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# Law student knowledge of legal interviewing: a case study of self-evaluation using video annotation

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LAW STUDENT KNOWLEDGE OF LEGAL INTERVIEWING:  
A CASE STUDY OF SELF-EVALUATION  
USING VIDEO ANNOTATION

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
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in

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## ABSTRACT

Video has long been used to support learner reflection in professional education programs in law, health, and education. Emerging video analysis tools offer learners the ability to highlight segments of video and focus their attention to specific moments or aspects of performance. These emerging tools afford opportunities for more systematic observation, analysis, and deliberate reflection on learner performance than was available previously. Expertise research has found that representative, rigorous tasks followed by immediate feedback and error correction constitute deliberate practice. Training environments that incorporate deliberate practice and emerging video annotation and analysis tools provide opportunities for learners pinpoint strengths and weaknesses in a systematic way.

The purpose of this descriptive case study was to utilize a mixed method approach that would allow the identification and reveal the development of learner knowledge in an ill-structured professional domain. Data consisting of categorical, evaluative, and descriptive video annotations were collected from a legal interviewing and counseling course. Data were analyzed using Chi's (1997) verbal analysis approach. Verbal analysis is a methodology for quantifying the qualitative coding of the content of verbal utterances. Results imply that verbal analysis may be a useful method for other ill-structured professional domains. While the concept of reflection remains ambiguous, the method demonstrated in this study also provides a means to analyze reflective artifacts to reveal the content or object of reflections. Finally, results suggest that it may be possible to evaluate the development of learner knowledge in ill-structured professional domains.

## CHAPTER 1. INTRODUCTION

The aim of any professional education program is to prepare students for the practical skills they will need immediately upon graduation. Legal education has a reputation of attending closely to students' analytical skills and theoretical knowledge through espoused techniques like the case-study method and socratic dialogue. Until a few decades ago, legal educators could safely assume that many practical skills, such as the skills involved in communicating with clients, would be addressed through post-graduate mentorships and opportunities for apprenticeship. However, that assumption was questioned in the early 1990s with the MacCrate Report. MacCrate and subsequent documents (Gerald Hess, Paula Lustbader, & Zimet, 2001; Koo, 2007; Stuckey, 2007) have criticized legal education for not doing enough to prepare students for the actual day-to-day work that lawyers encounter. At the same time these criticisms were being made, post-graduate opportunities to learn on the job were becoming increasingly scarce. The calls for reform from within legal education and the pressures from outside to provide professionals whose practical skills were ready for clients have emphasized the need for legal education to innovate.

The first real-world domain a lawyer must be able to master is legal interviewing: without the ability to come to terms with the problems presented by an actual client a lawyer will never be able to exercise the analytical skills and theoretical knowledge at their disposal. Legal interviewing is a domain that requires competence in three skill areas emphasized by the MacCrate Report (MacCrate, 1992): Problem Solving (Skill 1), Communications (Skill 5), and Counseling (Skill 6). However, legal educators and scholars have observed that many lawyers have problems conducting successful legal interviews (Binder, Bergman, Price, & Tremblay, 2004). Often, the fact gathering that lawyers conduct with clients is guided by technical

considerations; lawyers focus only on the legal aspects of a problem (Williams, Farmer, & Manwaring, 2008). Lawyers possess an authoritarian orientation to the client: “Most lawyers are too busy asking questions and giving advice to take the time to listen” (Binder et al., 2004, p. 49). And lawyers lack skills to manage information flow during an interview. Lawyers possess few concepts to guide the information gathering process. They lack an understanding of the impact of questioning style (Williams et al., 2008). While lawyers may possess problem solving skills they are often lacking the communications and counseling skills that allow them to work effectively with another person (client) with a problem.

In his influential book, *The Reflective Practitioner*, Donald Schön (1983) made a compelling case for the importance of reflection to the education and ongoing development of professionals. He theorizes two forms of reflection that are used by the professional: reflection-in-action and reflection-on-action (Moon, 1999). Reflection-in-action occurs in association with performance and in response to surprising events. It guides the performance via “knowledge in use” (p. 390) which is derived from an implicit and unstated “theory-in-use” (Schön, 1983, p. 390). This form of reflection has very little contact with “espoused theory” (p. 390) that can be articulated verbally. In contrast, reflection-on-action is that form of reflection that occurs after an event, is consciously undertaken and is usually documented or verbalized. Schön’s (1983) notion of a reflective practitioner has proven to be very appealing; his work is frequently cited in the literatures of teacher (Wildman & Niles, 1987), medical (Zick, Granieri, & Makoul, 2007), and legal education (Farmer & Williams, 2005). He espoused a “practicum” (p. 27) that is designed for the task of learning a practice and in which students learn by doing, with the help of coaching. Schön’s ideas on reflection have done much to stimulate discussion amongst professionals and educators of professions (Moon, 1999).

However, few have attempted to operationalize Schön's descriptions of reflection (Moon, 1999). Despite the attempts by many scholars, reflection is a very difficult concept to define precisely (Moon, 1999; Rodgers, 2002). Authors who attempt to clarify its meaning to applied instructional situations are aware of the difficulty in doing so: Kirby and Teddlie (1989) found it difficult to operationalize Schön's constructs by theorizing a form of "reflective teaching". Scholars of legal education have also reflected on the difficulty of defining reflection: "it is easy to tell students to be reflective, but difficult to tell them what to be reflective about. The most critical thing that a trainer can do may be to suggest the factors in the environment to which trainees should attend" [emphasis added](Blasi, 1995, p. 390). Blasi's suggestion suggests that some factors in the environment are more important to notice and reflect upon than others.

Experts and novices notice different features of an environment and, when asked to reflect upon them, generate very different representations of those features (Charness, 1991; Chase & Simon, 1973; de Groot, 1978). Numerous empirical studies have established that experts notice and produce representations of what they have noticed that are more extensive, coherent, and organized than those of novices (Chi, 2000; Chi, 2006). These differences between experts and novices suggest that we might be able to better motivate reflective activities by helping guide and scaffold what features of a situation students notice and how then notice them. Collins, Brown, and Newman (1989) state that, "reflection involves enabling students to compare their own problem-solving processes with those of an expert or with their own internal cognitive model of expertise. Reflection is enhanced by the use of techniques that allow replaying performances (e.g., video recording)" (p. 17). Collins, et al. (Collins et al., 1989) go on to suggest some form of "abstracted replay" (p.17) in which the salient features of expert and novice performance can be highlighted.

Emerging video annotation and analysis technologies may offer a means of guiding reflection that helps students to learn to notice situations and represent them in the way that experts can. What distinguishes emerging video analysis tools from video, which has long been used to support reflection, is the ability to highlight certain segments of video that can be subjected to analysis using frameworks developed by instructors (Dye, 2007; Rich & Hannafin, 2008; Rich & Hannafin, 2009a). When students use these frameworks their attention can be drawn to specific moments or aspects of performance. Students can write about their performance and link that writing to specific segments of video. This annotated video evidence can then be searched for patterns. This process of annotation results in videos that are pre-indexed by students so that instructors can provide focused expert feedback. These emerging tools provide the means for more systematic observation, analysis, and deliberate reflection on learner performance than was available previously.

#### Statement of the Problem

Professional education is concerned with the development of practical skills that require the opportunity to engage in training scenarios that combine action with reflection upon that action. However, the process and content of reflections are ambiguously defined in the literature. One approach to clarifying the content of reflections is to draw from the literature of expertise, especially its distinction between the knowledge representations experts which are more coherent, organized, and extensive than those of novices. One way to help guide the reflections of novices is to utilize emerging video annotation and analysis tools which direct learner efforts towards certain moments or aspects of performance.

## Purpose of the Study

The purposes for this study were: 1) to develop a coding framework and guidelines to represent different levels of self-regulating knowledge during guided self-analysis of professional skill performance in legal interviewing, 2) to apply the knowledge representation framework and guidelines in analyzing, identifying and describing patterns of student self-analysis skills and progress, and 3) to systematically examine the extent to which novices (students) develop knowledge of an ill-structured domain (legal interviewing) in a legal interviewing and counseling course.

## Research Questions

The following are specific research questions that guided the study:

1. What types of knowledge representations do law students generate in their written self-evaluations of legal interview practices?
2. Do the knowledge representations of legal interviewing by law students change and develop over time? In what ways do they develop?
3. Do law students of different knowledge levels generate different types of knowledge representations of legal interviewing skills? In what ways do their patterns of knowledge representations similar or different across students of different skill levels?

## Terms & Definitions

**Video Viewing Only.** Video viewing only studies included scenarios that only involved video recording and playback; no additional video affordances were included.

**Video Review/Advance/Pause.** Some video review studies allow for participant control over video playback functions (play, pause, stop, review, and advance). These affordances allow participants to select and examine certain incidents repeatedly and play them back at different

speeds. These affordances make it possible to notice aspects of events that might go unseen in real-time, sequential viewing (Tan & Towndrow, 2009).

**Video Segmenting.** Video segmenting allows participants to divide video into segments with specific start and stop times. As Calandra, Brantley-Dias, & Dias (2006) note, the flexible quality of digital video affords repeated viewing, pausing, editing and reorganizing of performance events (segmenting) that can be used as the basis for reflection (Calandra et al., 2006).

**Video Annotation.** Video annotation allows participants to attach text to video segments. Video annotation differs from other, less sophisticated video technologies in terms of its ability to allow participants to use a systematic and precise analytical framework that can link directly to video evidence. In this way it allows participants to produce an “evidence-based externalization” (Kong, 2010, p. 1772) of their thoughts on their own competence.

**Analytical frameworks.** Analytical frameworks guide learning activities so that reflection on specific practices or aspects of performance is emphasized. Also, some video annotation tools allow users to share annotated evidence.

## CHAPTER 2. LITERATURE REVIEW

This chapter provides a review of the literature in two areas of focus: expertise and video analysis and reflective strategies. The review of research literature on expertise and deliberate practice provides a background for deliberate practice and how it influenced the pedagogy of the course. The review of the video analysis and reflective strategies research literature is comprehensive and includes studies from the last four decades. This review will inform the theoretical framework for the study, provide terms for the discussion of video analysis technologies, and will include a summary of the implications of these technologies for professional skill development.

### Expertise

The traditional explanation for exceptional performance by an individual in any domain has been that it results from heritable and innate characteristics that cannot be substantially changed through education or training (Ericsson, 2006). However, studies in the 20th-century revealed that high-performing individuals, or experts, did not differ from others in terms of basic memory, intellectual skills, or intelligence (Ericsson, 2004; Newell & Simon, 1972). In fact, the extraordinary performance of experts is restricted to their domain of expertise (Ericsson, 2005).

Early studies of expertise attempted to conceptualize expert performance in terms of a search for problem solutions (Simon & Chase, 1973). However, in a widely-cited study, de Groot (1978) found no significant distinctions in the way that chess grand masters and ordinary players deliberated about subsequent chess moves (number of chess moves examined, depth of search, and speed of search). In this study, de Groot (1978) attempted to isolate the exceptional characteristics of experts by repeating and extending an earlier experiment in which participants were shown chess positions from actual chess games for a short period of time. Those

participants were then asked to reconstruct the position from memory. He found that grand masters were able to reproduce chess board configurations from actual games with much greater accuracy than ordinary players. However, chess grand masters exhibited no advantage over ordinary players when asked to reproduce the board configurations that contained randomly placed chess pieces. The memory advantage of chess grand masters only held when using chess positions from actual chess games. Consequently, chess grand masters appear to be constrained to the same short-term memory limits as ordinary players (Miller, 1956). Based upon this evidence, de Groot (1978) concluded that the ability of exceptional players to remember chess positions must lie with their capacity to perceive structure in the positions and encode them into chunks.

Chase and Simon (1973) extended the research by de Groot (1978) in order to isolate and define the proposed chunks used by exceptional chess players. To do this they designed two experiments that confronted participants of varying skill levels (grand master, Class A, ordinary player) with two tasks: 1) a perception task in which the researchers asked participants to reconstruct the positions of chess pieces from a board in plain view. The successive glances at the board were used to identify the “chunks” of pieces. They also asked participants to perform 2) a memory task, similar to that of de Groot (1978), in which participants were asked to reconstruct chess pieces from memory after a brief exposure to the board. The researchers used timing or clustering during recall to segment the output into chunks. By measuring the time intervals between placements of chess pieces the researchers were successful in identifying the boundaries of perceptual chunks. During further analysis, the researchers found that the pieces within a single chunk were also bound by chess relations, meaningful relationships between the pieces (i.e., mutual defense, proximity, attack over small distances, common color, and type).

This finding suggests that the performance of expert chess players is derived from their ability to encode individual chess pieces into larger perceptual chunks.

Based upon the findings from this study, Chase and Simon (1973) proposed the first domain-general theory of expertise. In their account, experts (e.g., chess grand masters) are individuals who have acquired a large number of complex, domain-specific patterns (e.g., arrangements of chess pieces) that are used to retrieve solutions (e.g., possible chess moves) during subsequent experiences. Consistent with this theory, the superior memory of experts is constrained to representative stimuli from their given domain of expertise (e.g., arrangements of chess pieces taken from actual chess games). This finding has been supported by research across a variety of domains when Chase and Simon's (1973) technique was used: chess (Charness, 1991); go (chosen as domain due to its similarity to chess for the purpose of replicating Chase and Simon's [1973] results), (Reitman, 1976); music notation (Sloboda, 1976); electronic circuit diagrams (Egan & Schwartz, 1979); computer programming (McKeithen, Reitman, Rueter, & Hirtle, 1981); and dance, basketball, and field hockey (Allard & Starkes, 1991).

#### Acquisition of Expertise

Both the foundational research by de Groot (1978) and the general theory of expertise by Chase and Simon (1973) have been very influential in the development of cognitive psychology and expertise research. Both studies have been cited hundreds of times in journals and frequently in cognitive psychology textbooks (Charness, 1992). And both studies have contributed to the theory (e.g., general theory of expertise) and methodology (e.g., think-aloud protocols) of cognitive psychology. However, the theory of expertise proposed by Chase and Simon (1973) also has limitations. While the theory provides the first comprehensive model of expertise it does not explain how individuals acquire the highly organized knowledge representations that are

essential for expert performance. The findings from their study suggest that extensive experience in a domain may be responsible for the coherent patterns and organized structure of an expert's knowledge. Chase (1973) do not say precisely how much experience is required to obtain expertise but note that, at the time, no one had attained the status of chess grandmaster in under ten years. Notable exceptions to this "rule" are Bobby Fischer and Salo Flohr who both reached grand master ranking in nine years (Ericsson, Krampe, & Tesch-Rmer, 1993).

However, subsequent evidence offers support for the requirement that individuals have at least ten years of experience in a domain before attaining a socially-recognized expert status (Ericsson et al., 1993). In their review of the literature, Ericsson (1993) find support for the "10-year rule" (p. 387) from a wide range of domains: music (Sosniak, 1985), mathematics (Gustin, 1985), tennis (Monsaas, 1985), swimming (Kalinowski, 1985), long-distance running (Wallingford, 1975), diagnosis of X-rays (Lesgold et al., 1988; Lesgold, 1984), and medical diagnosis (Patel & Groen, 1991). Further analysis by Ericsson (1993) suggests that, despite the apparent requirement of 10 years of experience to attain socially recognized expert status, the relationship between amount of experience and actual performance is not as strong as it should be if practice were all that was required. For example, in domains like running marathons and violin, feats that were once considered to be the pinnacle of performance (e.g., fastest marathon times in 1896 Olympics, Tchaikovsky's violin concerto) are now considered to be entry-level accomplishments. The researchers concluded that an increase in what is considered to be peak performance in these and other domains suggests that it is not only the amount of time spent in practice but also the duration, intensity, and structure of practice that plays a significant role in the improvement of performance.

More recently, Ericsson (2007) and Choudhry (2005) provide reviews of research in the

broad professional domains of nursing and medical diagnosis. In their paper, Ericsson et al. (2007) review the research on the experience and professional behavior of nurses. The reviewers looked at a range of studies using standardized, representative nursing tasks with large sample sizes. Across these studies, when peer nomination, accumulated experience, or even formal qualifications were used the researchers were unable to find reliable performance differences. Even studies of nursing (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Estabrooks, Midodzi, Cummings, Ricker, & Giovannetti, 2005) with very large sample sizes (e.g., 15,000) found that the accumulated experience of nurses was unrelated to patient outcome. Consequently, these studies do not offer clear directions for research into the development of nursing expertise.

Choudhry et al. (2005) also found surprising results: an inverse relationship between the number of years that a physician has been in practice and the quality of care that the physician provides. The reviewers' stated purpose was to, "assess the robustness of the relationship between clinical experience and quality of care by systematically reviewing empirical studies" (Choudhry et al., 2005, p. 260). In this review, "quality of care" (p. 260) was defined as knowledge; adherence to standards of practice for diagnosis, screening, and prevention; adherence to standards of appropriate therapy; and actual health outcomes. The reviewers found that, of the 62 studies that were reviewed, 60 studies (96%) reported a negative or no association between greater clinical experience and quality of care. Only two studies (4%) reported a positive association. Choudhry et al. (2005) concede that there are possible explanations for these paradoxical results: unfamiliarity of older physicians with newer standards of care and reluctance to incorporate newer techniques. They also note that studies specifically designed to assess the relationship between experience and performance in which no association was found may be less likely to have been published and thus unavailable for their review. They also note

that disagreements between practice guidelines may exist and not provide a reliable measure of health care quality. However, despite the possible alternate explanations and study limitations, the reviewers argue that the link between experience and performance should be further evaluated using, “objective and widely accepted measures of performance” (p. 270). In summary, both reviews find that, “social criteria of expertise, self-rating, and extended experience are not closely related to superior performance on representative tasks in medicine” (Ericsson, 2007, p. E65). These reviews challenge the “popular myth” (Ericsson, 2009, p. 2) that expertise and superior performance develop as inevitable, naturally emerging consequences of many years of experience in a domain.

Self-nomination, accumulated experience, and social recognition have been shown to be unreliable means of identifying experts. It is also practically impossible to conduct a detailed analysis of acquisition processes extending over decades and varying across a range of environmental circumstances (Ericsson & Smith, 1991). Moreover, without a theoretical framework to outline relevant aspects the potential number of factors that contribute to the development of exceptional performance is vast. A much more promising approach would be the careful analysis of attained performance. This is the foundation of Ericsson and Smith’s (1991) expert-performance approach to studying expertise. The expert-performance approach is “an attempt to describe the performance under standardized conditions, to analyze it, and to identify the components of the performance that make it superior” (p. 523).

Their approach consists of three general steps:

1. Identification of representative tasks that can be studied under standardized conditions in a lab.
2. Analysis and description of cognitive processes critical to the production of an

outstanding performance on representative tasks.

3. Accounting for the acquisition of characteristics, cognitive structures, and processes that mediate superior performance of experts.

Ericsson and Smith (1991) argued that this approach would have more explanatory power than prior approaches. It could help explain what types of domain experiences or practice supported the continued performance improvement even after the initial improvement common to almost everyone in a domain. However, their approach was also limited in important respects. Where the prior approaches to studying expertise and its development relied upon social indicators as the basis for identifying expertise, the expert-performance approach requires the identification or design of tasks that would allow “real-life outstanding performance” (p. 524) to be reproduced under experimental conditions: “In those domains in which expertise can be measured, it is important to restrict the focus to those activities that are involved in producing the relevant performance or resulting product. One should search for goal-directed activities that result in overt behavior that can be reproduced by presentation of the appropriate stimuli” (Ericsson & Smith, 1991, p. 529). However, the design or identification of tasks to capture real-life performance is challenging. This is especially the case in domains more complex such as physics and medical diagnosis.

#### Changes in Expertise Definition

Before exploring how Ericsson and Smith’s (1991) expert-performance approach impacted the study of the development of expertise, it is important to clarify how the definition of expertise has been refined. The explanation offered by Chase and Simon (1973) is that aggregated past experience is the single most important factor accounting for the development of expertise. Their general theory of expertise continues to provide the basis for contemporary

expertise research (Ericsson, 2009; Nokes, Schunn, & Chi, 2010). However, Ericsson and colleagues (2005, 1993) argue that an individual must acquire two elements in order to manifest expertise: first, an individual must acquire knowledge representations that allow efficient control and execution of performance. Second, individuals must acquire the capability to plan, reason, and evaluate so that current high levels of performance can be smoothly controlled and further improvements can be made simultaneously. In complementary research, Chi (2006) explained that the structure or representation of experts' knowledge is the primary determiner of how experts learn, reason, remember, and solve problems. Based upon her research involving "complex domains" (Ericsson & Smith, 1991, p. 529) like physics, Chi (2006) defined expertise as "the manifestation of skills and understanding resulting from the accumulation of a large body of knowledge" (p. 167). With this more nuanced description of expertise it is possible to look for learning mechanisms that are generalized across a variety of domains.

#### Deliberate Practice

Ericsson et al. (1993) proposed that the reason practice and expert performance were not more strongly related was due to vague definitions of what constituted practice. In their seminal paper they asserted that the maximum level of performance for individuals in a given domain is not attained automatically but can be increased by deliberate efforts to improve. They described these efforts as deliberate practice (Ericsson et al., 1993; Ericsson, 2006; Krampe & Ericsson, 1996). Ericsson et al. (1993) identified four characteristics of deliberate practice. The first being that an individual must be motivated to attend to a learning task and exert effort to improve their performance. Deliberate practice activities are not inherently motivating and are only undertaken by an individual for the purpose of skill improvement. The second characteristic is that an activity should take into account the prior knowledge of an individual. During practice it is

important for prior skill gains to be preserved while pursuing new skills. Any activity that requires extensive instruction may be too difficult for an individual to reliably undertake. The third characteristic is that an individual should receive immediate, informative feedback and knowledge of results of their performance. In the absence of adequate feedback efficient learning is impossible. Even highly motivated individuals are likely to attain only minimal improvement without feedback regarding the accuracy of performance. The fourth characteristic is that an individual should repeatedly perform the same or similar tasks.

Ericsson et al. (1993) contrasted deliberate practice with other domain-related activities such as work and play. Work includes “public performance, services rendered for pay, and other activities directly motivated by external rewards” (p. 368). Work is generally regarded as distinct from training. While working, individuals are expected to perform to the best of their ability. In this context they may be discouraged from learning new skills due to the likelihood of mistakes or failures, which can be costly in a work environment. Moreover, work is rewarded with external prizes and monetary compensation unlike play or deliberate practice. On the other hand, in playful engagement, the goal is the activity itself. Individuals may report feelings of “flow” or “peak experiences” (p. 368). But this state of diffused attention is very different from the focused attention required by deliberate practice activities in which individuals seek to maximize the utility of feedback for the purposes of taking corrective action. In contrast to work and play, deliberate practice is a highly structured activity whose sole aim is to improve performance.

