7%</td>
<td>56%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>All Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Atlantic</td>
<td>13%</td>
</tr>
<tr>
<td>Midwest / Ohio Valley</td>
<td>6%</td>
</tr>
<tr>
<td>Pacific Northwest / N. California</td>
<td>16%</td>
</tr>
<tr>
<td>National Office</td>
<td>32%</td>
</tr>
<tr>
<td>Northeast</td>
<td>19%</td>
</tr>
<tr>
<td>South</td>
<td>13%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Industry Specialty(^{37})</th>
<th>All Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer products and services</td>
<td>34%</td>
</tr>
<tr>
<td>Financial Services</td>
<td>26%</td>
</tr>
<tr>
<td>Technology</td>
<td>23%</td>
</tr>
<tr>
<td>Health Care</td>
<td>9%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
</tr>
</tbody>
</table>

\(^{37}\) Some partners indicated more than one industry specialty over the course of their career. The percentages include a representation of multiple specialties for these partners. The category of “Financial Services” includes real estate, private equity, investment management, banking, capital markets and mergers and acquisitions. The category of “Other” includes oil and gas, not-for profit, and entertainment.
Table 1.2
Partner Experiences Learning the Craft of Auditing mapped to the Cognitive Apprenticeship Framework

<table>
<thead>
<tr>
<th>CA Model Teaching (Learning) Methods</th>
<th>Definitions (Collins 1989)</th>
<th>Total n=30</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced n=14</th>
<th>Percentage of New n=16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling (Observation)</td>
<td><em>Modeling</em> involves an expert carrying out a task for a learner to observe and build a conceptual model of the process that is required to accomplish the task.</td>
<td>16</td>
<td>53%</td>
<td>43%</td>
<td>63%</td>
</tr>
<tr>
<td>Coaching</td>
<td><em>Coaching</em> consists of observing learners carry out a task and providing support offered in the form of hints/clues, reminders, feedback, and/or demonstrations related to specific actions/problems that come about while the learner is attempting to execute the task on their own</td>
<td>19</td>
<td>63%</td>
<td>57%</td>
<td>69%</td>
</tr>
<tr>
<td>Scaffolding and Fading</td>
<td><em>Scaffolding and fading</em> are temporary supports the expert provides to help the learner carry out the task the in the form of suggestions and help; this support is removed when no longer needed.</td>
<td>4</td>
<td>13%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Articulation</td>
<td><em>Articulation</em> is when learners are required to explain what they are thinking related to their acquired knowledge, problem solving, or reasoning (i.e., critique or monitor someone else and explain why it is good/poor).</td>
<td>2</td>
<td>7%</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Reflection</td>
<td><em>Reflection</em> encourages the learner to think about improving their performance by “replaying” and comparing their way of thinking to others on similar tasks.</td>
<td>4</td>
<td>13%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Exploration</td>
<td><em>Exploration</em> encourages learners to try out different hypotheses, methods, and strategies.</td>
<td>1</td>
<td>3%</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Notes: This table is presented in the sequence of the teaching methods component of the cognitive apprenticeship framework.
Table 2.1: Descriptive Statistics

Panel A: Comparison of Higher/Lower Knowledge Learners on Performance

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Learners</th>
<th>Total Possible Score</th>
<th>Higher Knowledge Mean</th>
<th>Lower Knowledge Mean</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Performance:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company A</td>
<td>127</td>
<td>24.5</td>
<td>16.058 (sd = 4.584)</td>
<td>12.33 (sd = 4.9241)</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test Score *</td>
<td>131</td>
<td>16</td>
<td>12.525 (sd = 1.296)</td>
<td>7.321 (sd = 2.142)</td>
<td>0.000</td>
</tr>
</tbody>
</table>

a. Learners with pre-test scores > 10 are categorized as “higher-knowledge” and those learners with pre-test scores ≤ 10 are categorized as “lower-knowledge.”