The basic assumption of the deliberate practice framework is that the amount of time individuals engage in deliberate practice is monotonically related to that individual’s acquired performance (Ericsson et al., 1993). From this assumption it follows that individuals should attempt to maximize their time engaged in deliberate practice activities. But maximization of this

practice is a long-term and complex undertaking. First, deliberate practice activities require available time, energy, access to teachers, and training resources. Second, engagement in deliberate practice is not inherently motivating; individuals rarely undertake such activities spontaneously. And finally, deliberate practice activities are effortful and can only be undertaken for a limited amount of time without leading to exhaustion.

#### Empirical Studies on Deliberate Practice

Since Ericsson et al. (1993) presented their deliberate practice framework numerous studies have been undertaken across domains that provide additional support for its claims.

Chess. Charness, Tuffiash, Krampe, Reingold, and Vasyukova (2005) undertook a similar study in the domain of chess. Their study is primarily concerned with the relative influence of different activities on the development of chess expertise. In a preliminary paper, Charness, Krampe, and Mayr (1996) argue that serious study alone fits the definition of deliberate practice as described by Ericsson et al. (1993). They cite two reasons for this. First, in serious study alone, materials can be deliberately chosen or adapted to provide problems at an appropriate skill level. In contrast the problems encountered during tournament play may vary greatly due to the fact that players are typically matched against opponents who are typically stronger or weaker than his or her skill level. Second, serious study alone allows for multiple repetitions of similar problems so that individuals can learn to distinguish stronger and weaker solutions; tournament play does not allow such repetitions.

In their study, Charness, Tuffiash, Krampe, Reingold, and Vasyukova (2005) asked two large, diverse samples of tournament-rated chess players to estimate the duration and frequency of their engagement in various chess-related activities. Variables representing serious study alone, tournament play, and formal instruction were all significant bivariate correlates of chess

skill as measured by tournament performance ratings. But multivariate regression analyses revealed that serious study alone was the strongest predictor of chess skill. These results provide further evidence to support the critical role of deliberate practice activities in the acquisition of chess expertise (Charness et al., 2005).

Music. Ericsson et al. (1993) conducted two studies in the domain of music in order to test several of his predictions related to deliberate practice. The first prediction concerns an individual's developmental history. An individual's current performance is directly related to the amount of time spent in deliberate practice activities. Also, an individual's capacity for deliberate practice increases over time. Second, the framework predicts that the highest improved performance is associated with the largest weekly amounts of deliberate practice. Third, the framework makes predictions about experts' evaluations regarding the nature and role of deliberate practice activities that are relevant throughout development. Deliberate practice activities are expected to be rated by experts as high on relevance for performance, high on effort, and low on inherent enjoyment.

All the musicians in both studies by Ericsson et al. (1993) were categorized by skill level based upon recommendations from music academies. All participants were also matched by age and gender. To test the first prediction, Ericsson et al. (1993) identified violinists who had practiced for more than ten years and asked them to complete two tasks: 1) provide retrospective reports of their practice over their entire musical career, and 2) keep daily activity diaries over the course of one week that recorded type of activity and start and end times for each activity.

The findings from the first study with different groups of violinists support the deliberate practice framework. Consistent with the first (developmental history) and second (current levels and habits of practice) predictions, the weekly and retrospective estimates for practice alone were

higher for the best violinists than those of the less-accomplished violinists. It is important to note that participants were required to categorize their retrospective and weekly estimates into a variety of musical and non-musical categories; practice alone was one of many other musical categories including practice with others, playing for fun, and taking lessons. In support of the third prediction (experts' evaluations regarding the nature and role of deliberate practice activities), violinists in all groups rated practice alone as the most relevant activity for improving performance. Also supportive of the third prediction is the fact that the best violinists all rated sleep as a highly relevant activity for practice.

In their second study, Krampe & Ericsson (1996) replicated the results of the first study by comparing expert and amateur pianists. They also related amount of prior practice to current performance on a wide range of musical and nonmusical tasks. Consistent with the first (developmental history) and second (current levels and habits of practice) predictions, at no point during development did the expert and amateur pianists accumulate comparable amounts of practice. The participants in the second study were not asked to evaluate the relevance of various activities for piano performance. However, the researchers did find a clear distinction on musical skill-related tasks between experts and novices; these distinctions were also consistent with the accumulated practice for each group. Also relevant to the deliberate practice framework is the finding that skill advantage was limited to those tasks that reflect components of skilled performance.

Ericsson & Smith (1991) argued that to arrive at a complete understanding of the structure and acquisition of expertise would only be attainable in domains in which experts exhibit objectively superior performance in a reproducible manner in domains where these activities represent the essence of accomplishment in that domain (Ericsson, 2006). Most of the

domains studied in deliberate practice research so far have been in well-structured domains like music and sports (Dunn & Shriner, 1999). These domains can be considered well-structured in the sense that practice leading to improvement can be recognized and observed. In addition, improved performance is defined and can be assessed by comparison to some standard.

However, other ill-structured domains, particularly those dealing with human behavior, contain problems whose solutions and goals are ambiguous. These domains do not have clearly defined goals and subgoals that constitute improved performance (Jonassen, 1997). The problems that individuals in these domains need to overcome are not clearly defined. Teaching, medicine, and professions dealing with human behavior are ill-structured. Deliberate practice research was often undertaken in well-structured domains but rarely undertaken in ill-structured domains. Perhaps it is not surprising that there has been relatively little deliberate practice research in ill-structured domains.

Teaching. Dunn and Shriner's (1999) study is an effort to explore an ill-structured domain (teaching) from the perspective of deliberate practice. Dunn and Shriner (1999) investigated teacher activities that may lead to the development of expertise. In Study I they asked if the framework of deliberate practice provides a useful approach to understanding the development of expertise in the ill-structured domain of teaching. To answer this question the researchers surveyed 136 teachers at 14 schools about their planning and evaluation activities. Following the same approach taken by earlier deliberate practice research in music (Ericsson et al., 1993; Krampe & Ericsson, 1996), the researchers asked the respondents to rate the activities for relevance, effort, and frequency. If an activity met these criteria it was considered a possible deliberate practice activity. The results showed that planning and evaluation were possible candidates for deliberate practice activities.

After receiving the results of the first study, the researchers wanted to further explore how the planning and evaluation activities that were identified as deliberate practice supported the development of teacher knowledge leading to expertise. Consequently, in Study II the researchers asked what more they could learn about the nature and dimensions of these activities that support their identification as deliberate practice for teachers? Also, they asked how much time teachers invested in planning and evaluation activities. To answer these questions they identified 19 teachers with 10 years of experience to participate in the study. The researchers asked the participants to code their daily activities every 15 minutes over the course of 14 days. The researchers also conducted qualitative interviews following the completion of the activity logs. Dunn & Shriner (1999) calculated basic descriptive statistics for the log data and coded and analyzed transcribed interviews.

Dunn & Shriner (1999) acknowledge that, “effective teaching” (p. 633) and its assessment are not clearly defined in the literature. As noted earlier, specific performance criteria needed to identify expert performers. In addition, they found that, unlike other domains in which deliberate practice is undertaken for self-improvement, the planning and evaluation activities identified as deliberate practice in the study are undertaken for the improvement of their students. Immediate feedback is another feature necessary for deliberate practice and lacking in teaching (Dunn & Shriner, 1999). If the goal of planning and evaluation activities is student improvement, then feedback in the form of tests, projects, and assignments, is not typically immediate. Moreover the value of feedback in deliberate practice is in its specificity. However, teaching is very ill-structured in that predictable relationships are not strong enough for us to take reasonably complex subject matter, teach it to diverse students, and expect success for all of them.

Despite these factors which make the application of the deliberate practice framework challenging, Dunn and Shriner (1999) argue that deliberate practice framework still provides a useful approach for understanding the development of teaching expertise. They note that several common and routine aspects of teaching were identified as deliberate practice activities. They also note that real differences in performance in teaching have been observed. “As in other domains, differences in levels of competence imply differences in the knowledge that has been acquired by the performer, and experience alone does not account for these differences” [emphasis added](Dunn & Shriner, 1999, p. 633).

#### Implications for Professional Education

Although it is challenging to apply the deliberate practice framework to professional domains, there is no reason to believe that the changes in the structure of human performance and skill are restricted to well-structured domains (Ericsson & Charness, 1994). Similar changes should be expected in everyday skills like thinking, comprehension, and problem solving. However, people acquire everyday skills, including those used in professional settings, under less structured conditions that do not have the strict and generalizable criteria needed for evaluation. In contrast, proficiency in traditional, well-structured domains investigated by expertise researchers is acquired in standardized conditions that allow for comparison across individuals.

What makes everyday skills like thinking, comprehension, and problem solving so difficult to study is that they occur covertly and are not directly observable. This is also true of skills involved in ill-structured, professional domains (e.g., planning, evaluating, analyzing) (Ericsson & Smith, 1991). However, evidence of thinking, comprehension, and problem solving can be obtained indirectly through spoken or written language (Chi, 2006). For example, more sophisticated and detailed explanations of how a heart pumps blood (Chi, De Leeuw, Chiu, &

Lavancher, 1994) or categorizations of physics problems (Chi, Feltovich, & Glaser, 1981) suggest more detailed and elaborate mental models in these respective domains (Chi, 2000). Similarly, one of the markers of expertise in professions is the use of names and concepts that represent the knowledge in these domains (Ericsson & Charness, 1994). These knowledge representations are explicated in training manuals and books with differing levels of mastery of the vocabulary that correspond to different levels of professional attainment. The relationship between the language of a domain and covert cognitive processes provides an opportunity for those who might wish to identify deliberate practice activities in ill-structured, professional domains and evaluate the effect of engaging in deliberate practice.

#### Video Analysis and Reflective Strategies

The use of reflective strategies combined with video recordings has been a prominent teaching strategy for preparation of doctors (Zick et al., 2007), lawyers (Williams et al., 2008), teachers (Calandra, Brantley-Dias, Lee, & Fox, 2009), and other professions for decades. Emerging video analysis tools provide new capabilities for students in professional education programs: these tools help guide learner reflection and direct learner efforts towards specific events or aspects of performance. Such tools have become increasingly popular with professional education (Rich & Hannafin, 2009a). Education researchers have also become interested in the implications of these technologies and published numerous peer-reviewed studies in the past several years. This section provides a summary of prior reviews on video analysis literature and a systematic review of more current empirical studies.

### Prior Reviews of Video Self-Reflection Literature

Three relevant prior reviews on video self-reflection literature including Fuller & Manning (1973), Wang & Hartley (2003), and Rich & Hannafin, a (2009a) were identified. All reviews were drawn from the literature of teacher education.

Fuller & Manning (1973) provide the earliest review of research related to video playback to support teacher education. They investigate whether the experimental and theoretical literature on video-supported “self-confrontation” (p. 469) can inform teacher video review practices. The reviewers do not provide a definition of self-confrontation. Instead they describe it in general terms as a technique for behavioral modification often used in therapeutic settings. They describe the video-supported self-confrontation treatments and their relationship to outcomes, along with the characteristics of the study participants and facilitators. Their review includes journals in education and psychology from January 1960 through May 1973. The authors included studies that investigate personal change due to video self-confrontation and are empirical studies as opposed to “descriptive” (p. 473) articles. Studies whose treatment and outcomes were ambiguous were not included. The reviewers also included studies about self-confrontation that did not involve the use of video. The reviewers do not share how many studies they identified but the list of works cited includes over 300 studies.

Fuller & Manning (1973) note enthusiasm for self-confrontation in pre-service teacher education but a lack of careful documentation of its specific effects. Their stated purpose is to inform video-supported self-confrontation in teacher education by drawing on more well-documented accounts of “personal change” (p. 472) as opposed to more focused, discrete behaviors in other professional and therapeutic contexts. They conclude that the use of video for

this purpose is valuable in its capacity to reveal novel and powerful information. But it also can be disruptive and disorganizing, especially when “negative information” (p. 511) is revealed.

In their review, Wang & Hartley (2003) discuss the relationship between video technology and teacher reform. The reviewers searched the ERIC database for articles and research reports from 1990 through 2003 using keywords “teacher education”, “video”, “teacher learning”, and “video”. The authors also included studies that were referenced in the initial results. All studies that lacked substantial data analysis of video technology applications were excluded. This resulted in 20 studies that were categorized and reviewed.

Wang & Hartley (2003) give specific attention to the application of video-technology in supporting preservice teachers to transform their beliefs, acquire pedagogical content knowledge, and to develop a theoretically-informed understanding of learners. They note that video technology has the potential to create flexible ways of representing and connecting information to teacher performance. However, the reviewers conclude that the findings documenting the effectiveness of video technology are mixed. Specifically, the reviewers observe that the effects of video technology are “more often assumed than carefully documented” (p. 128). The reviewers cite two shortcomings of the literature. First, the reviewers note a “prevailing conceptual ambiguity” (p. 129) as to what counts as effects of video technology. Many studies use attitudes toward technology or the participants’ self-report of what they learned as a way to assess the effects of video technology instead of standards and principles related to teacher education reform. Second, the reviewers note methodological problems with the studies they reviewed. Most of the studies are quantitative, short-term studies that fail to provide a deeper understanding of “the nature of...[participant] conceptions” (p. 129). Thus, it is difficult to describe the development of participant knowledge. The reviewers recommended more

qualitative studies designed to investigate the complex processes of participant thinking and how they are shaped by video technologies.

The purpose of Rich and Hannafin's review (2009a) was to identify, compare, and contrast video annotation tools used to support teacher reflection. The reviewers described video annotation tools as offering the ability to "link captured video with related evidence" (p. 53) so that pre-service teachers can systematically analyze their video using instructor-provided frameworks. They used the search terms "video", "self-reflection", "evaluation", "teachers", and "video analysis tools" to search ERIC, SSCI, PsycInfo, Academic Search Premier, and digital dissertation databases. They also used key articles and ISI citation index to perform a highly-cited search for additional articles. Eighteen studies, articles, and presentations were identified that described a video annotation tool that was used for analyzing one's own teaching in an authentic (non-simulated) context and was available. Seven video annotation tools met the criteria for inclusion.

In their review, Rich & Hannafin, (2009a) provide illustrations of each of the tool interfaces, discuss their features, and identify areas of needed research. By definition, all video annotation tools afford users the ability to connect text or other media to specific sections of text. This feature allows users to make their thoughts, intents, and assumptions explicit and to connect them to observable (video) evidence. Some video annotation tools also scaffold and structure user attention via embedded "analytical frameworks" (p. 62). Analytical frameworks guide learning activities so that reflection on specific practices or aspects of performance is emphasized. Also, some video annotation tools allow users to share annotated evidence.

Although they did not conduct a review of the research literature, Rich & Hannafin (2009a) note that there are few studies examining the effects of video annotation on teacher

reflection. They also note that, overall, video annotation studies “ten[d] to be strong on ideas but lack evidence of impact” (p. 64). In the studies they cite, the reviewers note that it is also unclear how video and non-video evidence support teacher reflection. In addition, they note that there is relatively little research regarding the accuracy and reliability of student self-evaluations of video-recorded performances in teacher education. Rich and Hannafin (2009a) raise practical considerations about the costs (e.g., time required to learn software) and risks (e.g., legal and ethical issues) of video annotation and analysis.

Taken together, these reviews show certain trends. First, the reviews show that the use of video to support reflection and preparation of professionals has been a source of enduring interest for researchers for nearly 50 years. Second, these reviews also show a persistent concern for the conceptually ambiguous effects of video-supported analysis on professional development. Both Wang & Hartley (2003) and Rich & Hannafin, (2009a) have emphasized the need for studies that reveal details about the development of knowledge that results from reflection and how video supports and shapes that knowledge.

These reviews have several limitations. Fuller and Manning (1973) review a large number of studies but their conclusions have limited relevance to contemporary uses of video in professional education. First, the technological affordances of video are no longer restricted to video recording and playback. Modern video environments include video editing and annotation. These features support the systematic observation and analysis of performance. Second, the popularization of Dewey’s (1910) notion of “reflection” via Schön’s (1983, 1987) work informs both the research literature and pedagogy of professional development. Theoretically, it bears little resemblance to the self-confrontation as described by Fuller & Manning (1973).

The reviews by Rich and Hannafin (2009a) and Wang & Hartley (2003) were conducted much more recently, but also have limitations. Wang and Hartley's (2003) review cannot take into account the changes in video analysis technologies since 2003 nor how these changes may offer new supports for or have effects on the process of reflection. Rich & Hannafin, a (2009a) examine more recent studies but provide a review of video annotation tools and do not provide a review of the research.

## A Systematic Review of Current Empirical Studies

### Purpose of Review

The purpose of this section is to conduct a systematic review of the research literature documenting the instructional use of video analysis and reflective strategies. Prior reviews have covered the use of video for teacher reflection and described emerging video analysis technologies. This review will contribute to the ongoing discussion about the role of video in teacher education but will also draw from other professional preparation programs. This review will highlight newer affordances that these technologies offer and how they support systematic observation, analysis, and reflection. This review will also identify the research designs, methods, and evidence found in research studies. Four questions guide this review: 1) What types of scaffolds, frameworks, or structure are used in guiding student reflection activities? 2) How do technological affordances (Norman, 1999) provide support for analyzing and reflecting on skill performance? 3) What research designs and methods have been used to study technology supported student analysis for skill performance?

Two concepts will be of particular interest to this review: reflection and video annotation. As Dewey (1910) and subsequent scholars (Moon, 1999; Zeichner & Tabachnick, 1991) have observed, reflection is difficult to define without ambiguity. The fact that reflection is difficult to

define clearly makes it difficult to design instructional support for reflective activities. Moreover, this lack of clarity makes it difficult to know whether or not a student has become better at reflecting upon their experience. However, while definitions of reflection may vary, the “reflective artifacts” (Calandra et al., 2006, p. 77) or products of an individual’s reflection such as writing or edited video may offer a window into the content of reflections. The research literature of expert-novice differences provides one means of identifying the knowledge embedded in written reflective artifacts (Chi, 2006). This literature draws distinctions between the knowledge representations of experts which are more coherent, organized, and extensive than those of novices.

As defined by Rich & Hannafin, (2009a), video annotation refers to the ability to identify specific segments of a video recording and apply descriptive or evaluative text to those segments. This feature allows students to analyze a video recording of their own performance so that it can be reviewed, analyzed, and synthesized by teachers or mentors. Dye (2007) clearly describes the benefits of video annotation: 1) it allows instructors and mentors to focus the attention of students on key aspects of performance by explicitly structuring evaluation and reflection activities and 2) it allows students the chance to anchor their observations through referring to specific events in their videos.

#### Literature Review Method

Search strategies The current literature search included two phases: 1) gathering all relevant articles in an initial search and 2) choosing articles from that search using inclusion and exclusion criteria. In the first phase of the search, the following databases were used: ERIC, SSCI, PsycInfo, Academic Search Complete, and ProQuest’s Digital Dissertation Abstracts. The following search terms were used: video, video annotation, video analysis tools, reflection, self-

reflection, self-analysis, and self-evaluation. When precise matches of these terms were not available as keywords and subjects, variations were used. Additional papers were identified using the reference sections of the articles retrieved. Searches were limited to: 1) peer-reviewed documents; 2) studies of professional education or training; 3) studies in which a participant used analysis to record, annotate, and reflect on their own activity. This search resulted in a list of 88 papers.

**Inclusion and Exclusion Criteria** To be included in this literature review, each study had to meet the following inclusion-exclusion criteria:

- 1) The study had to focus primarily upon the use of video analysis technologies. For this review, a video analysis technology was defined as any use of video playback intended to be used as a basis for performance review. These technologies could include the ability to control playback using pause, stop, review, and advance functions. The technologies could also include the ability to identify segments of video and to attach writing to those segments of video.
- 2) The study had to describe the use of scaffolds, prompts, or structure that support reflective activities on the part of participants. The scope of reflective activity included any attempt on the part of the instructor or researcher intended to provoke evaluation, assessment, or consideration of video-recorded performance.
- 3) The study had to take place in support for professional education. Professional education included any pre-service education or training along with any development for educators, medical, or legal professionals.
- 4) The study had to focus primarily upon the self-reflective activity of participants rather than on models or other study participants. After reviewing the articles, a total of 54

studies met all inclusion criteria.

### Study Features Coding and Analyses

**Research Quality.** The studies obtained for this literature review were all coded for study quality. The basis for study quality was based upon literature reviews by Azevedo & Bernard (1995), Bernard et al. (2004), and Lou, Bernard, & Abrami (2006). Overall study quality included: 1) sample size; 2) sampling sources (convenience, stratified); and 3) research design (case study, qualitative, mixed methods, experimental, quasi-experimental, and survey).

Additional study quality criteria were developed and coded for research designs. Case study, qualitative design, and mixed methods study quality included the following: 1) data triangulation (triangulation, no triangulation) and 2) outcome measure quality (reliability, no reliability). Quasi-experimental and experimental design study quality included the following: 1) group equivalence (random assignment, statistical control, non-equivalent control groups; and 2) outcome measure quality (standardized tests, outcome measures with reliability, outcome measures no reliability). Survey design study quality included the following: survey outcome measure quality (standardized tests, researcher-made measures with reliability, researcher-made measures without reliability, instructor-made measures); and 2) survey development framework (guided by theoretical framework, not guided by theoretical framework).

**Outcome Measures.** In addition, all studies were coded for different types of outcome measures and study results. Outcome measures included: 1) reflection data analysis, which involved an examination of reflection artifacts in the form of an audio recording of a participant's spoken reflection or text composed by a study participant in response to a reflection prompt; 2) questionnaire, this included responses to questions that were not intended to promote reflection; 3) performance, this included any researcher or instructor evaluation of participant

performance in a particular domain. For example, study participants might have their teaching performance evaluated by an instructor during a study; and 4) other. All results were also coded for study results including: 1) positive, study findings and conclusion support use video-supported reflection activities; 2) neutral/mixed, study findings that neither support nor discourage the use video-supported reflection activities; and 3) negative, studying findings that discourage the use of video-supported reflection activities. Findings for each study were also recorded as brief, textual summaries.

Substantive Features. To address the research questions all studies were also coded for several substantive features: video analysis technologies, reflection structure, field, collaborative/individual reflection, and professional status. Codes for these substantive features were developed on the basis of earlier literature reviews (Fuller & Manning, 1973; Rich & Hannafin, 2009a; Wang & Hartley, 2003). Prior reviews did not code for or attempt to categorize affordances of video analysis technologies. The codes used in this study represent a scale from least interactive (i.e., video viewing only) to most interactive video technology (i.e., video annotation) with each feature understood to include features that afforded fewer and less sophisticated options for interaction. Thus, only one video analysis technology feature was assigned to each study. Video analysis technologies consisted of:

- (a) video viewing only where participants were permitted to view video but were not allowed to control playback;
- (b) video pause, review, and advance where participants were permitted to control play, pause, review, and advance functions;
- (c) video segmenting where participants were permitted to divide video into segments with specific start and stop times; and

(d) video annotation where participants were permitted to attach text to video segments.

All studies were also coded for scaffolds, prompts, and scaffolds used during reflection (i.e., reflection structure). Prior reviews did not code for or attempt to categorize reflection structure. The codes for reflection structure were developed during an initial review of a limited number of articles. Reflection structure features are not mutually exclusive. For example, one study could contain both the use of oral reflection prompts and an analytical framework.

Reflection structure consisted of:

(a) oral reflection prompts in which participants were prompted to respond to a video recording of their performance orally;

(b) unstructured written reflection prompts in which participants were prompted to respond to a video recording of their performance in writing. No particular structure or scaffolding is provided;

(c) checklists in which participants were prompted to respond to a video recording of their performance by counting or otherwise indicating which events or facets were identified using a checklist;

(d) structured written reflection prompts in which participants were prompted to respond to a video recording of their performance in writing. Specific structure and scaffolding is provided; and

(e) analytical framework in which participants were provided a reflection prompt that was described as based upon a set of concepts, categories, or terms. The distinguishing feature for these concepts, categories, or terms is that they are explicitly linked together. Participants are asked to respond to more than a descriptive listing of ideas. Instead, an analytical framework involves connecting these ideas into a whole in ways that ask

participants to provide evidence for their claims, generate alternatives to their decisions, or question their assumptions (Bayat, 2010; Dewey, 1910; Rodgers, 2002). The participants have been provided direct explanation of the framework.

Studies were also coded for field (teacher, medical, legal, or other professional education); collaborative or individual reflection; or whether participants were professionals or pre-service professionals.

### Overview of the Studies

A total of 54 studies are included in the systematic literature review of the empirical studies on the use of video analyses for improving professional practices. The studies were published in 1984-2011.

Types of Reflection Prompts. Table 1 lists the number of studies that used different types of reflection prompts. Structured written reflection prompts and analytical frameworks appears to be the most common types of supports used to guide student reflection activities. These two types of reflection structures were most often used in scenarios involving video annotation or video segmenting. Oral reflection prompts were often used in scenarios without any participant controls over video but were less often used with more sophisticated video technologies. Checklists were used least often.

Table 1.  
Reflection Prompts

<b>Reflection Prompt</b>	<b>Number of Studies</b>
Unstructured Oral	34
Unstructured Written	32
Checklist	7
Structured Written	41
Analytical Framework	48

Types of Video Analyses Technologies. Table 2 lists the number of studies that used different types of video analyses technologies. Seventeen studies used video viewing only, seven studies used video viewing with basic review, advance, and pause features. Nineteen studies used video with segmenting features. Ten more recent studies used video annotation software.

Findings for each type will be described in detail in separate sections below.

Table 2.  
Video Analysis Technologies

<b>Video Analysis Technology</b>	<b>Number of Studies</b>
Video Viewing Only	17
Video View, Review, Advance & Pause	7
Video Segmenting	19
Video Annotation	10

The ability to control playback and select and examine certain events repeatedly was also cited across many studies. In this way, participants in studies by Downey (2008) and Lee & Wu (2006) became aware not just of their performance but of its effects and of alternative actions. Several studies involving video segmenting also emphasized the utility of selecting particular segments that resulted in shifting focus to the impact of certain actions (Harford & MacRuaric, 2008) and in participant reflections becoming more specific and complex (Rosaen, Lundeberg, Cooper, & Fritzen, 2010a).

Digital video is easy to share and this seemed to both facilitate (Guichon, 2009) and inhibit (Rhine & Bryant, 2007) participant reflection. Rosaen et al., (2010b) found that the participants' perception of the chosen audience for their writing influenced their purpose.

The ability to attach text and comments to segments of video through video annotation provided powerful capabilities. Rich & Hannafin, (2009b) found that video annotation was associated with the formal, written recognition of discrepancies between their perceptions and

direct evidence of teaching practices and events. Similarly, Shepherd & Hannafin (2008) also found that the review of video segments and comments supported the examination of video from different, previously unnoticed perspectives and the refinement of initial beliefs. Kong (2010) found that the "constructive effort" (p. 1777) required for video browsing and annotation resulted in an overall increase in the number and depth of reflective comments.

Research Design. As shown in Table 3, the majority of the studies obtained for the review used qualitative (n=21) or case study (n=17) designs. Most studies of video analysis also involved some type of analysis of participant reflection data. This analysis most often took the form of a content analysis of written reflection data by participants; often, this written reflection data was supported by the use of an analytical framework that was either developed by the researcher, the instructor, or the participant.

Table 3.  
Research Design

<b>Research Design</b>	<b>Number of Studies</b>
Qualitative	21
Case Study	17
Quasi-Experimental	8
Mixed Methods	5
Experimental	2
Survey	1

Twenty of 21 qualitative studies utilized some type of convenience sampling when selecting participants; two studies utilized some form of stratified sampling. Only one study (Downey, 2008) had 48 participants total. Two qualitative studies did not report the number of participants. The remainder of the qualitative studies utilized 31 or fewer participants. Only four qualitative designs used some type of data triangulation and three utilized outcome measures that reported reliability statistics.

Fifteen of 17 case study designs utilized some type of convenience sampling. All but two case studies reported 8 or fewer participants. One study (Rickard, McAvinia, & Quirke-Bolt, 2009) reported a total of 56 participants and one study did not report the exact number of participants. Seven case study designs reported use of data triangulation. Six case studies reported using outcome measures with reliability.

All eight quasi-experimental studies utilized convenience sampling. Five of the quasi-experimental studies used outcome measures with reliability. One quasi-experimental study utilized standardized tests. The two experimental studies used stratified sampling with random assignment. Only Seidel, Stürmer, Blomberg, Kobarg, & Schwindt (2011) utilized standardized tests. Two experimental studies and seven quasi-experimental did not use data triangulation.

All five of the mixed methods design studies utilized convenience sampling. The number of participants ranged from 674 (Zick et al., 2007) to 21 (Stockero, 2008). Three of those studies used outcome measures with reliability. Only Halter (2006) utilized data triangulation. The only survey design study utilized convenience sampling and had 37 participants (Lee & Wu, 2006). The survey study used researcher-made measures where no apparent reliability analyses had been conducted.

#### Video Viewing Only Findings

Seventeen of the 54 studies reviewed involved the use of video viewing only (see Table 4). These studies included scenarios that only involved video recording and playback; no additional video affordances were included. These studies provided findings related to reflection prompts, anchoring observations in video artifacts, depth of reflection, and participant affect and attitude. These studies also had fewer examples of structured written reflection prompts than did the studies where more sophisticated video technologies were used. All of the studies analyzed

reflection data (e.g., written or transcribed oral reflections). But the analyses of these data were more often limited to an overall rating rather than the detailed coding schemes that were used for more sophisticated video analysis technologies. Due to the use of experimental and quasi-experimental designs, these studies also tended to have higher numbers of participants than the qualitative studies of more sophisticated video analysis technologies.

Table 4.  
Key Characteristics and Findings of the Video Viewing Only Studies

<b>Author Year</b>	<b>Research Design</b>	<b>Reflection Structure</b>	<b>Outcome Measures</b>	<b>Findings</b>
Amobi, 2005	Qualitative	Structured Written Reflection Prompts	Reflection Data Analysis	Findings showed that participants had positive regard for and would participate in activity. Minority of participants scrutinized performance in depth. But those that did were able to correct performance problems.
Breyfogle, 2005	Qualitative	Oral Reflection Prompts, Analytical Framework	Reflection Data Analysis, Performance	Findings revealed themes related to nature of reflection: 'explain but not question', 'question but not explain', 'question and explore', and 'exploring'. 'Question and explore' was linked with the unsystematic development of performance innovations. But 'exploring' was linked with focused, systematic experimentation of classroom performance.
Byra, 1996	Quasi-Experimental	Structured Written Reflection Prompts	Reflection Data Analysis	Comparison between groups (individual/collaborative) showed that participants reflecting without video in collaborative condition generated more reflective writing with more emphasis on non-technical issues than those with video. When participants reflected on video both groups focused on technical issues.

Table 4. Continued

Dowling, 1984	Quasi-Experimental	Checklist	Reflection Data Analysis, Other	Researchers found that the self-evaluation of participants, with or without video-enabled reflection, was similar to that of peers and supervisors. Also, participants were found to be accurate observers when compared to more experienced professionals (e.g., supervisors).
Farnill, Hayes, & Todisco, 1997	Quasi-Experimental	Checklist	Reflection Data Analysis, Other	Findings reveal that when participants are prompted to identify performance behaviors (counting), evaluate quality of performance behaviors, and establish future performance priorities that their self-assessments had a moderate correlation with those of the expert observers.
Grant & Kline, 2010	Mixed Methods	Oral Reflection Prompts	Questionnaire, Performance, Other, Reflection Data Analysis	Survey results reveal that nearly half of the participants responded that their ability to question their students and probe their thinking was extended as a result of the reflection exercise. A subset of respondents were observed and shown to be able to alter their practice in ways that supported student thinking.
Hays, 1990	Quasi-Experimental	Checklist, Analytical Framework	Reflection Data Analysis	Findings show that self-evaluation by participants is influenced by the video review process and by instructor feedback. However, few individual aspects of performance demonstrated significant score changes after self-observation alone. Joint discussion and receipt of feedback resulted in an increased number of performance aspects rated negatively.

Table 4. Continued

Kwon & Orrill, 2007	Case Study	Oral Reflection Prompts	Reflection Data Analysis	Findings show that, as the participant viewed more videos of her performance and engaged in more oral reflection, she made more statements that linked her performance as a teacher to her understanding of her students' work. She was also demonstrated that she was better able to explain how her teaching related to student behavior.
Martin, Regehr, Hodges, & McNaughton, 1998	Quasi-Experimental	Checklist	Reflection Data Analysis	Findings show that the correlation between experts' evaluations and participants' self-evaluations was moderate immediately after viewing a video recording of their interview ( $r = 0.38$ ) but increased significantly after the participants viewed a model video recording ( $r = 0.52$ ).
McGovern, 1985	Quasi-Experimental	Oral Reflection Prompts	Reflection Data Analysis	Findings show that participants who reflected upon their performance twice (with and later without video) made more comments and were aware of more areas of performance than those who only reflected once after viewing a video of their performance.
Mir, Evans, Marshall, & Newcombe, 1989	Quasi-Experimental	Oral Reflection Prompts	Questionnaire, Performance	Findings show that study participants were able to improve their medical interviewing performance after viewing their performance, being shown model videos, and then collaboratively analyzing video with participants. Participants also rated the video review exercise as useful but stressful.

Table 4. Continued

Sewall, 2009	Qualitative	Oral Reflection Prompts	Reflection Data Analysis, Other	Findings reveal that in the video-elicited reflection group, the majority of the "reflective" comments came from participants (novice teachers) but in the observation-based structure, the majority of the reflective comments came from the supervisor. Also when a video recording was the basis for collaborative reflection, instead of notes taken by a supervisor, the quality and quantity of reflective comments produced by a participant was greater.
Snoeyink, 2010	Qualitative	Structured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis, Other	Findings show that the participants strongly believed in the effectiveness of video self-analysis to help them notice classroom interactions and improve their "withitness".
Song & Catapano, 2008	Case Study	Structured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis, Other	Findings show that, initially, many participants were unable to identify problem areas of performance. Only after researcher provided feedback and instruction in "framing" problems did most participants improve. Participant performance did not improve much. Also, findings showed significant differences in ratings given by external and participant reviewers.

Table 4. Continued

Stockero, 2008	Mixed Methods	Unstructured Written Reflection Prompts, Oral Reflection Prompts	Reflection Data Analysis, Other	The findings show that the participants (pre-service teachers) showed changes in their level of reflection, their tendency to ground their analyses in evidence, and their focus on student thinking. In particular, they began to analyze teaching in terms of how it affects student thinking, to consider multiple interpretations of student thinking, and to develop a more tentative stance of inquiry.
Welsch & Devlin, 2007	Quasi-Experimental	Structured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis, Questionnaire	Findings show that participants (teachers) who viewed video recordings of their performance while composing written reflections scored slightly higher on mean scores of written reflections than did participants who composed reflections based upon memory only.
Zick et al., 2007	Mixed Methods	Unstructured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis	Findings show that 30% of participants went beyond basic identification of strengths and weaknesses to demonstrate "insight into how communication affected the patient" (p. 163).

Reflection prompts. One consistent finding from these studies is that reflection prompts such as an analytical framework, checklist, or model were all associated with performance gains or increases in accuracy and depth of self-reflection. For example, Song & Catapano (2008) found that several participants in the case study were unable to “evolve” (p. 84) their reflective thinking skills until they had been trained in the use of the analytical framework. Breyfogle (2005) found that the use of a “Discourse Reflection Tool” (p. 155) supported the single

participant's ability to explore and develop a focused, systematic exploration of performance (teaching practice).

**Anchoring observations.** Another common finding is that anchoring of observations in an artifact was associated with the generation of a greater quantity and quality of reflective comments (Sewall, 2009). Several studies (Kwon & Orrill, 2007; Stockero, 2008) found that participants grounded more of their reflections in evidence from the video recording of teaching performance as they gained more experience with the use of video-supported reflection.

**Depth of Reflection.** Several video viewing studies provided findings related to the depth of reflection. For example, in Byra's (1996) study participants (pre-service teachers) were found to go beyond merely describing their teaching performance to "justifying, explaining, and assessing their action[s]" (p. 60). Repetition, even without the use of video, was also found to be significant to increasing the breadth and depth of participant reflective writing (McGovern, 1985). Welsch & Devlin (2007) found that participants who composed reflections while viewing video scored slightly higher on mean scores than participants who relied upon memory only.

One aspect of depth reported in these studies was the deepening of participant understanding of the effects of their performance. In their mixed methods study, Zick et al. (2007) found that 30% of participants (medical students) went beyond merely identifying strengths and weaknesses and provided "insights" (p. 163) into how communication affected the patient. In their case study, Kwon & Orrill (2007) found that, as the study participant viewed more video and engaged in more oral reflection, she was better able to explain how her performance (teaching) related to student behavior. Stockero (2008) also found that participants

(pre-service teachers) who analyzed video of their performance began to analyze teaching in terms of how it effected student thinking.

**Affect and Attitude.** Researchers also investigated participant affect and attitudes towards video-supported reflection. Mir et al. (1989) found that participants rated video review exercise as useful but stressful. Snoeyink (2010) found that participants indicated in interviews that they strongly believed that the use of video self-analysis helped them to notice classroom interactions.

#### Video Review/Advance/Pause Findings

As shown in Table 6, seven of the 54 studies involved participant control over video playback functions (play, pause, stop, review, and advance). These affordances allow participants to select and examine certain incidents repeatedly and play them back at different speeds. These affordances make it possible to notice aspects of events that might go unseen in real-time, sequential viewing (Tan & Towndrow, 2009). These studies provided findings related to participant understanding of effects of performance and alternative actions, introduction of structure in the form of an analytical frameworks, checklists, and/or models, and the anchoring of reflection in video. Five of the six studies used a qualitative or case study design. All of the studies collected data from multiple sources (e.g., reflection data, performance measures, questionnaires). All types of reflection structures were included except checklists. Four of the studies used four or fewer participants. One study did not report the number of participants.

**Affect and Attitudes.** One theme that emerged in several of the studies was participant affect and attitudes towards video-supported reflection. Downey (2008) asked participants (pre-service teachers) to write about their opinions of the “value and relevance” of video-supported reflection to their process of learning.

Table 5.  
Key Characteristics and Findings of the Video Review/Advance/Pause Studies

<b>Author Year</b>	<b>Research Design</b>	<b>Reflection Structure</b>	<b>Outcome Measures</b>	<b>Findings</b>
Burrack, 2001	Qualitative	Structured Written Reflection Prompts, Oral Reflection Prompts	Reflection Data Analysis	Development of themes that illustrated how video self-confrontation played a role in pre-professional teachers' instructional thought: participants saw aspects of instruction that were otherwise hidden.
Downey, 2008	Qualitative	Structured Written Reflection Prompts	Reflection Data Analysis, Other	The findings consisted written reflection data organized into five overarching categories of "insight and understanding about teaching" (p. 5): planning and organization, pedagogical strategies, delivery, content knowledge, and classroom management.
Hennessy & Deaney, 2009a	Qualitative	Unstructured Written Reflection Prompts, Analytical Framework	Other, Reflection Data Analysis, Performance	Findings show that participants (teachers) and researchers were able to collaboratively elaborate, integrate, and reframe sociocultural theories in ways that participants could use in practice. Participants also indicated their appreciation of the process of reflection.

Table 5. Continued

<p>Lee &amp; Wu, 2006</p>	<p>Survey</p>	<p>Unstructured Written Reflection Prompts</p>	<p>Questionnaire, Reflection Data Analysis</p>	<p>Questionnaire findings show that participants (pre-service teachers) indicated that video-supported reflection facilitated self-reflection, supported peer and faculty feedback, was convenient, and supported active participation. In written reflection data, participants revealed that recorded video became the basis for initial discovery and pinpointing of problem areas of performance, comparison with peer performance, and sharing video recorded evidence with peers and mentors.</p>
<p>Muir, Beswick, &amp; Williamson, 2010</p>	<p>Qualitative</p>	<p>Oral Reflection Prompts, Analytical Framework</p>	<p>Questionnaire, Other</p>	<p>Findings show that the participants' abilities to play, pause, review, and fast forward video at any time was associated with grounding oral reflections around particular teaching approaches and decisions. Participants indicated that video-supported reflection resulted in more reflective activity on their part. However, there was limited evidence to suggest that it resulted in substantial changes to their practices.</p>

Table 5. Continued

Tan & Towndrow, 2009	Case Study	Oral Reflection Prompts	Reflection Data Analysis, Performance	Findings show how participant (teacher) observed her teaching practice and redesigned her instruction on the basis of that video recording and collaboration with researcher,
Whitehead & Fitzgerald, 2006	Qualitative	Oral Reflection Prompts, Analytical Framework	Performance, Reflection Data Analysis, Other, Questionnaire	The researchers list "pedagogical insights" (p. 37) made accessible to participants through the use of student-generated feedback on learning activities.

All participants reported that the exercise was valuable; a small number of students reported that the experience was uncomfortable. Hennessy & Deaney, (2009a) also found that participants “appreciated the time and the opportunity to step back and view their own practice as observers” (p. 1789). Lee & Wu (2006) administered a questionnaire and found that participants (pre-service teachers) indicated that recordings of teaching performance were easy access, supported better performance assessment, and supported more concrete feedback and better involvement by instructors. The focus of the study by Muir et al. (2010) was on participant (pre-service teachers) perceptions of the benefits of video-supported reflection.

Effects of Performance. Another theme that emerged in two of the studies was evidence of participant understanding of the effects of their performance. Downey’s (2008) study involved participants (pre-service teachers) creating detailed lesson plans for a 50-minute teaching simulation. The participants reflected upon a video recording using a structured reflection prompt that was linked to lesson plan components. This resulted in several participant observations about

the effects of their performance on students and classroom activities. Alternative courses of action were also suggested by students. Lee & Wu (2006) also found that participants became aware of the effects of their actions on students.

**Introduction of Structure.** Hennessy & Deaney, a (2009a) found that through a process of collaborative reflection participants (teachers) were able to use an analytical framework to describe their practice. Participants were also able to modify the analytical framework to better fit their practice. Although Whitehead & Fitzgerald (2006) never explicitly identify a particular analytical framework they emphasize how participants were encouraged to connect their particular experiences with “professional knowledge” (p. 44); this connection was described by participants as being given a lesson on how to reflect.

**Anchoring of Reflection.** Findings from Lee & Wu (2006) show that participants (pre-service teachers) discovered and described specific performance problems using recorded video. Participants also used recorded video to compare their performance with that of peers and share video evidence with peers and mentors. In the study by Muir et al. (2010) the researchers describe a very explicit approach to viewing the video in which participants (pre-service teachers) could play, pause, stop, review, and advance the video whenever they liked. Participants reported that video grounded their reflective process and enabled them to examine particular teaching approaches and decisions. A study by Tan & Towndrow (2009) showed how a participant (teacher) anchored her reflection in particular video-recorded events. The study by Whitehead & Fitzgerald (2006) also shared findings describing how participants anchored their reflections in and were able to control video recordings of their performance. These participants described the process of “freez[ing] the evidence” (p. 42) at critical points during video review.

They emphasized how their ability to control playback allowed them to notice and analyze more material.

### Video Segmenting Findings

As shown in Table 7, nineteen of the 54 studies involved video segmenting. Video segmenting allows participants to divide video into segments with specific start and stop times. As Calandra et al. (2006) note, the flexible quality of digital video affords repeated viewing, pausing, editing and reorganizing of performance events (segmenting) that can be used as the basis for reflection (Calandra et al., 2006). The following themes emerged from the findings: focus of written reflections, changes in written reflections, participant willingness to share video evidence, and the blurring of boundaries between participant and researcher. Sixteen of these studies involved reflection data analysis: the analysis of some type of written, oral, or multimedia artifact that resulted from participant activities. Seventeen of the studies involved qualitative or case study research designs. Fourteen of these studies involved the use of analytical frameworks. The numbers of participants varied widely: the only experimental design had 38 participants (Santagata & Angelici, 2010), the mixed methods study had 67 participants (Halter, 2006), all but one of the qualitative and case study designs had 20 or fewer participants.

Focus of Written Reflections. Several studies reported findings on the focus of participant written reflections. Calandra et al. (2006) found that participants who used the video-enhanced reflective process tended to write longer and more pedagogically connected reflective writing than their non-video counterparts. Calandra et al. (2009) obtained similar results; they were also able to identify that participants who used the video-reflection process wrote more about the content of instruction than those participants that did not wrote more about classroom management and interpersonal relationships. In his study, Guichon (2009) found that participants

focused upon “critical incidents” (p. 172) or problems encountered during performance. van Es & Conroy (2009) found that high-performing (student-centered) participants used specific evidence from their video clips to support their claims. Low-performing participants generated over-generalized, superficial global claims without pinpointing specific incidents. In the only experimental study, Santagata & Angelici (2010) found that participants who used an analytical framework and video wrote more about student learning and the relationship between teacher instructional choices and student outcomes.