Panel B: Performance Means by Experimental Condition

<table>
<thead>
<tr>
<th></th>
<th>Repeated Modeling not Available Single View (S_S)</th>
<th>Repeated Modeling Available Single View (M_S)</th>
<th>Repeated Modeling Available Multiple Views (M_M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher-knowledge</td>
<td>M=15.82 (sd = 4.87)</td>
<td>M=16.58 (sd = 4.74)</td>
<td>M=15.64 (sd = 3.74)</td>
</tr>
<tr>
<td></td>
<td>n=27</td>
<td>n=22</td>
<td>n=11</td>
</tr>
<tr>
<td>Lower-knowledge</td>
<td>M=13.56 (sd = 5.4)</td>
<td>M=11.35 (sd = 3.78)</td>
<td>M=10.82 (sd = 4.71)</td>
</tr>
<tr>
<td></td>
<td>n=33</td>
<td>n=20</td>
<td>n=14</td>
</tr>
</tbody>
</table>
Table 2.2: Modeling Awareness and Knowledge on Performance (H1)
Panel A: Conventional analysis of covariance

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>726.376</td>
<td>8</td>
<td>90.797</td>
<td>4.690</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.569</td>
<td>1</td>
<td>2.569</td>
<td>.133</td>
<td>.717</td>
</tr>
<tr>
<td>M_S</td>
<td>63.917</td>
<td>1</td>
<td>63.917</td>
<td>3.301</td>
<td>.073</td>
</tr>
<tr>
<td>PreTestScore_HL</td>
<td>37.083</td>
<td>1</td>
<td>37.083</td>
<td>1.915</td>
<td>.170</td>
</tr>
<tr>
<td>M_S * PreTestScore_HL (H1)</td>
<td>58.713</td>
<td>1</td>
<td>58.713</td>
<td>3.033</td>
<td>.085</td>
</tr>
<tr>
<td>GPA&lt;sup&gt;a&lt;/sup&gt;</td>
<td>167.866</td>
<td>1</td>
<td>167.866</td>
<td>8.670</td>
<td>.004</td>
</tr>
<tr>
<td>NFC_Score&lt;sup&gt;a&lt;/sup&gt;</td>
<td>10.498</td>
<td>1</td>
<td>10.498</td>
<td>.542</td>
<td>.464</td>
</tr>
<tr>
<td>Difficulty&lt;sup&gt;a&lt;/sup&gt;</td>
<td>152.236</td>
<td>1</td>
<td>152.236</td>
<td>7.863</td>
<td>.006</td>
</tr>
<tr>
<td>Incentive_Employer&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.586</td>
<td>1</td>
<td>2.586</td>
<td>.134</td>
<td>.716</td>
</tr>
<tr>
<td>Incentive_Paid&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.018</td>
<td>1</td>
<td>2.018</td>
<td>.104</td>
<td>.748</td>
</tr>
<tr>
<td>Error</td>
<td>1548.888</td>
<td>80</td>
<td>19.361</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20655.500</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>2275.264</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Covariates included in the model
b. Learners included in this model completed the knowledge pre-test, completed the task for Company A, passed manipulation check for assigned condition, and were assigned to condition “repeated modeling not available” (S_S) or selected into condition “repeated modeling available but not taken” (M_S).

Panel B: Planned Contrasts

<table>
<thead>
<tr>
<th>Hypothesized Contrast</th>
<th>df</th>
<th>t-Statistic</th>
<th>p_value (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The performance of lower-knowledge learners will be higher when repeated modeling is not available. Higher-knowledge learners will perform better, regardless of awareness of the availability of repeated modeling.</td>
<td>1</td>
<td>-2.792</td>
<td>.003</td>
</tr>
</tbody>
</table>

Panel C. Simple Main Effects of Modeling Awareness

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>Mean Square</th>
<th>F-Statistic</th>
<th>p_value (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-knowledge</td>
<td>1</td>
<td>131.021</td>
<td>6.938</td>
<td>0.012</td>
</tr>
<tr>
<td>Higher-knowledge</td>
<td>1</td>
<td>0.053</td>
<td>0.003</td>
<td>0.960</td>
</tr>
</tbody>
</table>
Table 2.3: Repeated Modeling and Knowledge on Performance (H2)