Changes in Written Reflections. In three studies, Calandra and associated researchers focused on changes in written reflection (Calandra et al., 2006; Calandra et al., 2009; Calandra, Gurvitch, & Lund, 2008). Their rationale for focusing on written reflection, as opposed to analyzing participant performance that reflection is designed to support, is that the changes in written or video representations of performance mirrors the mental development of participants (Calandra et al., 2008). Calandra et al. (2008) found a range of participant reflections from simple descriptions to those that incorporated principle and theory at the highest level. They found improvements across all cases.

Table 6.  
Key Characteristics and Findings in the Video Segmenting Studies

<b>Author Year</b>	<b>Research Design</b>	<b>Reflection Structure</b>	<b>Outcome Measures</b>	<b>Findings</b>
Calandra et al., 2006	Case Study	Structured Written Reflection Prompts, Individual Video Analysis, Analytical Framework	Reflection Data Analysis	Researchers found that participants who used the video enhanced reflective process tended to write longer and more pedagogically connected reflective writing than their non-video counterparts.

Table 6. Continued

Calandra et al., 2009	Case Study	Structured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis	Researchers found that participants who used the video-enabled reflection process tended to write longer and more pedagogically connected reflective pieces than those who did not use the video-enabled reflection process. By contrast, those participants wrote more about interpersonal relationships and classroom management. Also, the video-enabled group showed evidence of change in perspective about teaching and learning.
Calandra et al., 2008	Case Study	Structured Written Reflection Prompts	Reflection Data Analysis, Performance	Researchers found that participants' edited video clips and written reflections generally focused more on their actions and performance rather than that of their students. They also tended to focus more on technical aspects of their teaching.
Fadde, Aud, & Gilbert, 2009	Qualitative	Unstructured Written Reflection Prompts	Questionnaire, Other	Researchers found that participants listed the following advantages to using video: recall of the lesson taught, easy feedback, and improvement of teaching practice in specific instances.

Table 6. Continued

Gemmell, 2003	Qualitative	Structured Written Reflection Prompts	Reflection Data Analysis	Researchers found that participants were able to add to and refine their skills. However, participant rarely shared "negative" video with peers.
Guichon, 2009	Qualitative	Oral Reflection Prompts, Unstructured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis	Researchers found that trainees concentrate particularly on pedagogical aspects that distance and faulty technology have rendered complex. The pedagogical aspects are equally divided between competencies related to language teaching and competencies related to online teaching.
Halter, 2006	Mixed Methods	Structured Written Reflection Prompts, Analytical Framework	Reflection Data Analysis, Performance, Other, Questionnaire	Researchers found that reflective writing type remained constant throughout the study. However, the focus of reflection became more sophisticated when participants analyzed their own performance.

Table 6. Continued

<p>Harford &amp; MacRuaric, 2008</p>	<p>Qualitative</p>	<p>Oral Reflection Prompts, Analytical Framework</p>	<p>Other</p>	<p>Researchers found that the peer-videoing process help participants to develop reflective skills such as a shift from a focus on their own activity towards a greater awareness on their impact of their actions on student activity. They also found evidence of positive effects on classroom practice.</p>
<p>Harford, MacRuaric, &amp; McCartan, 2010</p>	<p>Qualitative</p>	<p>Oral Reflection Prompts, Unstructured Written Reflection Prompts, Analytical Framework</p>	<p>Reflection Data Analysis</p>	<p>Researchers found that, during the video analysis and reflection exercises, participant writing was primarily concerned with planning and preparation for student activity, teaching and learning, and classroom management.</p>
<p>Hennessy &amp; Deaney, 2009b</p>	<p>Case Study</p>	<p>Oral Reflection Prompts, Unstructured Written Reflection Prompts, Analytical Framework</p>	<p>Reflection Data Analysis, Other</p>	<p>Researchers found that: 1) participants "enthusiastically exploited" (p. 627) the information available from video analysis and from approaches gleaned from other participants' performances; 2) also, half of the participants reported that the collaborative video analysis resulted in "profound impact" (p. 627) on their teaching practice.</p>

Table 6. Continued

Kang, 2007	Qualitative	Analytical Framework, Structured Written Reflection Prompts	Reflection Data Analysis, Other	<p>Researchers found that:</p> <ol style="list-style-type: none"> <li>1) participants emphasized the importance of probing and utilizing students' preconceptions, but they demonstrated various levels of epistemological understanding of student learning and teaching,</li> <li>2) participants experienced reflective activities as a means to evaluate their teaching methods and change their teaching practices, and</li> <li>3) participants identified sharing goals, problems, and solutions as an essential supporting condition for their learning.</li> </ol>
Rhine & Bryant, 2007	Qualitative	Unstructured Written Reflection Prompts	Questionnaire, Reflection Data Analysis	<p>Researchers noted that reflection exercises:</p> <ol style="list-style-type: none"> <li>1) provided a means for participants to offer positive feedback to one another;</li> <li>2) elicited writing related to instruction/classroom management strategies;</li> <li>and 3) provided students an opportunity to address classroom management topics.</li> </ol>

Table 6. Continued

Rickard et al., 2009	Case Study	Structured Written Reflection Prompts, Unstructured Written Reflection Prompts, Analytical Framework	Questionnaire, Reflection Data Analysis, Other	Researchers found that participants' survey responses showed a greater enthusiasm towards the use of technology in teaching and learning; also, participant survey responses towards collaborative work were mixed; finally, students expressed enthusiasm and appreciation for the constructivist approach used during instruction.
Rosaen et al., 2010b	Case Study	Unstructured Written Reflection Prompts, Analytical Framework	Other, Reflection Data Analysis	Researchers found that the participants' perception of the chosen audience for their writing influenced their purpose: Two interns identified themselves as the audience and problematized specific aspects of their lesson, whereas two others "showcased" themselves in a positive light for a public audience.
Rosaen et al., 2010c	Case Study	Oral Reflection Prompts	Reflection Data Analysis, Other	Researchers found that all participants gained insights into how they lead classroom discussions via editing and creating video clips and discussing them. In particular, all participants "noticed" (p. 520) connections between conversational and instructional components of discussions.

Table 6. Continued

<p>Rosaen et al., 2010a</p>	<p>Case Study</p>	<p>Unstructured Written Reflection Prompts, Analytical Framework</p>	<p>Other</p>	<p>Three main findings: (a) the interns' frame of mind toward using video as a tool for reflection changed from closed to more open; (b) observations became more specific, complex and more focused on instruction and student interaction; and (c) the audience for the case influenced the object of interns' attention.</p>
<p>Santagata &amp; Angelici, 2010</p>	<p>Experimental</p>	<p>Analytical Framework, Structured Written Reflection Prompts, Unstructured Written Reflection Prompts</p>	<p>Reflection Data Analysis, Performance</p>	<p>Researchers found that participants in the LAF condition wrote more about student learning and the relationship between teacher instructional choices and student outcomes.</p>
<p>van Es &amp; Conroy, 2009</p>	<p>Qualitative</p>	<p>Structured Written Reflection Prompts, Analytical Framework</p>	<p>Reflection Data Analysis, Performance, Other</p>	<p>Researchers found that high-performing (student-centered) participants used specific evidence from their video clips to support their claims. Low-performing participants generated over-generalized, superficial global claims without pinpointing specific incidents.</p>

Table 6. Continued

Yerrick, Ross, & Molebash, 2005	Qualitative	Unstructured Written Reflection Prompts	Reflection Data Analysis, Other	Researchers found that: 1) participants used video-based reflection to emphasize children's' thinking regarding science concepts; 2) participant video editing resulted in shifts in beliefs and dispositions; and 3) participants' video projects reflected an openness to criticism.
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Halter (2006) found that participants who used video segmenting as opposed to video viewing only became more sophisticated in terms of their focus of reflection; they moved from more technical to critical perspectives. Harford & MacRuaric (2008) found that participants who selected particular segments from their practice teaching shifted their focus from their own activity towards a greater awareness of the impact of their actions on student activity. Rosaen et al., a (2010a) found that observations became more specific, complex, and more focused on instruction and student interaction. Yerrick et al. (2005) found that participant video editing resulted in shifts in beliefs and dispositions found in written reflections.

Participant Video Sharing. Several studies mentioned the significance of participant affect and attitudes towards the sharing of video with peers or evaluators. Rhine & Bryant (2007) mentioned that participants were reluctant to share video recordings of performance with peers. However, Guichon (2009) found the opposite: that most participants were willing to show videos of themselves grappling with difficulties. In fact, he found that most participants utilized a “critical incident” (p. 172) in which participants identify performance obstacles and comment upon them. The reluctance on the part of some students notwithstanding, some studies highlighted the importance of collaboration between students and peer-evaluation as important

aspects of video review (Harford & MacRuairc, 2008; Harford et al., 2010). Rhine & Bryant (2007) found that sharing video segments was important in supporting the process of identifying relevant and meaningful issues and being open to alternate solutions to problems encountered. In addition, Rickard et al. (2009) also found that participant attitudes towards sharing reflective material grew more positive during the course of the study. Rosaen et al., (2010b) found that the participants' perception of the chosen audience for their writing influenced their purpose: Two interns identified themselves as the audience and problematized specific aspects of their lesson, whereas two others "showcased" themselves in a positive light for a public audience. Rosaen et al., a (2010a) found that, by deciding on a particular focus and audience when constructing video cases, participants created their own standards for what they thought was important to analyze. Yerrick et al. (2005) also found that participants' video projects reflected an openness to criticism.

**Participant & Researcher Roles.** The role of participants in several studies shows how the role of researcher was shared by both participants and researchers. For example, Hennessy & Deaney, (2009b) reported that both researchers and participants helped to develop the coding scheme. Often, the coding schemes that were developed were derived from theories (e.g., sociocultural theory) that were the subject of participant study and that were used as frameworks by researchers. Rhine & Bryant (2007) explicitly discussed how the segmenting of videos by participants resulted in a novel "teacher-researcher stance" (p. 354) that involved participants taking a more objective view of their performance. Hennessy & Deaney, (2009b) found that participants shifted towards a more "analytical interpretation" (p. 622) and adopted novel terms used by the researchers as their own. In their study, Calandra et al. (2009, p. 77) asked how video editing could be combined with critical incident analysis to cultivate more multifaceted reflection

among preservice teachers Kang (2007) also used a qualitative coding approach to reveal participants' "epistemological understanding" (p. 469) of student learning and teaching.

### Video Annotation Findings

As shown in Table 7, ten of the 54 studies involved the use of video annotation. Video annotation allows participants to attach text to video segments. Video annotation differs from other video technologies in terms of its ability to allow participants to use a systematic and precise analytical framework that can link directly to video evidence. In this way it allows participants to produce an "evidence-based externalization" (Kong, 2010, p. 1772) of their thoughts on their own competence. The following themes emerged from these studies: an emphasis on the focus of written reflections, an emphasis on changes in written reflections, participant comments upon the limitations of video evidence. All of the studies involved some sort of written reflection prompts; only two involved oral reflection prompts. Eight of the studies used case study or qualitative designs. Seven of the studies had fewer than 10 participants. All but one study involved the collection and analysis of written, oral, or video-based reflection data.

Focus of Written Reflections. As in studies that involved the use of video segmenting, several video annotation studies reported findings discussing the focus of participant written reflections. Rich & Hannafin, (2009b) found that participants were able to "step back" (p. 141) and identify and address discrepancies between thought and action; these discrepancies often led to changes in teaching practices. Shepherd & Hannafin (2008) also found that participants' use of video allowed them to shift their attention to new areas of focus (e.g., student performance). While Tripp (2009) did not measure participant written reflections she found that her participant felt that video analysis was more useful than the traditional reflection method that did not involve the use of video for three reasons: 1) it allowed her to notice aspects of performance that

were otherwise not available, 2) to focus her attention on specific aspects of teaching, and 3) to provide evidence during mentoring discussions.

Table 7.  
Key Characteristics and Findings in the Video Annotation Studies

<b>Author Year</b>	<b>Research Design</b>	<b>Reflection Structure</b>	<b>Outcome Measures</b>	<b>Findings</b>
Kong, 2010	Qualitative	Analytical Framework, Structured Written Reflection Prompts, Checklist	Reflection Data Analysis	Researcher found that video browsing prompted student-teachers to generate an additional 50 per cent of reflective notes and stimulated them to significantly increase the depth of their reflective thoughts in the areas of discipline and classroom management, and professional knowledge on teaching.
Rich & Hannafin, 2009b	Case Study	Structured Written Reflection Prompts, Analytical Framework	Questionnaire, Reflection Data Analysis, Other	Researchers found that participants were able to "step back" (p. 10) and identify and address discrepancies between thought and action; these discrepancies often led to changes in teaching practices.

Table 7. Continued

<p>Rosaen, Lundeberg, Cooper, Fritzen, &amp; Terpstra, 2008</p>	<p>Case Study</p>	<p>Unstructured Written Reflection Prompts</p>	<p>Other, Reflection Data Analysis</p>	<p>Researchers found three main differences between video-based vs. memory-based reflection: 1) participants made more specific observations during video-based reflection, 2) they discussed instructional elements more than behavior management during video-based reflection, and 3) participants paid more attention to the students during video-based reflection.</p>
<p>Seidel et al., 2011</p>	<p>Experimental</p>	<p>Unstructured Written Reflection Prompts</p>	<p>Reflection Data Analysis</p>	<p>Researchers found that participants who watched their own video-recorded performance experienced immersion. However, these participants also commented less critically and identified fewer consequences and alternatives than participants who watched the videos of others.</p>
<p>Shepherd &amp; Hannafin, 2008</p>	<p>Case Study</p>	<p>Structured Written Reflection Prompts</p>	<p>Reflection Data Analysis, Other</p>	<p>Researchers found that the use of video artifacts: 1) facilitated reflection, 2) supported inquiry into classroom success and failure, and 3) influenced self-improvement plans.</p>

Table 7. Continued

Smith & Krumsvik, 2007	Qualitative	Unstructured Written Reflection Prompts, Oral Reflection Prompts	Reflection Data Analysis	Researchers list several excerpts of participant reflections. However, there is no apparent analysis of the data making the findings difficult to discern.
Tripp, 2009	Case Study	Unstructured Written Reflection Prompts, Oral Reflection Prompts	Reflection Data Analysis, Other	The researcher found that her participant felt that video analysis was more useful than the traditional reflection method that did not involve the use of video for three reasons: 1) it allowed her to notice aspects of performance that were otherwise not available, 2) to focus her attention on specific aspects of teaching, and 3) to provide evidence during mentoring discussions.
West, Rich, Shepherd, Recesso, & Hannafin, 2009	Qualitative	Structured Written Reflection Prompts, Analytical Framework	Other	The findings suggested that participants could find examples of key attributes in videos of teaching practice and that group reflection and discussion about the practices in the videos enabled everyone to develop their understanding of what constituted evidence of effective teaching.

Table 7. Continued

Wright, 2008	Case Study	Structured Written Reflection Prompts	Reflection Data Analysis, Other	Researcher found that the video-enhanced reflection process provides solutions to the barriers (i.e., time, tool, support) that have traditionally prevented reflection from being meaningful and long lasting.
Wu & Kao, 2008	Mixed Methods	Structured Written Reflection Prompts	Reflection Data Analysis, Other	Researchers found that participants were satisfied with the reflection activities and the technology used and believed them to be beneficial for their learning.

Changes in Written Reflections. Kong (2010) investigated the use of video browsing with annotation on the number and depth of reflective notes by study participants. The researcher found that there were significant increases in the number and depth of reflective notes written by participants on most of the measured dimensions. However, he also found that participants were “unable to discern, associate with and then articulate abstract teaching rationales beyond specific teaching behavior in every key aspect of teaching” (p. 1780). In their study, Rosaen et al. (2008) describe the importance of a shift from “vague perceptions” (p. 349) of what transpires during performance to a more “complex and evidence-based analysis” of performance.

Limitations of Video Evidence. The findings from some studies emphasized the limitations of video evidence. Participants in a study by West et al. (2009) unanimously agreed that video was not capable of capturing all instances of practice. Some participants in this study emphasized the potentially misleading nature of video: it captures participants (pre-service teachers) elaborated that such performances not only consist of teacher actions but also student

actions. First, West et al. (2009, p. 373) reported that video allows for “focus on specific [aspects of performance] without being distracted by extraneous or unrelated elements of [performance] in much the same way that photography lenses amplify or suppress attributes of an image”. In the only experimental study, Seidel et al. (2011) found that participants who watched their own video-recorded performance reported experiencing “immersion”(p. 260) during the review exercise. However, these participants also commented less critically and identified fewer consequences and alternatives than participants who watched the videos of others.

### Summary and Implications

The introduction of structure in the form of reflection prompts is associated with better reflection outcomes. These outcomes consisted of a greater volume of written reflections, written reflections of greater depth or specificity (Byra, 1996; McGovern, 1985). This was found across different video analysis technologies and types of reflection prompts.

The anchoring of observations in video evidence was also associated with better reflection outcomes. This anchoring was facilitated through the use of more technologies that allowed more control over video evidence such as video segmenting and video annotation.

Researchers have tended to use more qualitative and case study designs when investigating more sophisticated video analysis technologies. These designs often used content analysis to investigate written reflection data. No studies examined the content of edited video segments. By contrast, earlier studies that involved the use of video with limited affordances often used experimental and quasi-experimental designs. These designs often used single, overall ratings to describe data.

The findings from this systematic review of the video analyses research literature have important implications for future research and practice. How can we better understand what

accomplished professionals reflect upon and what students should learn to notice? How can the emerging video technologies be used to focus attention rather than be an overwhelming disruption as occurred in some studies? To address these questions a researcher will need to contend with the “messy data” (Chi, 1997, p. 271) of written student self-reflections. The approach must allow a researcher to take advantage of the rich impressions available to subjective analysis. But this approach must also allow the researcher to organize these impressions in a manner that “capture[s] the representation of knowledge that a learner has and how that representation changes with acquisition” (Chi, 1997, p. 274). Chi’s (1997) verbal analysis provides such an approach.

Like the theory of deliberate practice, verbal analysis is based upon the expertise literature of the previous three decades (Chi et al., 1981; Chi, 2000; Chi, Glaser, & Farr, 1988; Nokes et al., 2010; VanLehn, Jones, & Chi, 1992). “Expertise, by definition, refers to the manifestation of skills and understanding resulting from the accumulation of a large body of knowledge [emphasis added]” (Chi, 2006, p. 167). Based upon this definition, researchers have been able to identify differences exist between the knowledge representations of experts and those of novices (Chi, 2006). These differences are consistent with findings in expertise studies where the knowledge representations of experts have been found to be better organized and more accessible than those of novices. Chi and colleagues have focused their efforts on clarifying how the knowledge representations of novices develop. They have found that experts differ from novices along a number of dimensions: 1) the extent of experts’ knowledge structures is more complete, their content is deeper, and more generalizable; 2) experts demonstrate greater ease when categorizing knowledge representations; 3) the depth of experts’ knowledge is greater; and 4) expert knowledge is more integrated and coherent (Chi et al., 1981). By using this research

approach the content of self-reflection both from professionals and students could be clarified and perhaps modeled.

This approach assumes that new knowledge cannot be readily and perfectly assimilated by students from direct instruction. Instead, students must be actively involved in the construction of their own knowledge as occurs in self-reflective activities. It has been used to examine the generation of explanations students make to themselves in an attempt to make sense of new information presented in a text or another medium (Chi, 2000). In this way, it presents an opportunity to deepen our understanding of how students use the affordances of video analysis tools.

## CHAPTER 3. METHODOLOGY

This study used a case study design as described by Yin (2002). The purpose of this study is to systematically examine the extent to which novices (students) develop knowledge of an ill-structured domain (legal interviewing) in a legal interviewing and counseling course. In order to address this purpose, this study examined representations of knowledge of legal interviewing theory generated as through the use of video annotation and self-evaluation writing exercises. This study also examined the development of that knowledge over time.

### Research Design

Yin (2002) argues that case studies have certain strengths over other research designs. One distinct advantage is that they are ideal for examining contemporary phenomena within real-life contexts, over which the researcher has relatively little control. This description matches the context for the current study where the phenomenon of interest is student knowledge of legal interviewing process and techniques in a legal interviewing and counseling course in law school in the Western United States. Another strength of case studies is their ability to deal with multiple sources of data (Yin, 2002). Multiple sources of textual data were used in this study. During the course of a single self-evaluation students generate multiple written artifacts: 1) legal interviewing tags representing legal interviewing skills are used to annotate segments of video; 2) evaluation tags representing the adequacy of each performance using evaluation tags to identify which speaking events were conducted well and which need improvement; and 3) self-evaluation writing written to describe effective and ineffective performances and explore alternate interview tactics and strategies. These data were collected from three exercises over the course of the semester.

The unit of analysis for this study consisted of the exercise files (interviewing skill tags,

evaluation tags, and written self-evaluations) for a single student over the course of a semester. Because only one unit of analysis per case are present this study used a holistic design. Multiple case studies can provide compelling evidence and strengthen the claims of case study research (Yin, 2002). In this study, multiple cases were chosen based on "polar" (Eisenhardt, 1989, p. 537) or extreme types: participants with a high, medium, and low knowledge of legal interviewing techniques at the beginning of the course. Cases were selected on the basis of legal interviewing self-evaluation knowledge during the first exercise: one high, two mid-level, and one low knowledge student. Replication logic (Yin, 2002) or theoretical sampling (Eisenhardt, 1989) is used to guide the selection of multiple cases. In contrast with sampling logic, replication logic and theoretical sampling insist on the choice of cases based upon theoretically meaningful categories. Following recommendations by Eisenhardt (1989), this study conducted both within-case and cross-case analysis. This offers the opportunities for of cross-case patterns, similarities and differences between cases (Eisenhardt, 1989).

#### Course Context

This study was conducted in an elective Legal Interviewing and Counseling (I&C) course offered at a law school at a large university in the Western United States. The I&C course was taught by one professor and four adjunct instructors. Research participants were second- and third-year law students at the law school who enrolled in the Legal Interviewing and Counseling Course. The course objective was to help students achieve “basic interviewing and counseling proficiency and fluency” (Farmer, 2008b, p. 1). The duration of the course was one full semester. Class meetings last 50 minutes and are held three times each week. Approximately half of these class meetings are devoted to theory instruction. All other class meetings are devoted to skills practice exercises. The course is modeled on instructional principles derived from research on

deliberate practice, reflective self-evaluation, and expert feedback (Farmer, 2008a; Williams et al., 2008).

### Description of Interviewing Exercise

All students in the Legal Interviewing and Counseling course participated in skills practice exercises conducted 18 times over the course of the semester (10 interview exercises, 8 counseling exercises). Each of these exercises involve a student practicing interviewing techniques and lasted approximately 20-30 minutes. At the beginning of the semester, the instructor groups students into dyads that change for each exercise. The process of the interview and reflective self-evaluation process is presented in Figure 1.

Participants in the legal interviewing course were prompted to observe, categorize, evaluate, and describe their video-recorded performance and then propose alternate approaches to problems they encountered. Prior to each interview, during the Exercise Preparation, students completed readings, attended lectures, and actively participated in discussions in which new interviewing terminology and concepts were presented. As new content was presented, the model of legal interviewing was elaborated and refined. Individual students used the new terminology and concepts to plan for the subsequent interview.

Specific planning tasks were prescribed before each interview. During the Interview Exercise, students practiced the role of an attorney in a simulated interview with a client. Paired students will take turns practicing the role of attorney and client. All students were responsible for making video recordings of their performance as an attorney; students did not make video recordings of their role as client. Immediately after concluding their role as attorney, students engaged in approximately three minutes of writing about their performance in response to a prompt.

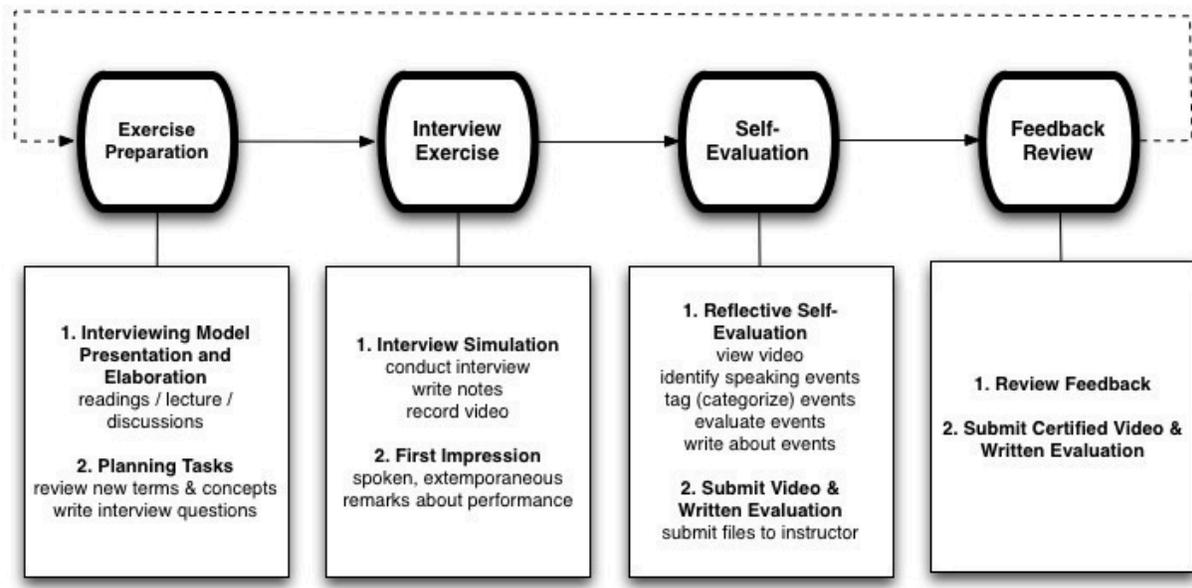


Figure 1. Interview and Reflective Self-Evaluation Process

During the Self-Evaluation, students engaged in a reflective exercise using video annotation software, MediaNotes. The software allowed students to identify and name specific segments of video or “events”. The software also allowed for the integration of rich analytical frameworks, such as the one introduced in the Legal Interviewing and Counseling course, that provided the basis for legal interviewing concept “tags”. The software also supported the association of extemporaneous text with segments of video. The reflective self-evaluation process involved several steps: first, using MediaNotes, a student identified each of his or her speaking events. Next, a student categorized each speaking event using lawyer skill tags; multiple tags were used, if necessary. Next, a student evaluated the adequacy of each performance using evaluation tags to identify which event was conducted well and which needed improvement. Finally, a student revisited each evaluated speaking event and wrote about the strengths or weaknesses of their performance; students proposed alternate approaches for weak performances. After completing the reflective self-evaluation, students submitted their video-

recorded performance and written self-evaluation to the instructor for review and final evaluation.

After the instructor reviewed the video and returned it to the student, the student began the Feedback Review phase in which he or she reviewed the written feedback provided by the instructor. Students were required to certify their review of instructor feedback by tagging the video a final time; the written self-evaluation was then submitted to the instructor. Individual students maintained this interviewing schedule that consisted of planning, interviewing, and self-evaluating for the entire semester.

### Participants

Ten students enrolled in the Interviewing and Counseling course. The Interviewing and Counseling course is an elective course; students are admitted to the course on first-come, first-serve basis.

### Data Sources

This study utilized multiple sources of verbal data. Table 9 links all research sub-questions, data sources, and data analysis approaches that were used in the study. Each of the data sources was described in detail including their origin in the context of the legal interviewing course, how they were generated by participants, and why they were be used in the study. The data sources were presented in the order in which they are generated by participants during the self-evaluation phase (see Figure 1. Interview and Reflective Self-Evaluation Process) of the exercise. At the conclusion of the semester all identifying information that could be used to identify a particular student within a data source was removed and replaced with a number that was used to identify particular students across all data sources.

The first source of data generated by participants came from the assignment of legal interviewing skill tags to the video. After participants wrote their initial observations for an exercise, each participant reviewed a video recording of their performance as a lawyer. During this first review, participants identified all speaking events (any time a participant speaks during their role as lawyer) as video clips using the MediaNotes software. Participants then reviewed the video a second time; during this time, they annotated the speaking event video clips by assigning one or more legal interviewing tags representing legal interviewing skills. This data represents a participant's recognition of lawyer interviewing skills. This body of skills and structural concepts grew incrementally over the course of the semester through lectures, readings, and other course materials. Within an exercise, legal interviewing skill tags were associated with particular speaking events, collected in a database, and published as rich-text files (RTF).

The second source of data generated by participants comes from the assignment of evaluation tags to video. After participants assigned lawyering interviewing skill tags to video clips they were prompted to evaluate the adequacy of their performance using evaluation tags. During this step, participants evaluated individual speaking events as requiring improvement or being considered effective by assigning "Requires Improvement" or "Effective Performance" tags. This data represents a participant's recognition of effective and ineffective performance of lawyer interviewing skills.

The third source of data generated by participants comes from written self-evaluations. After participants assigned evaluation tags they were prompted to generate written comments describing their performance. Participants drafted written comments for speaking events that describe what was done well or what was not done well. In addition, participants were prompted

to describe what they would say to improve the performance if the exercise were repeated.

Written self-evaluations demonstrated a participant's knowledge of legal interviewing skills, their effect on the interviewing process and their effect on the client and themselves as they conducted the interview. These written self-evaluations also provided evidence of participant knowledge of alternate interview tactics and strategies.

#### Development of Coding Framework

As shown in Table 8, this study includes three research questions. As noted by Eisenhardt (1989) and Yin (2002) case studies can utilize both qualitative and quantitative data. Qualitative data can suggest theory that can be strengthened by quantitative support. And quantitative data can indicate relationships that may not otherwise be visible to the researcher (Eisenhardt, 1989). This case study utilized the qualitative coding recommended by Chi (1997) to identify knowledge representations in the writing generated during legal interviewing exercises: interviewing skill tags, evaluation tags, and written self-evaluations. The study used quantitative methods to identify relations between knowledge representations. The results of qualitative and quantitative approaches provided the basis for the process of pattern matching, whereby "several pieces of information from the same case may be related to some theoretical proposition" (Yin, 2002, p. 26). The patterns should be sufficiently contrasting to so that the findings can be compared to two rival propositions. Once patterns emerged in each unique individual case, cross-case analyses were made within polar types. Finally, cross-case comparisons were made across legal interviewing skill levels.

As Wang & Hartley (2003) concluded, relatively little is known about the development of student knowledge acquired during video self-reflection. Recent studies have investigated the form and content of student self-reflections through the use of qualitative methods that have

yielded rich descriptions (Rich & Hannafin, 2009b; Rosaen et al., 2008; Tripp, 2009; West et al., 2009). Other studies have used quantitative methods to provide global measures of performance (Farnill et al., 1997; Mir et al., 1989; Zick et al., 2007). However, the goal of obtaining systematic descriptions of the knowledge generated by students during video self-reflection has been elusive.

For several decades, Chi (1997) and colleagues (Chi et al., 1981; Chi et al., 1994; Roy & Chi, 2005) have argued that verbal analysis can provide systematic descriptions of complex, "messy data" (Chi, 1997, p. 271) generated during self-explanation and self-reflection activities. Verbal analysis is intended to quantify the qualitative coding of verbal data. When using this method, the researcher tabulates, counts, and draws relations between the occurrences of different kinds of verbal data to minimize the subjectiveness of qualitative coding (Chi, 1997). Ultimately, this method aims to "capture the representation of knowledge that a learner has and how that representation changes with acquisition" (Chi, 1997, p. 274). This method assumes that the structure of a learner's knowledge is a primary determiner of how they learn, reason, remember, and solve problems (Chi, 2006). According to research by Chi (1997) and colleagues, knowledge representations (e.g., verbal data) generated by learners in response to written (Chi, 2000) or multimedia (Roy & Chi, 2005) prompts can provide evidence of the acquisition of knowledge acquired by those learners. The structure of this knowledge can be understood by assessing the relations between knowledge representations (Chi, 2006).

The qualitative coding used for the study followed Chi's (1997) guidelines. The first step in the process calls, reducing or sampling of verbal data, is optional. The second step in the process, segmentation of verbal data, involves dividing the verbal data into discrete units (segments) using non-content or semantic features. Non-content features can be characterized by:

a) language-related syntax like words, sentences or sentences with connecting words; or b) activity features like pauses, turn-taking, or a change of activity. Semantic features such as ideas, argument chains, topics of discussion, or impasses while solving problems can also be used (Chi, 1997, p. 288).

The third and fourth steps in the process, development of a coding scheme and operationalizing evidence, are closely related. Development of a coding scheme is the process of choosing how to represent the theoretical orientation, domain, and research questions being asked. Operationalizing evidence is the process of deciding what utterances in the verbal data constitute evidence of a specific category or can be translated into a specific code. The development of the coding scheme is "an interactive top-down and bottom-up process" (Chi, 1997, p. 291) in that codes can and should be modified as one becomes familiar with the verbal data.

The fifth step in the process is depicting the coding scheme. It refers to graphical or tabular depiction of data to an audience. Chi (1997) makes no prescriptions regarding which format is best; there are many ways that coded data can be depicted. For example, if the data are coded into taxonomic categories, then bar graphs with statistical analysis that can confirm or disconfirm reliable differences may be appropriate. The intent of this step is to aid the researcher and the audience in the sixth step of the process, the identification of patterns in the data. The seventh step is interpreting patterns in the data. This step is dependent upon the questions being asked and the theoretical orientation of the researcher.

In this study, Chi's (1997) seven steps were followed. In the first step, reducing or sampling of verbal data, cases were selected using theoretical sampling according to legal interviewing skill level (i.e., low, medium, high). Four of the five interviewing exercises were

analyzed for this study. All available verbal data from each exercise was used. In the second step, segmentation of verbal data, the researcher developed an approach to segmentation of verbal data into discrete units and drafted initial coding definitions and guidelines (see Appendix A. Coding Definitions and Guidelines).

In the third step, development of a coding scheme, the coding definitions and guidelines were further developed. These definitions and guidelines that reflect legal interviewing theory as defined by course objectives: understanding the reasons for being-client centered, learning to recognize and correct mistakes lawyers make when interviewing clients, and learning to use video recordings effectively to evaluate their interviewing skills and improve their capacity for reflection and becoming proficient in the use of interviewing skills. Course materials define legal interviewing as “interpersonal, communication and problem framing skills that allow you [attorney], in a professional setting, to effectively work with a person [client] with a problem...to identify and diagnose the problem” (Farmer, 2008, p. 19). This definition is based upon fundamental lawyering skills defined by MacCrate (1992). Students in the interviewing course should demonstrate the ability to recognize effective and ineffective performances, propose alternate courses of action, and to develop increasingly elaborate written descriptions of their performance. Written self-evaluations become increasingly elaborate when they include mention of legal interviewing skills and descriptions of how those skills relate to and effect the evolving structure of the interview and how the deployment of those skills effects the client and the interviewer. Accordingly, the codes defined in Appendix A cover student recognition of effective performance and ineffective performance, plans for improvement, and elaboration features.

The fifth step, depicting the coding scheme, resulted in the creation of a taxonomy representing legal interviewing knowledge representations. Chi & VanLehn (1991) developed a

taxonomic scheme to represent physics concepts acquired by students. This scheme allowed the researchers to isolate different types of knowledge that were used during student problem solving. In this study, the researcher developed broad types of self-evaluation writing (i.e., Effective Performance, Ineffective Performance) and then located features of those writing segments (i.e., Concept, Concept+, Concept+Client, and Concept+Lawyer) that reflected legal interviewing theory as developed in the course. Some self-evaluation writing did not show evidence of legal interviewing concepts (i.e., Unrelated Concept).

The sixth step in the process was identification of patterns in the data. Because this study used a taxonomy simple graphical displays and tabular presentation of frequencies were appropriate to confirm differences. These patterns constitute more than a tabulation of segments. Instead, this study quantified a pattern that emerged from student annotation and self-evaluation writing activities demonstrating the depth of legal interviewing insight. In the seventh step, interpreting patterns in the data, the researcher addressed questions one and two. Because this study used a taxonomic scheme to represent the data, the interpretation was straightforward and was confirmed with descriptive statistics.

### Data Analysis

Data analysis in qualitative research can be described in terms of three concurrent flows of action (Miles & Huberman, 1994): data reduction, data display, and conclusions and verification. The first component, data reduction, refers to the process of selecting, focusing, simplifying, abstracting, and transforming collected data. In this study, data reduction occurred during the process of selecting which portions of verbal data to code and which patterns represent coded data. The second component, data display, refers to an "organized, compressed, assembly of information that permits conclusion drawing and action" (Miles & Huberman, 1994,

p. 11). Rather than use extended selections of text, this study utilized tabular and graphical displays of data frequencies along with illustrative text. The third component, conclusion drawing and verification, also constituted a component of analysis. During data collection, there should be no definitive conclusions. However, from the beginning of the study, the researcher made preliminary conclusions that must be verified during the analysis. Yin (2002) recommends that every case study should possess a general analytic technique. These analytic techniques are described in Table 9. This allows the researcher to establish priorities for what to analyze and why. This study used pattern matching which allows several pieces of data from the same case to be related to some theoretical proposition.

Table 8.  
Research Questions, Data Sources, and Data Analysis

Research Questions	Data Sources	Data Analysis
What types of knowledge representations do law students generate in their written self-evaluations of legal interview practices?	Interviewing Skill Tags, Evaluation Tags, and Written Self-Evaluations.	Development of codes and coding guidelines that reflect legal interviewing theory.
Do the knowledge representations of legal interviewing by law students change and develop over time? In what ways do they develop?	Interviewing Skill Tags, Evaluation Tags, and Written Self-Evaluations.	Within-case comparisons of knowledge representations across multiple exercises.
Do law students of different knowledge levels generate different types of knowledge representations of legal interviewing skills? In what ways do their patterns of knowledge representations similar or different across students of different skill levels?	Interviewing Skill Tags, Evaluation Tags, and Written Self-Evaluations.	Cross-case comparisons of knowledge representations across multiple exercises.

## Research Question One

The first question asked: What types of knowledge representations do law students generate in their written self-evaluations of legal interview practices? The proposition for this sub-question was that representations of declarative and conceptual knowledge embedded in written self-evaluations could be represented by a coding scheme. This coding scheme consists of types of statements (structure) and subject matter (content). The coding scheme was developed in accord with recommendations from Chi (1997). First, verbal data (i.e., lawyer skill tags, evaluation tags, and self-evaluation writing) from a pilot were segmented using different techniques. After repeating this process the researcher concluded that segmenting self-evaluation writing according to semantic rules was more appropriate. All segments would be composed of single phrases or sentences or series of phrases or sentences that address the same interview skill or structural term. Next, a categorization scheme for the segments was designed using the expertise literature and course objectives. The researcher decided that segments could be represented by three categories: segments that were examples of effective performance, ineffective performance, and an improvement plan. These categories were based upon Interviewing and Counseling course objectives and expertise literature (Ericsson et al., 1993). Finally, features of the categorized segments were identified that showed evidence of deeper content knowledge. This content knowledge included interviewing skills and structural components, how those skills and structural components fit into the overall structure of an interview, and how those skills and structural components affect the client and lawyer during the process. The development of this coding process continued iteratively until a preliminary set of coding definitions and guidelines were developed.

## Research Question Two

The second question asked: Do the knowledge representations of legal interviewing by law students change and develop over time? In what ways do they develop? The proposition for this sub-question was that student interviewing knowledge would change and develop over the course of all legal interviewing exercises. Evidence of that development was demonstrated by observing a greater frequency and type of skills features for each case per exercise, per speaking event, and across all types.

In order to obtain this evidence data were coded using Chi's (1997) guidelines described earlier. Prior to the start of any coding the researcher trained a research assistant in the coding definitions and guidelines. The researcher used examples during the training process to clarify the meaning of the codes and how they should be applied. Multiple trials were conducted between the researcher and assistant until sufficient agreement was reached about the meaning of the codes and how to apply them. The researcher made changes to coding guidelines during this training process when necessary.

At the conclusion of this process the researcher coded the first exercise for all ten cases. Simple tabulations and graphical displays along with descriptive statistics were used to determine whether or not there was greater frequency of upper-level concepts for each case per exercise and per speaking event and across all types. Four cases were chosen corresponding to the highest, middle, and lowest frequency of upper-level concepts. Three additional exercises for these four cases were chosen and coded using the definitions and guidelines.

After all data were coded the researcher and assistant checked the reliability of coding. Ten percent of all coded data were randomly selected and coded by the assistant. Cohen's Kappa was used to calculate inter-rater reliability (Fleiss, 1981; Gwet, 2008). After reliability was

confirmed within-case analyses were conducted.

### Research Question Three

Question three asked: Do law students of different knowledge levels generate different types of knowledge representations of legal interviewing skills? In what ways do their patterns of knowledge representations similar or different across students of different skill levels? The proposition for this sub-question was that, that there would be no differences between the change and development of lawyer interviewing skill knowledge for high-, medium-, and low-knowledge participants. As stated earlier, the researcher chose three cases corresponding to the highest, middle, and lowest frequency of skills features. Two additional exercises for each selected participant were coded using the coding definitions and guidelines.

After the coding was completed and reliability was confirmed cross-case analyses were conducted. For each case, self-evaluation writing, lawyer statement tags, and evaluation tags were tabulated over the course of three exercises. Simple tabulations and graphical displays along with statistical measures (Chi-square) were used to determine whether or not there were any reliability differences between the improvement for high-, medium-, or low-knowledge participants.

### Assurances of Data and Design Quality

Yin (2002) recommends several tactics to ensure the validity of descriptive case study research. The first of these tactics, the triangulation of data, is also recommended by Patton (1987). This study used multiple sources of verbal evidence (i.e., lawyer skill tags, evaluation tags, and self-evaluation writing) from each case. When the data have been triangulated, the facts or events of a study have been supported by more than one form of evidence (Yin, 2002). A second tactic recommended by Yin (2002) is the review of the draft of the case study report by

key participants. This study also involved the review of the study by a key participant, the professor of the Interviewing and Counseling course. The course instructor's review was sought when developing the coding scheme, the data analysis approach, and when drafting the results.

For case studies, Yin (2002) recommends that steps be taken to ensure reliability, i.e., to demonstrate that the operations of a study be repeated with the same results. When using verbal analysis, Chi (1997) recommends that more than one researcher code the data and that their agreement should be no less than 80%. Interruption reliability was conducted for each of the levels involved in coding the data: at the level of segmentation and categorization into segment types and at the assignment of features to segments.

## CHAPTER 4. RESULTS

The results for the multiple case studies are reported by research question. The types of knowledge representations, knowledge change and development, and student knowledge levels will be discussed. Following recommendations from Yin (2002), within-case analyses will be discussed describing individual students followed by cross-case analyses of trends.

### Types of Knowledge Representations

The first question asked: What types of knowledge representations do law students generate in their written self-evaluations of legal interview practices? The proposition for this question was that evidence of student interviewing knowledge could be consistently represented with a coding scheme developed using Chi's (1997) verbal analysis technique (see Figure 2 for graphical representation).

This coding scheme depicts law student perceptions of effective and ineffective performances, increasingly elaborate written descriptions of their performance, and proposals for alternate courses of action. Written self-evaluations become increasingly elaborate when they include mention of legal interviewing skills and descriptions of how those skills relate to and effect the evolving structure of the interview and how the deployment of those skills effects the client and the interviewer. Accordingly, the codes defined in Appendix A cover student recognition of effective performance and ineffective performance, plans for improvement, and elaboration features.

In order to test the validity of these codes, the research contact for the study was provided an orientation to the coding categories, an overview of the study design, and a random sample consisting of 20% of the overall data (4 of 16 exercises). After several initial trials, he coded the selected portion of the data using the definitions provided above and using the definitions and

guidelines in the Appendices. The raw rate of agreement was 89.5%. In order to correct for chance, inter-rater agreement was calculated using Cohen's (1960) Kappa ( $K = 0.8769$ ). These results can be interpreted as representing a strong level of overall agreement.