Panel A: Conventional analysis of covariance

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>556.526</td>
<td>8</td>
<td>69.566</td>
<td>4.453</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>.765</td>
<td>1</td>
<td>.765</td>
<td>.049</td>
<td>.826</td>
</tr>
<tr>
<td>M_M</td>
<td>.698</td>
<td>1</td>
<td>.698</td>
<td>.045</td>
<td>.833</td>
</tr>
<tr>
<td>PreTestScore_HL</td>
<td>64.025</td>
<td>1</td>
<td>64.025</td>
<td>4.098</td>
<td>.048</td>
</tr>
<tr>
<td>M_M X PreTestScore_HL (H2)</td>
<td>15.141</td>
<td>1</td>
<td>15.141</td>
<td>.969</td>
<td>.329</td>
</tr>
<tr>
<td>GPAa</td>
<td>54.055</td>
<td>1</td>
<td>54.055</td>
<td>3.460</td>
<td>.068</td>
</tr>
<tr>
<td>NFC_Scorea</td>
<td>17.210</td>
<td>1</td>
<td>17.210</td>
<td>2.153</td>
<td>.148</td>
</tr>
<tr>
<td>Difficultya</td>
<td>33.631</td>
<td>1</td>
<td>33.631</td>
<td>2.153</td>
<td>.148</td>
</tr>
<tr>
<td>Incentive_Employera</td>
<td>.123</td>
<td>1</td>
<td>.123</td>
<td>.008</td>
<td>.930</td>
</tr>
<tr>
<td>Incentive_Paida</td>
<td>4.817</td>
<td>1</td>
<td>4.817</td>
<td>.308</td>
<td>.581</td>
</tr>
<tr>
<td>Error</td>
<td>843.624</td>
<td>54</td>
<td>15.623</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13194.500</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1400.151</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Covariates included in the model
b. Learners included in this model completed the knowledge pre-test, completed the task for Company A, and selected into either condition “repeated modeling available but not taken” (M_S) or “repeated modeling” (M_M).

Panel B: Planned Contrasts

<table>
<thead>
<tr>
<th>Hypothesized Contrast</th>
<th>df</th>
<th>t-Statistic</th>
<th>p_value (one-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2: Performance of lower-knowledge learners will be better when modeling is repeated; however higher-knowledge learners will perform better, regardless of modeling repetition.</td>
<td>1</td>
<td>2.323</td>
<td>0.012</td>
</tr>
</tbody>
</table>

Panel C: Simple Effects of Repeated Modeling

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>Mean Square</th>
<th>F-Statistic</th>
<th>p_value (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-knowledge</td>
<td>1</td>
<td>2.023</td>
<td>.143</td>
<td>.708</td>
</tr>
<tr>
<td>Higher-knowledge</td>
<td>1</td>
<td>.197</td>
<td>.012</td>
<td>.915</td>
</tr>
</tbody>
</table>
Table 3.1: Relevant auditing topic ands and citations related to **CONTENT**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Application to Auditing</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning strategies</strong> – knowledge about how to learn new concepts, facts, and procedures</td>
<td>No evidence as to whether this is currently practiced</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.2: Relevant auditing topics and citations related to METHOD

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Application to Auditing</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaffolding – teacher provides supports to help the student perform a task</td>
<td>No evidence as to whether this is currently practiced</td>
<td></td>
</tr>
<tr>
<td>Reflection – teacher enables students to compare their performance with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploration – teacher invites students to pose and solve their own problems</td>
<td>No evidence as to whether this is currently practiced</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.3: Relevant auditing topics and citations related to **SEQUENCING**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Application to Auditing</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increasing complexity</strong> - meaningful tasks gradually increasing in difficulty</td>
<td>Auditors are assigned to more complex tasks as experience increases</td>
<td>Abdolmohammadi (1999)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prawitt (1995)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bonner (2008)</td>
</tr>
<tr>
<td><strong>Increasing diversity</strong> - practice in a variety of situations to emphasize broad application</td>
<td>Assignment to different clients Assignment to different tasks as experience increases</td>
<td>Salterio (2004)</td>
</tr>
<tr>
<td><strong>Global before local skills</strong> - focus on conceptualizing the whole task before executing the parts</td>
<td>Audit methodology training</td>
<td>Bonner and Pennington (1991)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abdolmohammadi (1999)</td>
</tr>
</tbody>
</table>
Table 3.4: Relevant auditing topics and citations related to **SOCIOMETRY**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Application to Auditing</th>
<th>Citations</th>
</tr>
</thead>
</table>
| **Situated learning** students learn in the context of working on realistic tasks | Audit engagements  
Audit simulation in classroom training | Dirsmith and Covaleski (1985)                    |
| **Community of practice** communication about different ways to accomplish meaningful tasks | Hierarchical teams | Dirsmith and Covaleski (1985)  
Bonner (2008) |
| **Intrinsic motivation** students set personal goals to seek skills and solutions | Desire for promotion  
Desire to maintain reputation  
Accuracy motivated reasoning | Jiambalvo (1979)  
Ferris and Larker (1983)  
Hunt (1995)  
Becker (1997)  
Hammersly et al. (1997)  
Solomon and Trotman (1997)  
Kadous and Sedor (2004) |
| **Exploiting Cooperation** students work together to accomplish their goals | No evidence as to whether this is currently practiced |                                                |
APPENDIX A: Instrument for Interview Study

We define “on-the-job learning” as all ways that auditors learn in their working environment about how to appropriately perform their professional roles. This includes both formal learning practices and opportunities (e.g., classroom training, e-learns, peer discussion, review by interview) and informal learning through discussion with supervisors and peers).