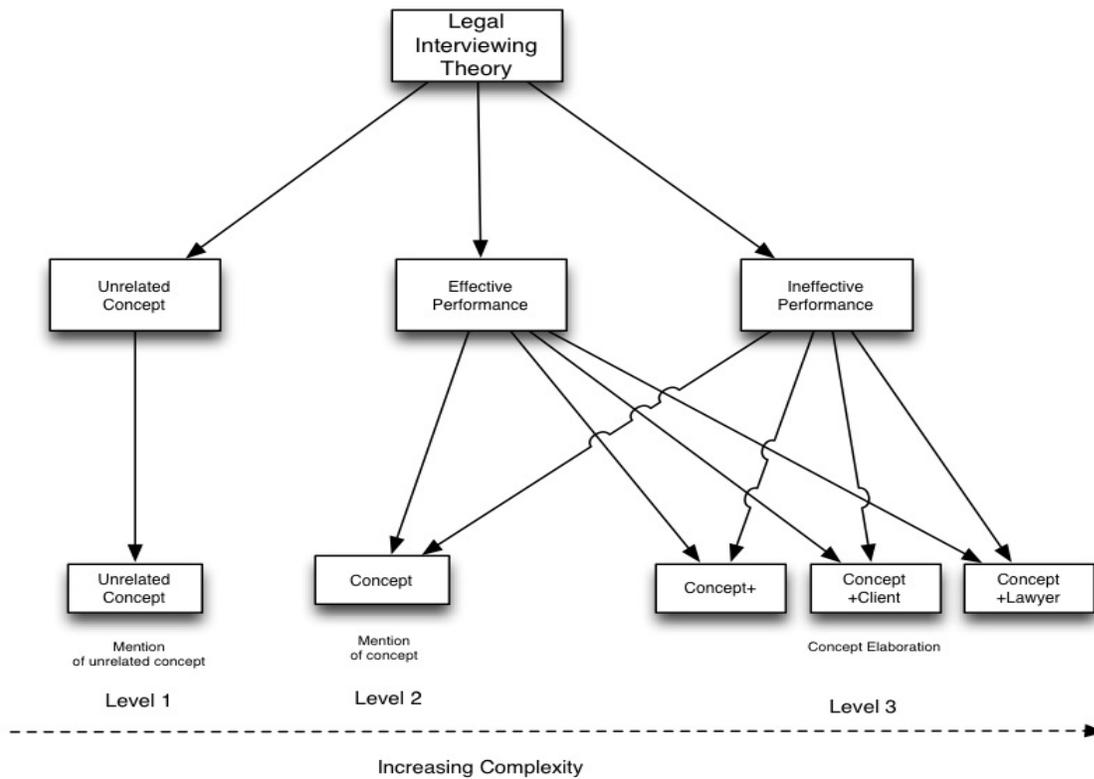


Figure 2. Taxonomy of Lawyer Interviewing Knowledge Representations

### Knowledge Change and Development

The second question asked: Do the knowledge representations of legal interviewing by law students change and develop over time? In what ways do they develop? The proposition for this sub-question was that student interviewing knowledge would change and develop over the course of all interviewing exercises. Evidence of that development was demonstrated by observing a greater frequency and type of skills features for each case per exercise, per speaking

event, and across all types. The results for sub-questions one and two will be discussed for each case. A summary report addressing both sub-questions will also be discussed.

### Within-Case Analyses

#### Student Two

The exercises for Student Two show evidence of increasingly sophisticated self-evaluation writing when measured by the ratio of upper-level concepts per segment. The findings show increases in the number of Concept+Client and Concept+Lawyer segments when the first (Exercise 3) and last exercises (Exercise 8) are compared in Table 10. The findings show no consistent increase in the number Concept+ segments. In Student Two's earliest exercise (Exercise 3), there were instances of Unrelated Concept and Concept segments.

Table 9.  
Student Two

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Unrelated Concept	1	0	0	0
Concept	4	0	0	2
Concept+	2	10	1	1
Concept+Client	3	4	1	11
Concept+Lawyer	2	9	5	12
Total Upper-Level	7	23	8	24
<b>Upper-Level Concept per Segment</b>	<b>0.58</b>	<b>1</b>	<b>0.88</b>	<b>1.6</b>

Concept. Concept segments mention a legal interviewing structure or skill concept but provide no further detail or elaboration of that concept. The following example is representative of Student Two's earliest Concept segments. Note that while both the concept tag (e.g., *\_Encouraging-the-Narrative*) and the text of the evaluation are used as evidence during coding only the text of the segment text is italicized:

Student Two, Exercise Three

Event 10

Time: 12:54-12:57 (0:03)

[[STUDENT]] Smile, nod, verbal "ok"

\_Encouraging-the-Narrative\_

In this example, Student Two applied the tag for the concept, Encouraging the Narrative, to the speaking event and then wrote a brief self-evaluation that provides no explicit term but does provide synonymous phrase that links the text to the concept. However, no further elaboration of the concept is provided.

In Exercise Eight, segments from two additional speaking events were assigned Concept codes.

Student Two, Exercise Eight

Event 7

Time: 24:42-25:27 (0:45)

[[STUDENT]] [[SEGMENT ONE]] So I tagged this effective and requires improvement because the first part introducing the T-funnel section was pretty clear and effective in explaining where I wanted to go from there. [[SEGMENT TWO]] The problem came in when I remembered she had mentioned questions that I hadn't addressed, so I paused to find out what kind of questions she had on her mind before proceeding. Not an ideal time to do it, and as Megan mentioned, it kind of derailed my framing of the T-funnels. However, I think in real life, had a client mentioned questions, I would still probably find out what they were worried about and let them know when they could expect answers, so they weren't stewing about it during my info gathering questions.

\_Frame\_

\_Begin T-Funnel\_

\_Effective Performance\_

\_Requires Improvement\_

In SEGMENT ONE of this example, Student Two identifies the legal interviewing concept using a term, "T-funnel" that is linked to the "\_Begin T-Funnel\_" concept tag also applied by the student. The use of both a clearly identifiable term (e.g., "T-funnel") and a concept tag (e.g., "\_Begin T-Funnel\_" ) to which the term can be linked provides the strongest evidence for the presence of a legal interviewing skill concept. This example is coded as concept because

it uses simple evaluative language, "clear and effective", without further elaboration. However, while both this segment and the prior segment were assigned the Concept code, there are identifiable differences: the latter segment shows explicit mention of the concept ("T-funnel"), an evaluation of performance ("effective and requires improvement"), and more verbose self-evaluation text.

Concept+Client. The results in Table 10 also demonstrate how the frequency of Concept+Client segments increased in later exercises. A comparison of the text of the segments from earlier and later exercises illustrates other differences. In the example from Exercise Three, Student Two, the term "narrative" is linked to the "\_Encouraging-the-Narrative\_" concept tag. There is also a simple description of an impact on the client, "listening without interrupting his narrative":

Student Two, Exercise Three

Event 2

Time: 4:15-4:18 (0:03)

[[STUDENT]] Nodding/making eye contact shows that I am listening without interrupting his narrative.

\_Encouraging-the-Narrative\_

\_Effective Performance\_

But the example from Exercise Eight illustrates a more detailed impact on the client that was typical of later exercises:

Student Two, Exercise Eight

Event 3

Time: 9:01-9:14 (0:13)

[[STUDENT]] Megan pointed out that the way I phrased this frame, it sounded like I expected her to have taken actions. It might have been more helpful to say something like, "Before coming to me, have you done anything to try to resolve the problem, or were you hoping to discuss things with me first before taking any steps to solve it?" That might make her feel less like taking actions prior is an expected thing.

\_Begin PPI - Actions\_

\_Requires Improvement\_

\_Frame\_

The more detailed descriptions of Concept+Client segments can be shown through two features. First, rather than just identify a single concept, Student Two identifies multiple concepts with the terms "frame" linked to the "\_Frame\_" concept tag and "actions" linked to the "\_Begin PPI - Actions\_" concept tag. Also, Student Two provides two, more detailed phrases to describe impact on the client: "it sounded like I expected her to have taken actions" and "that might make her feel less like taking actions prior is an expected thing".

Concept+Lawyer. The results in Table 10 also demonstrate how the frequency of Concept+Lawyer segments increased in later exercises. Also, a comparison of the text of the segments from earlier and later exercises illustrates other differences:

Student Two, Exercise Two

Event 4

Time: 6:32-6:35 (0:03)

[[STUDENT]] I'm realizing by this point that the only way I "encourage-the-narrative" is by nodding and saying "Ok." I don't think this is an ineffective method, but when it is the ONLY way I encourage the narrative, it probably becomes less effective. I could use arms/posture to indicate interest as well.

\_Encouraging-the-Narrative\_

\_Requires Improvement\_

In the example above, strong evidence for the presence of a legal interview concept is provided as Student Two uses a term, "encourage-the-narrative", that can be linked to the "\_Encouraging-the-Narrative\_" concept tag. The phrase, "...I could use arms/posture to indicate interest as well", indicates a simple suggestion for future interview performances.

Another example from Exercise Eight shows how the Concept+Lawyer segments that describe possible approaches to future legal interviews have become more elaborate and detailed:

Student Two, Exercise Eight

Event 2

Time: 6:43-7:02 (0:18)

[[STUDENT]] This transition from objectives to concerns wasn't framed very well.

Megan pointed out that I could have emphasized more that I was moving from one to the

other. I felt like her conversation was mixing objectives and concerns, so it seemed kind of natural to me to transition the way I did. I can see where it might be confusing to a client who didn't know my outline though. Maybe I could have said, "It sounds like you also are worried about some things here. Do you have any other objectives you want to discuss before we move on to look at your concerns?"

\_Requires Improvement\_  
\_Begin PPI - Concerns\_  
\_Frame\_

In this example, the segment uses a term, "concerns" mentioned on three different occasions that is linked to the "\_Begin PPI - Concerns\_" concept tag. This is strong evidence for the presence of a legal interviewing concept. As in prior examples, the phrase, "I could have emphasized more that I was moving from one to the other", shows evidence of an alternate, future plan. But the subsequent phrase, "Maybe I could have said, 'It sounds like you also are worried about some things here. Do you have any other objectives you want to discuss before we move on to look at your concerns?'" , provides a possible script or rehearsal for future performance that contains more precise information about how such a plan could be executed.

Dual-Coded Segments. Another example from Exercise Eight also shows evidence of additional sophistication in writing. The segment below was assigned codes for both

Concept+Client and Concept+Lawyer:

Student Two, Exercise Eight

Event 4

Time: 10:30-10:37 (0:07)

[[STUDENT]] This would have been a great questions for one of my T-funnels later on-- I didn't really need this info at this point. Like Megan pointed out, it kind of got my client going into more detail than was necessary here.

\_Closed Question\_  
\_Requires Improvement\_

In this segment, Student Two provides clear evidence for the presence of legal interviewing concept by using a term, "questions", that is linked to the "\_Closed Question\_"

concept tag. The phrase, "This would have been a great questions for one of my T-funnels later on" provides evidence of an alternate, future approach to the interview. In addition, the phrase "it kind of got my client going into more detail than was necessary here" shows evidence of impact on the client. This dual-coded (Concept+Lawyer, Concept+Client) segment provides clear illustration of how the self-evaluation writing for this student improved over time.

#### Student Four

The exercises for Student Four also show evidence of increasingly sophisticated self-evaluation writing when measured by the ratio of upper-level concepts per segment. The findings show increases in the frequency of all upper-level concepts (i.e., Concept+, Concept+Client, Concept+Lawyer) in Table 11. However, in terms of the frequency of upper-level concepts, these increases are not consistent across all exercises. Exercises Six and Eight show the highest absolute number of upper-level concepts even though the ratio of upper-level concepts per segment is higher in Exercise Eight (1.0) than in Exercise Six (0.95).

Table 10.  
Student Four

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Unrelated Concept	2	2	0	2
Concept	1	2	5	2
Concept+	0	7	2	0
Concept+Client	3	2	11	6
Concept+Lawyer	0	8	9	4
Total Upper-Level	3	17	22	10
<b>Upper-Level Concept per Segment</b>	<b>0.5</b>	<b>0.85</b>	<b>0.95</b>	<b>1</b>

Unrelated Concept. Student Four generated two Unrelated Concept segments for Exercises Three, Five, and Eight. The segment below is representative of these segments:  
Student Four, Exercise Five

Event 12

Time: 10:19-10:45 (0:26)

[[STUDENT]] I was proud of myself that I thought of a relevant question.

\_Effective Performance\_

In this example, no clearly identifiable terms are provided by Student Four. In addition, no legal interviewing concept tags are provided making it impossible to identify any phrases consistent with a legal interviewing concept definition. As a result, no relevant legal interviewing concepts can be identified.

Concept. Student Four generated an increasing frequency of Concept segments across Exercises Three, Five, and Eight. However, early examples of Concept segments did not use clearly identifiable terms (Exercise Three), were brief or did not apply legal interviewing concept tags (Exercise Five). The example from Exercise Three is representative of these Concept segments:

Student Four, Exercise Three

Event 11

Time: 4:37-4:39 (0:01)

[[STUDENT]] I hope by putting down my pen for a moment I was able to look like I'm listening more to her story and more sympathetic.

\_Encouraging-the-Narrative\_

\_Body Language\_

\_Effective Performance\_

This segment was coded as Concept due to presence of synonymous phrase, "putting down my pen...to look like I'm listening more to her story" which was linked to the "\_Encouraging-the-Narrative\_" concept tag. A clearly identifiable term (e.g., "narrative") would provide a stronger basis for the code assignment. However, phrase cited above is consistent with the definition of "\_Encouraging-the-Narrative\_" concept tag in Appendix B: "Brief lawyer responses (silence, pause) or statements (minimal prompts, open questions) intended to encourage the client to continue a narrative statement".

Student Four, Exercise Five

Event 23

Time: 15:30-15:54 (0:23)

[[STUDENT]] I think I did a good, clear transition for that.

\_Summary Frame\_

\_Effective Performance\_

\_Open Question\_

As mentioned above, Student Four generated some Concept segments that did not have legal interviewing concept tags. The example below was coded as Concept due to the term, "transition", which is consistent with the definition for the "\_Transition\_" or "\_Transition Frame\_" concept tags in Appendix B. Student Four did not apply a concept tag to which the term could be linked nor did he or she provide further elaboration of the concept.

In Exercises Six and Eight, Student Four occasionally generated stronger evidence for within Concept segments that usually employed clearly identifiable terms and applied legal interviewing concept tags. The example below is typical of this pattern:

Student Four, Exercise Six

Event 1

Time: 0:34-1:01 (0:27)

[[STUDENT]] I think it was good that I framed the PPI process even though I don't remember talking about that in class.

\_Effective Performance\_

\_PPI Overview Frame\_

In this segment, Student Four used clearly identifiable terms, "framed the PPI process", that can be linked to the "\_PPI Overview Frame\_" concept tag. The phrase, "I think it was good that I framed the PPI process", provides a simple positive evaluation. The rest of the sentence does not provide any further elaboration.

Concept+. Student Four only generated Concept+ segments during Exercises Five and Six. But during these exercises different examples of elaboration can be identified. The least detailed and elaborate of Student Four's Concept+ segments was identified in Exercise Five:

Student Four, Exercise Five

Time: 5:03-5:09 (0:05)

[[STUDENT]] Less wordy than the last one, and a bit more clear.

\_Closed Question\_

\_Effective Performance\_

In this example, the phrase, "less wordy than the last one", can be linked to the "\_Closed Question\_" concept tag. The description of the Closed Question as "less wordy" provides an example of minimal elaboration that goes beyond simple evaluative language (e.g., good/bad, well/poorly, etc.). Another Concept+ example demonstrates more detailed elaboration:

Student Four, Exercise Five

Time: 5:18-5:30 (0:11)

[[STUDENT]] I think it was a pretty straightforward question, asked at the appropriate time in the T-frame.

\_Closed Question\_

\_Effective Performance\_

This speaking event featured a term, "question", that can be linked to the "\_Closed Question\_" concept tag. The term, "question", could also be linked to other interviewing concept tags (e.g., "\_Open Question\_"). However, the coding guidelines permit this linkage between term and concept tag when an existing concept tag will suffice. The concept is described further by the phrase, "asked at the appropriate time in the T-frame", which describes how the concept fits into the overall structure of the interview.

All of the examples listed previously demonstrate some degree of concept elaboration but the latter examples provide richer detail about how the concept fits into the structure of the interview and provide greater definition of the concept itself.

Concept+Client. Student Four generated a much larger number of Concept+Client segments in Exercises Six and Eight. However, a comparison of early Concept+Client segments

to later segments reveals differences in the richness of detail. For example, a Concept+Client segment from Exercise Three shows minimal detail:

Student Four, Exercise Three

Event 2

Time: 2:38-2:39 (0:01)

[[STUDENT]] I tried to nod a lot to let her know I was listening.

\_Encouraging-the-Narrative\_

In this segment the phrase, "let her know that I was listening", is consistent with the definition of the "\_Encouraging-the-Narrative\_" concept tag (see Appendix B. Legal Interviewing Concepts). The impact on the client is evident in the phrase, "tried to nod to let her know I was listening".

However, another later example shows richer detail:

Student Four, Exercise Six

Event 5

Time: 4:23-4:47 (0:24)

[[STUDENT]] I think it was good to frame why I was asking about concerns after she just told me about her objectives so she knew that they weren't the same thing.

\_Effective Performance\_

\_PPI Concerns Frame\_

This segment was coded as Concept+Client due to term, "concerns", linked to the "\_PPI Concerns\_" concept tag. The effect on the client is described in the phrase, "so she knew that they weren't the same thing".

Another example below contains rich detail regarding the client, that describes a client's feelings. This segment was coded as Concept+Client due to term, "anything else question", linked to "\_Anything Else Question\_" concept tag. The effect on the client is described in terms of a feeling that client may have had, "she probably felt like I was fishing for too much information":

Student Four, Exercise Six

Event 6

Time: 6:09-6:29 (0:20)

[[STUDENT]] She probably felt like I was fishing for too much information after she gave me all of that, so I don't know if I needed an anything else question here.

\_Requires Improvement\_  
\_Anything Else Question\_

Another example described the knowledge a client may have had about an interview. The segment below was coded as Concept+Client due to phrase, "I explained clearly what the initial interview was and made sure that the client knew that we would talk about fees later", linked to the "\_Begin Preliminary Matters Discussion\_" concept. Impact on client evident in phrase "I explained clearly what the initial interview was and made sure that the client knew that we would talk about fees later":

Student Four, Exercise Eight

Event 3

Time: 3:22-3:25 (0:03)

[[STUDENT]] I'm glad that I explained clearly what the initial interview was and made sure that the client knew that we would talk about fees later, when it was better for both of us.

\_Effective Performance\_

Concept+Lawyer. Student Four generated no Concept+Lawyer segments in Exercise Three and generated the majority in Exercises Five and Six. The features of those segments vary. Some segments contain references to abstract plans for improvement and some contain rehearsed text for future interviews. These alternate plans express different degrees of certainty by Student Four. In addition, some segments are embedded in larger self-evaluation statements that contain multiple segments. One Concept+Lawyer segment from Exercise Five contains an abstract plan and "rehearsed" text for future performances:

Student Four, Exercise Five

Time: 8:34-8:47 (0:13)

[[STUDENT]] Yet another unclear/rambling question. I definitely need to practice closed questions. I could have said, "Do you have custody of your accounts?" or "Who keeps track of your accounts and determines commission?"

\_Closed Question\_  
\_Needs Improvement\_

In this example, the clearly identifiable term, "closed questions", can be linked to the "\_Closed Question\_" concept tag. Evidence of lawyer self-regulation is provided by two sentences. The first sentence, "I definitely need to practice closed questions", provides a plan, albeit abstract, for future performance. The second sentence, "I could have said, 'Do you have custody of your accounts!...' consists of two "rehearsed" phrases for future performances.

Student Four generated Concept+Lawyer segments that expressed different degrees of certainty about how performance should be changed:

Student Four, Exercise Six

Event 11

Time: 9:45-10:15 (0:30)

[[STUDENT]] [[SEGMENT ONE]] I think this may have been a good frame for a narrative, [[SEGMENT TWO]] although now that I look back I don't know if we needed to do that.

\_End PPI\_

\_Effective Performance\_

\_Open Question\_

\_Requires Improvement\_

This segment is Coded as Concept+Lawyer due to the phrase, "if we needed to do that", that refers to, "frame for a narrative", in the prior segment which is linked to the "\_End PPI\_" concept tag. Evidence of self-regulation for future performance can be found in the phrase, "I don't know if we needed to do that". This statement reflects uncertainty when compared to other segments that contains phrases such as, "I should have..." (Student Four, Exercise Eight, Event 13), "Next time I'll..." (Student Four, Exercise Eight, Event 13), and "I could have..." (Student Four, Exercise Six, Event 14).

Student Four also generated Concept+Lawyer segments that were embedded in self-evaluation text that contained multiple segments. The example below was coded as Concept+Lawyer due to phrase, "...why I was doing that", that refers to the term, "summarized", in the prior segment. This term can be linked to the "\_Summary\_" concept tag. Evidence of self regulation can be found in the phrase, "I should have told her why I was doing that".

Student Four, Exercise Six

Event 3

Time: 3:42-3:57 (0:15)

[[STUDENT]] [[SEGMENT ONE]] Even though I summarized here to make sure I got everything, [[SEGMENT TWO]] I should have told her why I was doing that.

[[SEGMENT THREE]] But I'm glad that I summarized and remembered to ask her if there was anything else.

\_Requires Improvement\_

\_Summary\_

\_Anything Else Question\_

\_Effective Performance\_

Dual-Coded Segments. Student Four also generated some segments that were coded with both Concept+Client and Concept+Lawyer codes and thus contained evidence of the impact of the interview on the client as well as self-regulation or plans for future action of the lawyer.

Student Four generated five dual-coded segments in Exercise Six and four in Exercise Eight.

Student Four, Exercise Five

Event 28

Time: 18:50-19:04 (0:14)

[[STUDENT]] Maybe I shouldn't have limited this question to the appraiser because James had to come up with his objectives himself.

\_Anything Else Question\_

\_Needs Improvement\_

The segment above was coded as Concept+Client and Concept+Lawyer due to the term, "question", which can be linked to the "\_Anything Else Question\_" concept tag. The Impact on client and specific evidence for the Concept+Client code is found in the phrase, "...because

James [client] had to come up with objectives himself". Evidence of self-regulation by the lawyer is found in the phrase, "Maybe I shouldn't have limited this question...".

Student Six

As shown in Table 12, Student Six was the lowest-knowledge student during Exercise Three generating the least upper-level concepts per segment (0.2). The exercises for Student Six show uneven evidence of increasingly sophisticated self-evaluation writing when measured by the ratio of upper-level concepts per segment. The findings show increases in the frequency of Concept+Lawyer codes when comparing Exercise Three and Exercise Eight. However, the highest number of Concept+ segments occurs in Exercise Five. Also, a large number of Unrelated Concept exercises were generated in Exercise Three. Exercises Five and Eight show the highest absolute number of upper-level concepts even though the ratio of upper-level concepts per segment is higher in Exercise Eight (1.12) than in Exercise Five (0.76).

Table 11.  
Student Six

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Unrelated Concept	8	1	2	0
Concept	0	4	4	1
Concept+	1	9	3	1
Concept+Client	0	3	0	3
Concept+Lawyer	1	1	1	5
Total Upper-Level	2	13	4	9
<b>Upper-Level Concept per Segment</b>	<b>0.2</b>	<b>0.76</b>	<b>0.4</b>	<b>1.12</b>

Unrelated Concept. Student Six had a larger number of Unrelated Concept segments than any other student. In Exercise Three, eight Unrelated Concept segments were identified. Most of

these segments described quick reactions to the client but lacked detail and legal interviewing concept tags. The following example illustrates the content of these segments:

Student Six, Exercise Three

New Event

Time: 11:38-11:41 (0:03)

[[STUDENT]] Quick "right" showing the client that I haven't fallen asleep.

In the example above, Student Six does not use any term or apply any concept tag. The phrase, "Quick 'right' showing the client...", could be linked to a the "\_Encouraging the Narrative\_" concept tag. Given the coding guidelines, this makes it impossible to identify any concepts in the speaking event.

Later exercises by Student Six show fewer Unrelated Concept segments. In addition, Student Six applied concept tags in later exercises which provided more information to identify concepts. However, in many instances, Student Six generated brief self-evaluation text and at times drafted no text at all. The example below is illustrative of Student Six's later Unrelated Concept segments:

Student Six, Exercise Six

Event 15

Time: 12:15-13:27 (1:11)

[[STUDENT]] Don't use legal jargon.

\_Question Frame\_

\_Requires Improvement\_

In this example the brief sentence provides no terms and no phrases that could be linked to the existing "\_Question Frame\_" concept tag. Consequently, there is no evidence that the segment contains any related legal interviewing concepts.

Concept. In Exercise Three, Student Six generated no Concept segments. However, four were generated in both Exercises Five and Six that were less verbose and that lacked application of concept tags. In the example below, the student used a term, "frame", that can be linked to

several of the "frame" concept tags. However, the student did not apply any relevant concept tag, limiting the specificity of the self-evaluation. Also, the self-evaluation text contains only minimal evaluation ("Didn't frame this very well"). Also, while verbose self-evaluations are not necessarily richer than brief self-evaluations, this example does not allow for much detail. This meets the minimum standard for a Concept segment.

Student Six, Exercise Five

Event 19

Time: 16:30-16:48 (0:17)

[[STUDENT]] Didn't frame this very well.

\_Empathy\_

\_Signpost\_

\_Closed Question\_

\_Needs Improvement\_

In Exercise Eight, Student Six generated only one Concept segment. In this example, Student Six used the term, "empathy", which can be linked to the "\_Empathic or Client-Centered Statement\_". However, as in the prior example, the self-evaluation text is very brief.

Student Six, Exercise Eight

Event 3

Time: 7:07-7:28 (0:21)

[[STUDENT]] Showed good empathy.

\_Effective Performance\_

\_Empathic or Client-Centered Statement\_

Concept+. Student Six generated the largest number of Concept+ segments in Exercise Five. Despite the fact that this number decreases in Exercises Six and Eight, examples of Concept+ segments reveal interesting differences in terms of how concepts were elaborated. The elaboration of the concepts described in these segments consisted of descriptions of particular performance problems, comparisons of one performance to another, discussions of multiple interviewing concepts, descriptions of the link to legal interviewing theory, and description of how the concept fits into the overall interview structure.

An example from Exercise Five shows Concept+ segment that describes a particular problem with the performance:

Student Six, Exercise Five

Event 1

Time: 0:07-1:12 (1:04)

[[STUDENT]] Not very concise or well worded. Also confused the client's last name with the last name of one of the client's problem creators.

\_T-Funnel Frame\_

\_Open Question\_

\_Roadmap\_

\_Needs Improvement\_

In this segment, the phrase, "concise or well worded" can be linked to one of the two concepts present in the lawyer skill tags: "\_Open Question\_" or "\_T-Funnel Frame\_". The elaboration of one of those concepts is evident in the phrase, "confused the client's last name with..." which identifies a particular problem with performance. This description of a performance problem is not linked to legal interviewing theory but just describes a misstatement on the part of the interviewer.

Another example of how a concept can be elaborated is found in Exercise Six where Student Six makes a comparison of one performance to another:

Student Six, Exercise Five

Event 2

Time: 3:41-4:12 (0:31)

[[STUDENT]] Wasn't the smoothest frame, but it was better than some of my others.

\_Summary Frame\_

\_Closed Question\_

\_Summary\_

\_Effective Performance\_

This segment was coded as Concept+ due to term, "frame" linked to the "\_Summary Frame\_" concept tag. The phrase, "it was better than some of my others" draws a comparison to other performances during the interview.

Another example of how concepts can be elaborated is found in Exercise Five where

Student Six describes multiple concepts in the same segment:

Student Six, Exercise Five

Event 23

Time: 18:02-18:27 (0:25)

[[STUDENT]] Decent summary and anything else question leading up to closing out this t-funnel.

\_Anything Else Question\_

\_Summary\_

\_Summary Frame\_

\_End T-Funnel\_

\_Effective Performance\_

In this example, Student Six used two terms, "summary" and "anything else question" linked to "\_Summary\_" and "\_Anything Else Question\_" concept tags. The inclusion of both concepts along with the description of the interview structure evident in the phrase, "leading up to closing out this t-funnel".

In another example, Student Six elaborates the interviewing concept by linking it to descriptions of legal interviewing theory:

Student Six, Exercise Five

Event 16

Time: 14:51-14:56 (0:04)

[[STUDENT]] Didn't provide a frame for this question, and this question is more appropriate for the other topic yet to be discussed (i.e., Larry's occupancy).

\_Closed Question\_

\_Needs Improvement\_

This segment was coded as Concept+ due to term, "question", which was linked to the "\_Closed Question\_" concept tag. Student Six elaborated the concept in the phrase, "didn't provide a frame for this question" which describes one of the principles of the class, that all questions should be framed and also describes the position of the concept relative to other parts of the interview.

In another example, Student Six elaborated a lawyer interviewing concept by describing the overall interview structure:

Student Six, Exercise Five

Event 18

Time: 16:07-16:21 (0:14)

[[STUDENT]] Decent Summary leading up to closed question asked.

\_Summary\_

\_Closed Question\_

\_Effective Performance\_

In this example, Student Six uses a term, "summary", which can be linked to the "\_Summary\_" concept tag. The concept is elaborated in the phrase, "decent summary leading up to closed question asked", which describes the location of the concept relative to the overall interview structure.

Concept+Client. Student Six generated Concept+Client segments in Exercises Five and Eight. The frequency of these segments is the same for both exercises and the features of the segments are also similar. In the first example, Student Six describes the impact on the client:

Student Six, Exercise Five

Event 4

Time: 5:39-6:27 (0:47)

[[STUDENT]] This may have been somewhat effective in the sense of showing empathy and letting the client that I was paying attention to their story.

\_Summary\_

\_Empathy\_

\_Effective Performance\_

In this segment, Student Six used a term, "empathy", which can be linked to the "\_Empathy\_" concept tag. The impact on the client is described in the phrase, "letting the client that I was paying attention to their story". This segment also shows how Student Six draws a link to the definition of the "\_Empathy\_" concept tag.

Similarly, in an example from Exercise Eight, Student Six describes the impact on the client:

Student Six, Exercise Eight

Event 4

Time: 9:31-10:19 (0:48)

[[STUDENT]] Good use of signpost to bring the client back onto the current topic ("Objectives"). Could have been delivered more smoothly though.

\_Effective Performance\_

\_Roadmap/Signpost\_

\_Empathic or Client-Centered Statement\_

In this example, the student uses the term, "signpost", which can be linked to "\_Roadmap/Signpost\_" concept tag. The impact on the client is described in the phrase, "bring the client back onto the current topic ("Objectives")". In this example, as in the previous one, Student Six, draws on the definition of the concept to describe the effect on the client.

Concept+Lawyer. Student Six generated only one Concept+Lawyer segment in each of the first three exercises but generated five in Exercise Eight. One aspect of these segments that improved across the first three exercises was the use of evaluation tags (i.e., "\_Effective Performance\_" and "\_Needs Improvement\_" ) and legal interviewing concept tags (e.g., "\_Transition Frame\_"). The application of both types of tags is expected for each speaking event; Student Six begins to use them gradually as can be seen in the examples below:

Student Six, Exercise Three

New Event

Time: 2:22-3:15 (0:52)

[[STUDENT]] I would like the narrative request to have been a little more smooth and less mechanical. It's obvious to me that I was thinking very hard about including each of the components in the narrative request.

Student Six, Exercise Five

Event 9

Time: 9:46-9:56 (0:09)

[[STUDENT]] Interrupted the client. I should have waited for a more appropriate time

to ask this question.

\_Needs Improvement\_

Student Six, Exercise Six

Event 12

Time: 9:24-9:59 (0:34)

[[STUDENT]] Decent actions frame, but it would have been better if I used a more open question.

\_Empathic Statement\_

\_Transition Frame\_

\_PPI Actions Frame\_

\_Effective Performance\_

In Exercise Eight, Student Six uses both evaluation and legal interviewing concept tags, provides a description of the error, and provides an alternate, future performance plan:

Student Six, Exercise Eight

Event 6

Time: 25:06-25:41 (0:34)

[[STUDENT]] I think the frame and delivery of this request for the timeline are pretty good, but I probably should have used more specific details rather than simply referring to "the problem."

\_Effective Performance\_

\_Begin Time Line\_

\_Frame\_

In this example, Student Six uses two terms, "frame" and "timeline", that are linked to the "\_Frame\_" and "\_Begin Time Line\_" concept tags. The description of the alternate performance plan is evident in the phrase, "I probably should have used more specific details rather than simply referring to 'the problem'".

Dual-Coded Segments. Student Six has one segment coded with both Concept+Client and Concept+Lawyer tags in Exercise Five and two in Exercise Eight. One difference between the examples from Exercise Five and Exercise Eight is the explicit link to descriptions of legal interviewing theory.

Student Six, Exercise Five

Event 9

Time: 9:46-9:56 (0:09)

[[STUDENT]] Interrupted the client. I should have waited for a more appropriate time to ask this question.

\_Needs Improvement\_

In this example, Student Six, used a concept term, "question" that can be linked to one of the "\_Open Question\_" or "\_Closed Question\_" concept tags. However, no concept tags were applied so it is not clear which concept the student is describing. The first sentence, "Interrupted the client", shows an example of impact on the client consistent with Concept+Client segments. The second sentence that begins, "I should have waited for a more appropriate time...", describes an alternate, future plan consistent with Concept+Lawyer segments.

An example from Exercise Eight shows how Student Six used the definition of the "\_Frame\_" concept tags to describe the impact of the concept on the client:

Student Six, Exercise Eight

Event 5

Time: 21:36-22:03 (0:27)

[[STUDENT]] This could have benefitted from a frame explaining why I'm asking the question and explaining that I don't expect her to have done anything.

\_Begin PPI - Actions\_

\_Requires Improvement\_

\_Open Question\_

In this example, Student Eight uses a term, "frame", that can be linked to any of the frame concepts (e.g., "\_Timeline Frame\_", "\_Question Frame\_", "\_Summary Frame\_", etc.). However, as in earlier examples from Student Eight, none of these concept tags were applied by the student so it is unclear which concept is being described. Unlike earlier examples, Student Eight has applied other concept tags to the speaking event. This example has also been assigned both Concept+Lawyer and Concept+Client codes. "This could have benefitted from a frame explaining why I'm asking the question ...", describes an alternate, future plan that is consistent

with the Concept+Lawyer segment definition. The impact on the client is evident in the phrase, "...explaining that I don't expect her to have done anything".

In summary, Student Six showed improvement from the initial exercise to the final exercise in terms of the number of upper-level concepts per segment. However, unlike other students, Student Six did not improve consistently as the coding for Exercise Six demonstrates.

### Student Eight

As shown in Table 13, Student Eight was the highest-knowledge student during Exercise Three generating the most upper-level concepts per segment (0.93). Student Eight generated a low but consistent number of Unrelated Concept segments. Student Eight generated the lowest number of Concept segments of all the students. Student Eight also generated most of the Concept+ segments in Exercise Five. High numbers of Concept+Client and Concept+Lawyer tags are generated for Exercises Five, Six, and Eight. Student Eight also generated the highest number of dual-coded segments.

Table 12.  
Student Eight

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Unrelated Concept	2	1	2	0
Concept	1	3	0	0
Concept+	1	13	6	1
Concept+Client	11	6	9	8
Concept+Lawyer	3	10	11	12
Total Upper-Level	15	30	26	21
<b>Upper-Level Concept per Segment</b>	<b>0.93</b>	<b>0.96</b>	<b>1.08</b>	<b>1.4</b>

Unrelated Concept. Student Eight generated a consistent but low number of Unrelated Concept segments for Exercises Three, Five, and Six. Most of these segments were verbose and

referred to physical distractions (e.g., coughing, looking at notes) that took place during the interview. The segment is representative of this writing:

Student Eight, Event Five

Event 1

Time: 0:00-0:48 (0:48)

[[STUDENT]] [[SEGMENT ONE]] I thought that this was an effective roadmap. I was able to lay out the three different t-funnels that I was going to address in the course of the interview. [[SEGMENT TWO]] I also feel like it is a bit choppy. This is likely because I really didn't get to hear the client give an overview of the problem and I had known before hand the 3 topics I was going to delve in to with the t-funnel method.

[[SEGMENT THREE]] (ps. Sorry for the loud coughing at times in the interview. I still have this cough and it is going on 2 and a half weeks. It seems a lot louder in the recording than in real life.)

\_Roadmap\_

\_Question Frame\_

\_Open Question\_

\_Transition Frame\_

\_Effective Performance\_

\_Needs Improvement\_

\_T-Funnel Frame\_

Concept. Student Eight generated the lowest number of Concept segments and all of them were contained Exercises Three and Five. The example below is representative of the Concept segments that Student Eight generated:

Student Eight, Exercise Three

Event 1

Time: 0:00-0:43 (0:43)

[[STUDENT]] [[SEGMENT ONE]] I think I was pretty complete in this narrative request,[[SEGMENT TWO]] but I said a few things that I would maybe change depending on the client. I said "have at it" to essentially turn the time over to the client. There is likely a more professional way of saying this.

\_Narrative Request\_

\_Effective Performance\_

\_Requires Improvement\_

This segment was coded as a Concept segment due to the term, "narrative request", which can be linked to the "\_Narrative Request\_" concept tag. This segment provides a simple

evaluation but provides no further detail or elaboration. In this speaking event, Student Eight generated multiple segments (i.e., Concept, Concept+Lawyer) that address both effective and ineffective aspects of performance. In the first segment, Student Eight describes the effective aspects of the overall narrative request. But in the subsequent segment, the student identifies features that can be improved.

Concept+. Student Eight generated the majority of his or her Concept+ segments in Exercise Five. Following Exercise Five, the frequency of Concept+ segments decreases and the frequency of upper-level concepts increases. The Concept+ segments generated by Student Eight show examples of multiple segments in the same speaking event, descriptions of legal interviewing theory, multiple concepts per segment, richly detailed elaborations, and descriptions of the structure of the interview. In the example below, two Concept+ segments are embedded in the same speaking event (emphasis added):

Student Eight, Exercise Five

Event 1

Time: 0:00-0:48 (0:48)

[[STUDENT]] [SEGMENT ONE]] I thought that this was an effective roadmap. I was able to lay out the three different t-funnels that I was going to address in the course of the interview. [SEGMENT TWO]] I also feel like it is a bit choppy. This is likely because I really didn't get to hear the client give an overview of the problem and I had known before hand the 3 topics I was going to delve in to with the t-funnel method.

[[SEGMENT THREE]] (ps. Sorry for the loud coughing at times in the interview. I still have this cough and it is going on 2 and a half weeks. It seems a lot louder in the recording than in real life.)

\_Roadmap\_

\_Question Frame\_

\_Open Question\_

\_Transition Frame\_

\_Effective Performance\_

\_Needs Improvement\_

\_T-Funnel Frame\_

The first two sentences were coded as Concept+ segment due to the term, "roadmap", that which can be linked to "\_Roadmap\_" concept tag. The evidence for concept elaboration can be found in the phrase, "able to lay out the three different t-funnels that I was going to address..." This comment describes the particular characteristics of the roadmap that describes another legal interviewing concept, "t-funnels". This segment describes aspects of performance that were effective. The second segment consists of the third and fourth sentences. Student Eight describes ineffective aspects of performance. This segment was coded as Concept+ due to the phrase, "it is", that refers to "roadmap" in the prior segment. The concept is elaborated with the word, "choppy", and the phrase, "I really didn't get to hear the client give an overview..."

Student Eight also generated Concept+ segments that describe legal interviewing theory such as the example below:

Student Eight, Exercise Five

Event 4

Time: 2:26-2:46 (0:19)

[[STUDENT]] I think I did a pretty good job summarizing the answer to the previous open question that I had asked about the falling out between her father and Farmer Garfield. I think this event would qualify as a signpost as well because of the purpose of the summary keeping us on track and making the client aware of what we are talking about.

\_Summary\_

\_Signpost\_

\_Effective Performance\_

This segment was coded as Concept+ due to the term, "summarizing", which can be linked to the "\_Summary\_" concept tag. Elaboration is provided in the phrases, "summarizing the answer to the previous open question I had asked" which provides specific details about content of the concept and about it's relation to an earlier concept (Open Question). The link to legal interviewing theory can be found in the phrase, "this even would quality as a signpost as

well because of the purpose of the summary keeping us on track...", which provides a definition consistent with that found in Appendix B.

Another example of the type of elaboration found in Concept+ segments is the description of multiple concepts:

Student Eight, Exercise Five

Event 21

Time: 14:56-15:27 (0:31)

[[STUDENT]] This is a good wrap up to one t-funnel and a good transition in to the next. I think that handled the transition well.

\_End T-Funnel\_

\_Signpost\_

\_Open Question\_

\_T-Funnel Frame\_

\_Effective Performance\_

\_Transition Frame\_

This segment was coded as concept due to the terms, "t-funnel" and "transition", linked to the "\_T-Funnel Frame\_" and "\_Transition Frame\_" concept tags. The presence of multiple concepts meets the standard for concept elaboration required to assign the Concept+ code to a segment.

Another example of a Concept+segment shows a richly detailed elaboration of concept:

Student Eight, Exercise Five

Time: 8:26-8:29 (0:03)

[[STUDENT]] I think this was a good use of the t-funnel method by interjecting a closed question. This is how the t-funnel process can be more flexible and not always just open questions first followed by all of the closed questions.

\_Summary\_

\_Closed Question\_

\_Effective Performance\_

This segment was coded as Concept+ due to the term, "t-funnel", which can be linked to the "\_T-Funnel Frame\_" concept tag. Concept elaboration is provided by the phrases, "by interjecting a closed question" and "this is how the t-funnel process can be more flexible and not

always just open questions first followed by all of the closed questions". This statement provided both information on how the concept was performed and information on how this performance differed from other notions of the concept.

A final example of a Concept+ segment generated by Student Eight demonstrates detail about the structure of the interview, relationship to other concepts, and particular interview details:

Student Eight, Exercise Five

Event 14

Time: 10:28-10:35 (0:07)

[[STUDENT]] I think that this can be described as an effective use of the t-funnel method. I am moving further down the funnel and am asking a closed question here to find out more specific detail about the use of the property.

\_Closed Question\_

\_Effective Performance\_

This segment was coded Concept+ due to the term, "t-funnel", which can be linked to the "\_T-Funnel Frame\_" concept tag. The sentence, "I am moving further down the funnel and am asking a closed question here to find out more specific detail about the use of the property", provides the elaboration of the concept. This sentence describes the structure, "moving further down the funnel", its relationship to other concepts, "am asking a closed question", and the particular details of the interview, "to find out more specific detail about the use of the property".

Concept+Client. The number of Concept+Client segments that Student Eight generated was highest in Exercise Three but remained steady across all exercises. Student Eight generated the highest frequency of Concept+Client segments of all the students. Student Eight also generated Concept+Client segments with multiple segments per event and multiple concepts per segment. The segment below shows an example of a speaking event with multiple

Concept+Client segments (emphasis added):

Student Eight, Exercise Five

## Event 9

Time: 5:41-6:26 (0:44)

[[STUDENT]] [[SEGMENT ONE]] It was definitely effective to ask here if there was anything that the client had thought of that she wanted to add to the topic before moving on to the next. [[SEGMENT TWO]] I don't know if maybe my short summaries are more of an annoyance to the client. Maybe that is something that is less effective in this event. Maybe the client is simply thinking "I just told you that!" [[SEGMENT THREE]] I do think that in this summary I added some empathy and a client always wants to feel like the attorney is really listening and does care about his/her situation.

\_Empathy\_

\_Summary\_

\_Anything Else Question\_

\_Open Question\_

\_Signpost\_

\_Effective Performance\_

\_Needs Improvement\_

The first segment was coded as Concept+Client due to the phrase, "ask here if there was anything", that is consistent with the "\_Anything Else Question\_" concept tag definition in Appendix B. Evidence of impact on the client can be found in the phrase, "ask here if there was anything that the client had thought of that she wanted to add". The second segment was coded as Concept+Client due to the term, "summaries", which can be linked to the "\_Summary\_" concept tag. Evidence of client impact can be found in the phrases, "more of an annoyance to the client" and "maybe the client is simply thinking 'I just told you that!'" which describe possible client feelings and thoughts. The third segment was coded as Concept+Client due to the term, "empathy", which can be linked to the "\_Empathy\_" concept tag. Evidence of client impact can be found in the phrase "a client always wants to feel like the attorney is really listening and does care about his/her situation". These three segments provide rich information about possible effects of the interview on the client.

Student Eight also provided examples of multiple concepts within the same segment:

Student Eight, Exercise Eight

Event 3

Time: 9:06-9:28 (0:22)

[[STUDENT]] Grouping of her objectives: I talked quite extensively with Megan about summarizing and grouping things together over the past few exercises. This can show the client that you are really listening because you group the things together and don't just simply repeat back what they told you.

\_Summary\_

This segment was coded as Concept+Client due to the terms, "objectives" and "summarizing", which can be linked to the "\_Begin PPI Objectives\_" and "\_Summary\_" concept tags. The impact on the client is evident in the sentence, "This can show the client that you are really listening because you group the things together and don't just simply repeat back what they told you".

Concept+Lawyer. After generating three Concept+Lawyer statements in Exercise Three, Student Eight generated a consistently higher number of Concept+Lawyer segments for exercises Five, Six, and Eight. The example below is representative of the early

Concept+Lawyer segments generated by Student Eight:

Student Eight, Exercise Three

Event 1

Time: 0:00-0:43 (0:43)

[[STUDENT]] [[SEGMENT ONE]] I think I was pretty complete in this narrative request, [[SEGMENT TWO]] but I said a few things that I would maybe change depending on the client. I said "have at it" to essentially turn the time over to the client. There is likely a more professional way of saying this.