PART A: ON-THE-JOB LEARNING

1. Consider on-the-job learning in the auditing profession now versus 10-20 years ago. What are the similarities? What are the differences?

2. We have composed a list of organizational factors that might affect on-the-job learning. We would like to explore each factor with you and discuss your observations about their impact, either positive or negative, on on-the-job learning. [Provide Attachment]

3. What is your impression of new staff entering the firm, compared to new staff in the past, say 10 or 20 years ago?

4. Now consider seniors. What is your impression of today’s seniors, compared to seniors in the past, say 10 or 20 years ago?

PART B: APPRENTICESHIP

5. Some have applied the term “apprenticeship” to describe one way in which on-the-job learning occurs in the auditing profession. Apprenticeship is traditionally defined as an experienced “master” working with one or more “apprentices” to learn the craft of auditing, as distinct from formal mentoring programs. Do you believe an apprenticeship model is being practiced today in public accounting? If so, at what levels do you believe that the apprentice/master relationship is practiced?

6. In your own experience, how did you learn the “craft of auditing?”

7. Tell me about your most meaningful experience while learning the craft of auditing, at any professional level.
8. Tell me about your most meaningful experience while teaching the craft of auditing at any professional level.

9. Do you believe that the use of apprenticeship has changed over the course of your career? If yes, how?

10. At the beginning of our interview we discussed organizational factors as they relate to on-the-job learning. We would like to revisit this same list - however we would like to specifically focus your responses to their impact on apprenticeship. [Provide Attachment]
APPENDIX A: ATTACHMENT

We have composed the following list of organizational factors that might affect on-the-job learning (apprenticeship.) We would like to explore each factor with you and discuss your observations about their impact, either positive or negative, on on-the-job learning (apprenticeship).

1. Information technology
2. Organizational culture (*Culture of learning; culture where expertise is valued; comfortable work environment; competition and politics discourage knowledge sharing*)
3. Diversity of Workforce
4. Supervisory and feedback practices
5. Time and work demands
6. Reward systems
7. Organizational support (*Range of activities, experts and client; auditors are able to experience process and outcome*)
8. Centralization/Decentralization of Formal Training (*National versus regional or local training*)
9. Team approach to work
10. Other – Are there any other organizational or audit team factors that you believe impact, either positively or negatively on-the-job learning?

---

38 These factors represent the list of factors that was physically provided to all partners in advance of their interview. Researchers asked consistent follow up questions about two additional factors that were brought up by partners: physical environment and regulatory environment.
Appendix B: Detailed Percentages of Results for Interview Study

### B.1 Apprenticeship As Practiced in Public Accounting

<table>
<thead>
<tr>
<th>Apprenticeship is practiced in public accounting</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n=14)</th>
<th>Percentage of New (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>20</td>
<td>67%</td>
<td>64%</td>
<td>69%</td>
</tr>
<tr>
<td>Somewhat</td>
<td>9</td>
<td>30%</td>
<td>21%</td>
<td>31%</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>3%</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### B.2 Partners’ Examples of “Learning the Craft of Auditing”

<table>
<thead>
<tr>
<th>Learning the Craft of Auditing</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n = 14)</th>
<th>Percentage of New (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received guidance</td>
<td>25</td>
<td>83%</td>
<td>86%</td>
<td>81%</td>
</tr>
<tr>
<td>Personal initiative/activity</td>
<td>17</td>
<td>57%</td>
<td>71%</td>
<td>44%</td>
</tr>
<tr>
<td>Observation and selection</td>
<td>14</td>
<td>47%</td>
<td>36%</td>
<td>56%</td>
</tr>
<tr>
<td>Feedback/review notes</td>
<td>9</td>
<td>30%</td>
<td>29%</td>
<td>31%</td>
</tr>
<tr>
<td>Being challenged</td>
<td>8</td>
<td>27%</td>
<td>14%</td>
<td>38%</td>
</tr>
</tbody>
</table>
B.3 Similarities and Differences in OTJL over Time

Panel A. Summary Statistics

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Total (n = 30)</th>
<th>Experienced (n=14)</th>
<th>New (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coaching</strong> (emphasis of, quality of instruction, structure)</td>
<td>67%</td>
<td>71%</td>
<td>63%</td>
</tr>
<tr>
<td><strong>Information Technology</strong></td>
<td>57%</td>
<td>57%</td>
<td>56%</td>
</tr>
<tr>
<td><strong>Formal Training</strong> (classroom content, structure, length and method of delivery)</td>
<td>50%</td>
<td>57%</td>
<td>44%</td>
</tr>
<tr>
<td><strong>Coaching</strong> (firm and/or individual emphasis)</td>
<td>43%</td>
<td>14%</td>
<td>69%</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>30%</td>
<td>36%</td>
<td>25%</td>
</tr>
</tbody>
</table>

- Increased Risk & Complexity: 30\%
- Increased Partner/Manager Involvement: 23\%

Panel B. Percentages related to similarities and differences in new staff

<table>
<thead>
<tr>
<th>Staff - Positive</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n=14)</th>
<th>Percentage of New (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence/ qualification</td>
<td>14</td>
<td>47%</td>
<td>50%</td>
<td>44%</td>
</tr>
<tr>
<td>Better prepared for work</td>
<td>7</td>
<td>23%</td>
<td>14%</td>
<td>31%</td>
</tr>
<tr>
<td>IT oriented/ savvy</td>
<td>6</td>
<td>20%</td>
<td>21%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Panel C. Percentages related to similarities and differences in seniors

<table>
<thead>
<tr>
<th>Seniors</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n=14)</th>
<th>Percentage of New (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in the complexity of the audit</td>
<td>18</td>
<td>60%</td>
<td>57%</td>
<td>63%</td>
</tr>
<tr>
<td>Technical responsibility has decreased</td>
<td>8</td>
<td>27%</td>
<td>7%</td>
<td>44%</td>
</tr>
<tr>
<td>Audit./technical maturity has decreased</td>
<td>7</td>
<td>23%</td>
<td>21%</td>
<td>25%</td>
</tr>
<tr>
<td>Administrative role of the senior has increased</td>
<td>6</td>
<td>20%</td>
<td>0%</td>
<td>38%</td>
</tr>
</tbody>
</table>
### B.4 Summary of Organizational Factors Impacting OTJL

<table>
<thead>
<tr>
<th>Information Technology - Positive</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n = 14)</th>
<th>Percentage of New (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility of information</td>
<td>22</td>
<td>73%</td>
<td>71%</td>
<td>75%</td>
</tr>
<tr>
<td>Timeliness of obtaining accounting and auditing information</td>
<td>15</td>
<td>50%</td>
<td>36%</td>
<td>63%</td>
</tr>
<tr>
<td>Facilitation of training &amp; learning (timeliness, consistency of information)</td>
<td>11</td>
<td>37%</td>
<td>43%</td>
<td>31%</td>
</tr>
<tr>
<td>Flexibility</td>
<td>9</td>
<td>30%</td>
<td>14%</td>
<td>44%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information Technology - Negative</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n = 14)</th>
<th>Percentage of New (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less human interaction</td>
<td>21</td>
<td>70%</td>
<td>57%</td>
<td>81%</td>
</tr>
<tr>
<td>Reduces ability to coach/provide feedback</td>
<td>12</td>
<td>40%</td>
<td>21%</td>
<td>56%</td>
</tr>
<tr>
<td>Distractions/ Multi-tasking</td>
<td>9</td>
<td>30%</td>
<td>29%</td>
<td>31%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supervisory &amp; Feedback Practices</th>
<th>Total (n=30)</th>
<th>Percentage of Total Participants Responding</th>
<th>Percentage of Experienced (n = 14)</th>
<th>Percentage of New (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty providing candid (negative) feedback</td>
<td>19</td>
<td>63%</td>
<td>50%</td>
<td>75%</td>
</tr>
<tr>
<td>Quality of feedback differs by individual</td>
<td>13</td>
<td>43%</td>
<td>43%</td>
<td>44%</td>
</tr>
<tr>
<td>Timeliness of Feedback is Important</td>
<td>12</td>
<td>40%</td>
<td>21%</td>
<td>56%</td>
</tr>
<tr>
<td>Written versus face-to-face feedback (content, impact of message)</td>
<td>10</td>
<td>33%</td>
<td>29%</td>
<td>38%</td>
</tr>
<tr>
<td>Feedback is not given in real time</td>
<td>9</td>
<td>30%</td>
<td>21%</td>
<td>38%</td>
</tr>
<tr>
<td>Formal feedback is &quot;soft&quot;</td>
<td>8</td>
<td>27%</td>
<td>21%</td>
<td>31%</td>
</tr>
<tr>
<td>Feedback is an important factor in OTJL</td>
<td>8</td>
<td>27%</td>
<td>29%</td>
<td>25%</td>
</tr>
</tbody>
</table>
### B.4 Summary of Organizational Factors Impacting OTJL (continued)

<table>
<thead>
<tr>
<th>Time &amp; Work Demands - Neutral</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental characteristics increase the time-work demands of auditors</td>
<td>11</td>
<td>37%</td>
</tr>
<tr>
<td>&quot;Good auditors&quot; are able to manage their time</td>
<td>9</td>
<td>30%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time &amp; Work Demands - Negative</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Limits the amount of time spent on coaching and providing OTJ Feedback</td>
<td>23</td>
<td>77%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diversity</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Different life perspectives and experiences</td>
<td>14</td>
<td>47%</td>
</tr>
<tr>
<td>No impact on OTJL</td>
<td>12</td>
<td>40%</td>
</tr>
<tr>
<td>More difficult to coach</td>
<td>11</td>
<td>37%</td>
</tr>
<tr>
<td>Bring in the smartest people (diverse or not)</td>
<td>6</td>
<td>20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rewards</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No relationship between rewards OTJL</td>
<td>11</td>
<td>37%</td>
</tr>
<tr>
<td>OTJ Coaching indirectly leads to rewards (part of annual evaluation)</td>
<td>9</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Notes:** Responses are presented by experience level and presented in descending order by total; only those items with 20% or greater response rate are included in this table.
Appendix C: Company A Scoring Rules

Panel A: Subsequent Cash Disbursements

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Included for Testing (Point Value)</th>
<th>Appropriate Categorization/Amount (^a) (Point Value)</th>
<th>Adjusting Entry (^b) (Point Value)</th>
<th>Point Value as a % of Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No (0.5)</td>
<td>n/a</td>
<td>n/a</td>
<td>2%</td>
</tr>
<tr>
<td>B</td>
<td>No (0.5)</td>
<td>n/a</td>
<td>n/a</td>
<td>2%</td>
</tr>
<tr>
<td>C</td>
<td>Yes (0.5)</td>
<td>Properly Included - $19,244 (2)</td>
<td>n/a</td>
<td>10%</td>
</tr>
<tr>
<td>D</td>
<td>Yes (0.5)</td>
<td>Properly Excluded - $17,766 (2)</td>
<td>n/a</td>
<td>10%</td>
</tr>
<tr>
<td>E</td>
<td>Yes (0.5)</td>
<td>Properly Included - $40,500 (1)</td>
<td>Cr. Accounts Payable Dr. Subcontractor Exp. $40,500 (2)</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improperly Included - $40,500 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Yes (0.5)</td>
<td>Improperly Excluded - $10,000 (2)</td>
<td>Dr. Subcontractor Exp. Cr. Accounts Payable $13,000-15,707 (2)</td>
<td>18%</td>
</tr>
<tr>
<td>G</td>
<td>No (0.5)</td>
<td>n/a</td>
<td>n/a</td>
<td>2%</td>
</tr>
<tr>
<td>H</td>
<td>Yes (0.5)</td>
<td>Properly Included - $13,000-15,707 (1)</td>
<td>Dr. Accounts Payable Cr. Subcontractor Exp. $13,000-15,707 (2)</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improperly Included - $13,000-15,707 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>No (0.5)</td>
<td>n/a</td>
<td>n/a</td>
<td>2%</td>
</tr>
<tr>
<td>J</td>
<td>Yes (0.5)</td>
<td>Properly Included - $3,647 (2)</td>
<td>n/a</td>
<td>10%</td>
</tr>
</tbody>
</table>

\(^a\) A search for unrecorded liabilities involves determining whether a liability is properly recorded in Company’s records. Work paper documentation should indicate whether the selected cash disbursement was appropriate and recorded in the correct “bucket”: liability properly included, liability properly excluded, liability improperly included, liability improperly excluded. The learner must select the correct “bucket” and amount to be awarded 2 points. No partial credit awarded.

\(^b\) The following coding rules was used for adjusting entries: Correct Dr. Account (0.5) – Correct Cr. Account (0.5) [Wrong Amount]; Correct Dr. Account / Amount (1)– Correct Cr. Account (1.0); Correct Amount [Wrong Accounts] (0).

Panel B: Discussion of Work Performed

<table>
<thead>
<tr>
<th>Conclusion</th>
<th>Correct Response</th>
<th>Point Value (as a % of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Sample</td>
<td>Cash disbursements register</td>
<td>0.5 (2%)</td>
</tr>
<tr>
<td>Dates Reviewed</td>
<td>January 1 – January 15</td>
<td>0.5 (2%)</td>
</tr>
<tr>
<td>Scope Tested</td>
<td>$3,000</td>
<td>0.5 (2%)</td>
</tr>
<tr>
<td>Type of Knowledge (Task-specific Element)</td>
<td>Knowledge Test Question (correct responses are in italics)</td>
<td>Point Value</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Declarative (Definition - Current Liability)</td>
<td>Which of the following is not a current liability? a. Trade accounts payable b. Trade accruals c. Goods received, not invoiced d. <em>Contract for future services not yet rendered</em></td>
<td>1</td>
</tr>
<tr>
<td>Declarative (Definition - Accrued Liability/Expense)</td>
<td>An accrued expense can best be described as an amount: a. Paid and currently matched with earnings b. Paid and not currently matched with earnings c. <em>Not paid and currently matched with earnings</em> d. Not paid and not currently matched with earnings</td>
<td>1</td>
</tr>
<tr>
<td>Declarative (Definition: Financial Statement Assertions)</td>
<td>Tracing a sample of liabilities from the accounts payable sub-ledger to the goods received but not invoiced file would test which financial statement assertion? <em>Existence/Occurrence</em> Performing a search for unrecorded liabilities tests which financial statement assertion? <em>Completeness</em></td>
<td>1</td>
</tr>
<tr>
<td>Declarative (Factual: Risk associated with Accounts Payable)</td>
<td>The main audit risk associated with liabilities and related expenses tend to be: <em>understatement/ omission of liabilities.</em></td>
<td>1</td>
</tr>
<tr>
<td>Declarative (Factual: Specific audit test to mitigate identified risk)</td>
<td>Which of the following does not represent a place the auditor would ordinarily look for unrecorded liabilities?</td>
<td>1</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>a. Unpaid invoice file</td>
<td>b. Purchasing records for the month subsequent to the audit period</td>
<td>c. Purchasing records for the month prior to the audit period</td>
</tr>
<tr>
<td>d. Cash disbursements records for the month subsequent to the audit period</td>
<td>e. Open purchase orders</td>
<td></td>
</tr>
</tbody>
</table>

**Declarative (Factual: Specific audit test to mitigate identified risk)**

Which of the following does not represent a place the auditor would ordinarily look for unrecorded liabilities?

- a. Unpaid invoice file
- b. Purchasing records for the month subsequent to the audit period
- c. Purchasing records for the month prior to the audit period
- d. Cash disbursements records for the month subsequent to the audit period
- e. Open purchase orders

**Procedural (Rules showing what types of errors could have caused accounts to be misstated)**

An overstatement of reported earnings could be the result of the failure to record:

- a. A dividend in arrears on preferred stock outstanding
- b. An accrued revenue
- c. An accrued liability
- d. Amortization of premium on bonds payable

**Procedural (Rules for determining the appropriate period for recording a liability and corresponding expense & Rules for determining whether an error has occurred)**

Your colleague Nancy has prepared the following documentation related to an unrecorded liabilities test for ABC Co. “Invoice 1234 from Kosinski & Sons, LLP is dated 1/20/09 for $25,000 and pertains to contracted legal services for the period 12/15/08 to 1/15/09. Per review [by Nancy] of the 12/31/08 accounts payable Ledger and 12/31/08 accruals ledgers ABC Company has properly recorded an accrual for $25,000 for the period ended 12/31/08.”

Please review her work and discuss any error(s) she may have made in the space provided. If no errors were made, please write “No Errors” in the space provided. Nancy overstated the liability by $12,500; or the amount of the liability recorded should be proportional to the services rendered.
| Your colleague Edward has prepared the following documentation related to an unrecorded liabilities test for ABC Co. “Invoice 3456 is dated 12/26/08 for $100,000 and pertains to rent owed to GO Management (for ABC Co.’s main office at 300 Harvard Place, Cambridge, MA) for January 2009. Per review of the 12/31/08 accounts payable ledger and 12/31/08 accruals ledgers ABC Company has properly excluded this amount from the Balance Sheet.” Please review his work and discuss any error(s) he may have made in the space provided. If no errors were made, please write “No Errors” in the space provided. **No Errors** |
| Your colleague Jake has prepared the following documentation related to an unrecorded liabilities test for ABC Co. “IBM Invoice 4567 is dated 12/29/08 for $50,000 and pertains to computers purchased by ABC Company. This invoice indicates that the shipping terms are FOB destination. The receiving docket indicates that goods were received by ABC Company on 1/02/2009. Per review of the 12/31/08 accounts payable ledger and 12/31/08 accruals ledgers ABC Company has properly recorded a payable for $50,000 for the period ended 12/31/08.” Please review his work and discuss any error(s) he may have made in the space provided. If no errors were made, please write “No Errors” in the space provided. **Liabilities overstated; Goods were not received until subsequent to year-end therefore should not be included as a liability on the balance sheet date** |
General and
Task-specific
Ability
(Application of both DK
and PK in
combination)

The following item was selected
from Company ABC’s Cash
Disbursements Listing for the
period 12/15/08 to 1/15/09.

**Cash Disbursement Date:**
1/08/09  **Amount:** $10,000

**Description of Item:** Services
rendered by Jones Legal, LLP. Visa
applicants: Brown, Jones, and
Carolle. Dates of legal services: 1-
Dec-08 to 31-Dec 08

Please indicate how the item should
be recorded on the ABC’s Balance
Sheet at 12/31/08. Specifically,
provide the journal entry that
should have been recorded (indicate
the specific balance sheet or
income statement accounts and
amounts) in ABC’s accounting
system prior to year end. If no entry
is required prior to year end, please
write “No Entry Required.”

*Dr. Legal Expense 10,000
Cr. Accounts Payable
10,000
-----------------------------------------------

The following item was selected
from Company ABC’s Cash
Disbursements Listing for the
period 12/15/09 to 1/15/10.

**Cash Disbursement Date:**
12/15/09  **Amount:** $24,000

**Description of Item:** Annual auto
insurance (for executive vehicles)
premium paid: Period of coverage: 1
Dec. ’09 through 30 November ’10.

Please indicate how the item should
be recorded on ABC’s Balance
Sheet at 12/31/09. Specifically,
provide the two journal entries that
should have been recorded in ABC’s
accounting system prior to year end.

*Dr. Prepaid Insurance 24,000
Cr. Cash 24,000
Dr. Insurance Expense 2,000
Cr. Prepaid Insurance 2,000

*Any appropriate combination of this
journal entry is awarded credit

2

[Chapter 5: Examples] “Let’s walk through
an example using Elephant and Castle
Construction. Let’s say that the cash
disbursement on 1/2/X2 to ADP of $682 is
within our audit scope. We obtain a copy of
the ADP invoice and note that the invoice
relates to ADP Payroll services for the period
of January 2 – 16 20X2. So, on our timeline
we would indicate that the liability relates to
the 20X2 period using an “X”. Next we
would look at the Accounts Payable detail for
December 31, 20X1 to determine if Elephant
and Castle Construction had/had not
recorded this amount as a liability for the
current period. As you can see from the
Accounts Payable detail, Elephant & Castle
has not recorded this amount as a liability at
12/31/X1. Further review of the clients
records (not provided) would show the
liability was recorded on 1/1/X2, thus
indicating that the liability has been properly
recorded in the subsequent period.”

Note: Journal entries for knowledge test are
scored as follows:

- Account - Account [wrong amount]
- Dr. Account-Amount
- Cr. Account-Amount
- Correct Amount [wrong accounts]
REFERENCES


Grant Thornton. 2010. The evolving accounting talent profile: CFO strategies for attracting, training, and retaining accounting professionals. Grant Thornton Public Policy and External Affairs. Summer. Available at: http://www.grantthornton.com/portal/site/gtcom/menuitem.8f5399f6096d695263012d28633841ca/?vgnextoid=2112b2052c079210VgnVCM1000003a8314acRCRD


Kimberly D. Westermann grew up in California and graduated from Cal Poly San Luis Obispo with a Bachelor of Science Degree in Accounting in 2000. She worked for Ernst and Young in San Jose, CA as an audit senior. Kim subsequently relocated to New York City, taking a job with PricewaterhouseCoopers, ending her career in public accounting as a full time instructor in PwC's Learning and Education division. In 2006, she entered the Bentley University PhD program and in 2009, Kim was a visiting scholar and lecturer at the University of New South Wales in Sydney, Australia. Kim will be taking a position as an assistant professor at Florida International University in Miami, Fall 2011.

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This manuscript was typed by the author.