\_Narrative Request\_

\_Effective Performance\_

\_Requires Improvement\_

This segment was coded as Concept+Lawyer due to reference, "said a few things", that refers to the "\_Narrative Request\_" concept in the prior segment. Evidence of alternate plans can be found in the phrases: "I would maybe change" and "there is likely a more professional way of

saying this". This segment contains language of uncertainty in contrast to later Concept+Lawyer segments generated by Student Eight.

In Exercise Six, Student Eight developed richer descriptions of alternate approaches to performance:

Student Eight, Exercise Six

Event 2

Time: 1:48-2:30 (0:41)

[[STUDENT]] [[SEGMENT ONE]] I think I did some good things here, but there are for sure many things that could use improvement. I think that I did a decent job of summarizing the overview and transitioning into the next step in the PPI. [[SEGMENT TWO]] The thing that I marked this event needs improvement is the fact that I said "and maybe any actions you have taken." I think this type of language goes to what I discussed last week with Megan in that I need to be a little more formal so to speak in my roadmaps. This is why at the end of this exercise I practiced this PPI roadmap again.

\_Summary\_

\_Requires Improvement\_

\_Effective Performance\_

\_PPI Objectives Frame\_

\_Transition Frame\_

\_Open Question\_

This segment was coded as Concept+Lawyer due to the terms, "roadmap" and "PPI roadmaps" which both refer to the "\_Roadmap\_" concept (not applied to this speaking event). Evidence of future plans of action can be found in the phrase, "I need to be a little more formal". References are also made to other learning experiences outside of the exercise and at other points in the exercise.

Dual-Coded Segments. Student Eight generated the highest frequency of dual-coded segments of any of the students. The number of these segments increased for each exercise. In the example from Exercise Three, Student Eight embeds both writing about impact on the client and speculation about an approach to future performance:

Student Eight, Exercise Three

Event 5

Time: 2:43-2:47 (0:03)

[[STUDENT]] [[SEGMENT ONE]] Once again I nod and say "OK" to encourage the client,[[SEGMENT TWO]] but there may be something else I could say. I don't really know what that would be as I am trying to keep my talking to a minimum at this point as to not interrupt the client.

\_Encouraging-the-Narrative\_

\_Effective Performance\_

\_Requires Improvement\_

This segment was coded as Concept+Lawyer due to the phrase, "...there may be something else I could say", which can be linked to the "\_Encouraging the Narrative\_" concept in the prior segment. Impact on the client is described in the phrase, "...as not to interrupt the client". An alternate plan of action is described in the phrases, "but there may be something else I could say" and "try to keep talking to a minimum. The description of Student Eight's approach to future performance contains uncertainty, consistent with other early examples of Concept+Lawyer codes for Student Eight.

A later example from Exercise Five shows a dual-coded segment with multiple legal interviewing concepts:

Student Eight, Exercise Five

Event 8

Time: 4:57-5:10 (0:13)

[[STUDENT]] [[SEGMENT ONE]] I think this was an effective use of a short summary again. [[SEGMENT TWO]] I think it could also be argued that each of these small or short summaries could be acting as focus frames by continually keeping me and the client focused on the issue at hand.

\_Closed Question\_

\_Summary\_

\_Transition Frame\_

\_Effective Performance\_

\_Focus Frame\_

This segment was coded as Concept+Client due to the terms, "summaries" and "focus frames", linked to "\_Summary\_" and "\_Focus Frame\_" concept tags. The phrase, "keeping me

and the client focused on the issue at hand", provides information about impact on the client.

Although the same phrase does not contain evidence of a future plan it does contain evidence of self-regulation on the part of the student.

A final example of a dual-coded segment show rich details of both the impact on the client and an alternate plan for action:

Student Eight, Exercise Eight

Event 7

Time: 18:08-18:55 (0:47)

[[STUDENT]] Timeline: I felt like this was a good problem to ask for a timeline and, like Megan noted, as soon as I said that I didn't need specific dates I knew that was wrong. I should have said that I wanted as specific of dates as possible and if she didn't have some of them then that would be fine. Most likely a client is going to have thought of the dates ahead of our meeting and might even have them written down Megan said.

\_Begin Time Line\_

\_Effective Performance\_

In this segment, the term "timeline" can be linked to the "\_Begin Time Line\_" concept tag. A detailed description of possible impact on the client is evident in the sentence, "Most likely a client is going to have thought of the dates ahead of our meeting and might even have them written down". A detailed description of an alternate plan for action is evident in the phrase, "I should have said that I wanted as specific of dates as possible and if she didn't have some of them then that would be fine".

### Cross-Case Analysis

A comparison of the performance of all the students across all exercises and covering all concept levels reveals identifiable trends. Table 14 shows the number of Unrelated Concepts per segment. The lowest-knowledge student (Student Six) began with the highest ratio (0.8).

However, the largest decrease in the frequency of these segments also occurred with the same

student. Another trend that can be identified across all exercises is the decrease in the frequency of Unrelated Concept segments when comparing the first and last exercises.

Table 13.  
Unrelated Concepts per Segment (Level One)

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Student 2	0.083	0	0	0
Student 4	0.33	0.1	0	0.2
Student 6	0.8	0.06	0.2	0
Student 8	0.13	0.03	0.08	0

Another trend in the data was the increase and subsequent decrease of Concepts per segment (Table 15). Students Four, Six, and Eight all increased the number of Concepts per segment before finally decreasing in Exercise Eight. Student Two began with a ratio of 0.33 and ended with a ratio of 0.13.

Table 14.  
Concepts per Segment (Level Two)

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Student 2	0.33	0	0	0.13
Student 4	0.17	0.1	0.22	0.2
Student 6	0	0.24	0.4	0.13
Student 8	0.06	0.1	0	0

Table 16 shows that all students increased the number of upper-level concepts per segment. Student Six had the lowest ratio in Exercise Three and demonstrated a greater increase than two other students including the highest knowledge student (Student Eight). Another trend that occurred for each student is the increase in the number of Concept+ segments. For every student, these segments were most frequent in the second exercise (Exercise Five) and then decreased during both of the remaining exercises.

Table 15.  
Upper-Level Concepts per Segment (Level Three)

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Student 2	0.58	1	0.88	1.6
Student 4	0.5	0.85	0.95	1
Student 6	0.2	0.76	0.4	1.12
Student 8	0.93	0.96	1.08	1.4

A contrasting trend can be seen for both the Concept+Client and Concept+Lawyer codes. The overall trend for all students was for these segments to increase after Exercise Three; that continued through Exercise Eight. One exception to this was Student Eight's relatively high frequency (11) of Concept+Client codes in Exercise Three.

During the process of coding it became clear that some segments contained information for that showed evidence of plans for alternate future actions and self-regulation on the part of the lawyer and that demonstrated evidence the described evidence of possible impact on client engagement, focus, orientation, and guidance. These segments were coded with with Concept+Client and Concept+Lawyer codes. In Table 19, the number of these dual-coded segments shows some signs of increase for every student when comparing Exercise Three and Eight. When this information is combined with the increase in the number of upper-level concepts per segment it suggests that writing that contains explicit stated information about the client and about how to improve in future performance is an indicator of improvement.

#### Dual-Coded Segments

#### Elaboration Patterns for Concept+ Segments

In addition to the quantitative measures described above, verbal patterns in the upper-level concepts (i.e., Concept+, Concept+Client, Concept+Lawyer) emerged during the coding

process. Because Concept segments were comprised of simple, evaluative language, no verbal patterns were identified.

Table 16.  
Frequency of Dual-Coded Segments

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Student 2	0	0	0	10
Student 4	1	0	5	4
Student 6	0	1	0	2
Student 8	2	3	4	6

As described earlier, Concept+ segments consist of self-evaluation writing that addresses at least once legal interviewing concept, is more detailed and elaborate than simple evaluative statements that are found in Concept segments, and that contain no information about the impact on the client or about alternate, future plans or attempts to self-regulate legal interviewing behavior (Appendix A. Coding Definitions). One pattern that was seen across different exercises occurred when the segment met the minimal requirements for a Concept+ code:

Student Four, Exercise Five

Time: 5:03-5:09 (0:05)

[[STUDENT]] Less wordy than the last one, and a bit more clear.

\_Closed Question\_

\_Effective Performance\_

By contrast, other Concept+ segments provided rich details of the elaboration. These could be described in various ways. One type of elaboration describes how the legal interviewing concept relates to the interview structure. In the example below, the term, "question", is linked to the "\_Closed Question\_" concept tag. The phrase, "asked at the appropriate time in the T-frame", describes when the question was asked in relation to other parts of the interview.

Student Four, Exercise Five

Time: 5:18-5:30 (0:11)

[[STUDENT]] I think it was a pretty straightforward question, asked at the appropriate time in the T-frame.

\_Closed Question\_  
\_Effective Performance\_

Another elaboration pattern that was identified in Concept+ segments is the definition of concept or description of interviewing theory that is often encountered. In the example below, the term, "transition", can be linked to the "\_Transition Frame\_" concept tag:

Student Two, Exercise Five

Time: 6:06-6:17 (0:11)

[[STUDENT]] An "anything else" question in conjunction with moving on to next topic makes an effective transition, I think.

\_Transition Frame\_  
\_Effective Performance\_  
\_End T-Funnel\_

The concept is elaborated through a description of the constituent parts of an "effective" Transition Frame: "An 'anything else' question in conjunction with moving on to next topic makes an effective transition, I think". This is consistent with the definition of a Transition Frame: Frames signal the end of a topic or active and introduce the next topic, question or activity.

Another example provides a brief description of legal interviewing theory. In the example below, the term, "question", can be linked to the "\_Closed Question\_" concept tag:

Student Six, Exercise Five

Event 16

Time: 14:51-14:56 (0:04)

[[STUDENT]] Didn't provide a frame for this question, and this question is more appropriate for the other topic yet to be discussed (i.e., Larry's occupancy).

\_Closed Question\_  
\_Needs Improvement\_

Elaboration is evident in the phrase, "didn't provide a frame for this question". This phrase describes one of the principles of the class, that prefacing statements should be made prior to changes in the interview from one topic to another.

Another pattern of elaboration that was identified in Concept+ segments was the description of particular interview details that related to the interview under evaluation. The example below contained a phrase, "concise or well worded", which can be linked to either the "\_Open Question\_" or "\_T-Funnel Frame\_" concept tags:

Student Six, Exercise Five

Event 1

Time: 0:07-1:12 (1:04)

[[STUDENT]] Not very concise or well worded. Also confused the client's last name with the last name of one of the client's problem creators.

\_T-Funnel Frame\_

\_Open Question\_

\_Roadmap\_

\_Needs Improvement\_

In this example, the elaboration is evident in the sentence, "Also confused the client's last name with the last name of one of the client's problem creators." This statement does not describe the structure of the interview, provide a definition of the concept, or describe some detail of legal interviewing theory. Instead the sentence identifies a particular problem with interview performance.

Another pattern of elaboration that was identified in Concept+ segments was the description of multiple segments per speaking event. In the example below, the student uses a term, "roadmap", that can be linked to the "\_Roadmap\_" concept tag. In the first segment, effective aspects of the performance are described in detail, "I was able to lay out the three different t-funnels that I was going to address in the course of the interview". In the second segment, ineffective aspects of the performance are described, "I really didn't get to hear the client an overview [sic] of the problem...".

Student Eight, Exercise Five

Event 1

Time: 0:00-0:48 (0:48)

[[STUDENT]] [[SEGMENT ONE]] I thought that this was an effective roadmap. I was able to lay out the three different t-funnels that I was going to address in the course of the interview. [[SEGMENT TWO]] I also feel like it is a bit choppy. This is likely because I really didn't get to hear the client give an overview of the problem and I had known before hand the 3 topics I was going to delve in to with the t-funnel method.

[[SEGMENT THREE]] (ps. Sorry for the loud coughing at times in the interview. I still have this cough and it is going on 2 and a half weeks. It seems a lot louder in the recording than in real life.)

\_Roadmap\_

\_Question Frame\_

\_Open Question\_

\_Transition Frame\_

\_Effective Performance\_

\_Needs Improvement\_

\_T-Funnel Frame\_

A final elaboration pattern related to Concept+ segments that was identified during the coding process was the description of multiple concepts per segment:

Student Eight, Exercise Five

Event 21

Time: 14:56-15:27 (0:31)

[[STUDENT]] This is a good wrap up to one t-funnel and a good transition in to the next. I think that handled the transition well.

\_End T-Funnel\_

\_Signpost\_

\_Open Question\_

\_T-Funnel Frame\_

\_Effective Performance\_

\_Transition Frame\_

In this segment, the student uses two terms, "t-funnel" and "transition", which can be linked to the "\_End T-Funnel\_", "T-Funnel Frame", and "\_Transition Frame\_" concept tags.

#### Elaboration Patterns for Concept+Client Segments

Verbal patterns also emerged during the coding of Concept+Client segments. As defined earlier, these segments contain one or more concepts as described in and also contain sentences or phrases that show evidence of possible impact of concept on client engagement, focus,

orientation, and guidance (Appendix A. Coding Definitions). The client must be mentioned explicitly in these segments. All of the verbal patterns mentioned previously such as minimal structure, how the legal interviewing concept relates to the interview structure, definition of concept or description of interviewing theory, description of legal interviewing theory, particular interview details, and multiple concepts per segment, and multiple segments per speaking event occurred in Concept+Client segments. However, additional client-specific patterns also emerged.

One type of pattern that was found across different Concept+Client segments was the description of techniques or approaches to interviewing clients.

Student Four, Exercise Five

Event 22

Time: 15:23-15:29 (0:06)

[[STUDENT]] I'm glad that I repeated the anything-else question because it's important to keep checking until they can't think of anything else.

\_Anything Else Question\_

\_Effective Performance\_

In this example, the student used a term, "anything-else question", which can be linked to the "\_Anything Else Question\_" concept tag. The student describes the client generically in terms of a guideline: "it's important to keep checking until they [client] can't think of anything else".

Another verbal pattern that emerged during the coding of Concept+Client segments consisted of descriptions of client thoughts and feelings. In the example below, the student used a phrase, "asking about it again", that is consistent with the "\_Open Question\_" concept tag

definition (Appendix B. Lawyer Interviewing Skills):

Student Four, Exercise Six

Event 14

Time: 18:42-18:55 (0:12)

[[STUDENT]] Since she already told me so much about this issue, I think she might have felt like I was digging too much or not listening before since I was asking about it

again. I could have framed this question better.

\_Open Question\_

\_Requires Improvement\_

The effect on the client is described in the phrase, "I think she might have felt like I was digging too much...", which describes possible feelings a client may have had.

#### Elaboration Patterns for Concept+Lawyer Segments

Verbal patterns were also identified in Concept+Lawyer segments. These segments show evidence of effort to change or self-regulate lawyer's role during the interview process. Such segments may contain information about alternate, future approaches (Appendix A. Coding Definitions). All of the verbal patterns mentioned in reference to Concept+ segments such as minimal structure, how the legal interviewing concept relates to the interview structure, definition of concept or description of interviewing theory, description of legal interviewing theory, particular interview details, and multiple concepts per segment, and multiple segments per speaking event also occurred in Concept+Lawyer segments. However, additional patterns emerged specific to the lawyer's role during the interview.

One verbal pattern that emerged during coding were a range of statements of certainty and uncertainty. In the example below, the student uses the term, "question", which can be linked to the "\_Closed Question\_" concept tag:

Student Two, Exercise Eight

Event 14

Time: 37:27-37:49 (0:21)

[[STUDENT]] Megan mentioned that this might have been a good place for a timeline request. I agree that my question should have been broader, but I don't know if a timeline would be super effective, especially since in her initial narrative statement, she had given me specific dates and times for each of these events--I was more interested in specifics. A timeline request might have jarred her memory, though, encouraging her to include those details, so I can see how it might have been effective.

\_Requires Improvement\_

\_Begin T-Funnel\_

\_Closed Question\_

The sentence, "A timeline request might have jarred her memory, though, encouraging her to include those details, so I can see how it might have been effective", describes a future, alternate plan. It also expresses uncertainty about whether or not this would be effective or not.

The example below shows more certainty on the part of the student:

Student Eight, Exercise Eight

Event 5

Time: 13:25-13:41 (0:15)

[[STUDENT]] Transition to actions: Here I failed to ask an anything else question. I think this was a problem I was having with the process itself. I kind of felt like Emily was getting annoyed by me asking if there was anything else earlier in the video. I think it was, once again, because she knew the process and felt like we had covered everything. I should not have let this throw me though and I should have stuck to what I knew to be right.

\_Requires Improvement\_

\_Begin PPI - Actions\_

In the example above, the student used a term, "actions", which can be linked to the "\_Begin PPI - Actions\_" concept tag. The sentence, "I should not have let this throw me though and I should have stuck to what I knew to be right", shows evidence of a self-regulation. It also shows more certainty about how a future, alternate approach ought to be performed.

Another pattern that emerged during the coding of Concept+Lawyer segments was rehearsed interview text. In the example below, the student uses a term, "client objectives", which can be linked to the "\_PPI Objectives Frame\_" concept tag:

Student Four, Exercise Six

Event 2

Time: 2:45-3:11 (0:25)

[[STUDENT]] Even though I thought it was good to introduce client objectives this way, I think I should have been more clear in I want, like "if this problem could be solved any way, how would you choose to solve it?"

\_Requires Improvement\_

\_Effective Performance\_

In this segment, the student includes text enclosed in quotation marks, "I think I should have been more clear in I want, like 'if this problem could be solved any way, how would you choose to solve it?'" This statement provides an example of a future, alternate plan of action. It also provides a specific, rehearsed question that could be used in a future interview performance.

### Student Knowledge Levels and Knowledge Change

Question three asked: Do law students of different knowledge levels generate different types of knowledge representations of legal interviewing skills? In what ways do their patterns of knowledge representations similar or different across students of different skill levels?

Exercise Three provided the baseline to assess legal interviewing knowledge by students. After coding Exercise Three for each of the ten students in the Legal Interviewing and Counseling course, all students the highest (Student Eight), lowest (Student Six), and two mid-range (Student Two, Student Four) students were identified. Some patterns were similar across all cases. As Tables 10-13 show, all cases generated all types of knowledge representations in the form of Concept, Concept+, Concept+Client, and Concept+Lawyer segments. For example, all students generated their highest frequency of Concept+ segments in Exercise Five. Also, Student Two, Six, and Eight generated the most Concept+Lawyer statements in the final exercise (Exercise Eight). No students generated the most upper-level concepts in the first exercise (Exercise Three).

However, the cases also differed in terms of the verbal patterns that emerged. For example, the verbal patterns associated with the Concept+Client segments varied between students. The highest-knowledge student (Student Eight) began providing descriptions of client thoughts and feelings during the first exercise (Exercise Three). The two mid-range students

(Students Two and Four) both began providing these descriptions in Exercise Six. The lowest-knowledge student never provided such descriptions.

In Concept+Lawyer segments, neither the lowest- (Student Six) nor the highest-knowledge student (Student Eight) generated rehearsed interview text. However, both mid-range students produced such self-evaluation writing. The student who exhibited the greatest increase in the number of upper-level concepts per segment (0.58 to 1.6), generated the highest number of segments with rehearsed interview text. Another difference that emerged in the Concept+Lawyer segments were the number of statements with uncertainty. The highest-knowledge student (Student Eight) generated the most of these statements and he or she did so from the first exercise (Exercise Three). By contrast, the lowest-knowledge student (Student Six) generated the least number of statements with uncertainty and only did so in the final exercise (Exercise Eight).

Another pattern that varied across all students was the density of segments for a given piece of self-evaluation writing. Table 20 provides the frequency for occasions when multiple concept segments per speaking event were identified. There is some correspondence between these frequencies and the different levels of legal interviewing knowledge. The highest-knowledge student (Student Eight) generated such segments beginning with the first event of the first exercise (Exercise Three). The two mid-range students (Student Four, Student Two) began producing multiple concept segments per speaking event in Exercises Six and Eight. The student with the lowest legal interviewing knowledge at the start of the exercises (Student Six) never generated multiple concept segments per speaking event. Another, similar measure that emerged, the frequency of dual-coded segments (Table 20), also appears to reflect the initial ranking from highest- to lowest-knowledge student. In addition, it suggests improvement across successive exercises. The highest-knowledge student (Student Eight) began with the highest frequency of

such segments and attained the highest, overall frequency across all exercises. The lowest-knowledge student (Student Six) started with no dual-coded segments and ended with the lowest frequency in Exercise Eight. Both students increased the frequency of such segments across all exercises.

Table 17.  
Frequency of Multiple Concept Segments in Single Speaking Event

	Exercise 3	Exercise 5	Exercise 6	Exercise 8
Student 2	0	0	0	1
Student 4	0	0	8	0
Student 6	0	0	0	0
Student 8	5	10	8	0

## CHAPTER 5. DISCUSSION AND CONCLUSION

Professional education is concerned with the development of practical skills that require the opportunity to engage in training scenarios that combine action with reflection upon that action. However, the process and content of reflections are ambiguously defined in the literature. One approach to clarifying the content of reflections is to draw from the literature of expertise, especially its distinction between the knowledge representations experts which are more coherent, organized, and extensive than those of novices. One way to help guide the reflections of novices is to utilize emerging video annotation and analysis tools which direct learner efforts towards certain moments or aspects of performance.

The purposes for this study were: 1) to develop a coding framework and guidelines to represent different levels of self-regulating knowledge during guided self-analysis of professional skill performance in legal interviewing, 2) to apply the knowledge representation framework and guidelines in analyzing, identifying and describing patterns of student self-analysis skills and progress, and 3) to systematically examine the extent to which novices (students) develop knowledge of an ill-structured domain (legal interviewing) in a legal interviewing and counseling course.

This study employed Chi's (1997) verbal analysis approach, which combines qualitative and quantitative methods. This methodology is used to quantify the subjective and qualitative coding of the contents of verbal utterances. In this study, the verbal utterances consisted of : 1) student-applied evaluation tags applied to clips of video recordings called speaking events, 2) student-applied legal interviewing concept tags applied to speaking events, and 3) student-generated self-evaluation text attached to speaking events. The goal of this method is to capture representations of knowledge held by learners and to how that knowledge changes.

## Discussion

### Ill-Structured Domains, Knowledge Representations, and Reflection

Most expertise and deliberate practice research has been conducted in domains like chess, music, and sports where practice leading to improvement can be easily recognized and observed (Ericsson, 2006). These domains can be considered well-structured in the sense that practice and improvement can be defined and assessed against a clear standard. The existence of clear, generalizable criteria for performance evaluation make it possible for these domains be acquired under structured conditions. In this way, these domains can be evaluated more readily. However, other domains, particularly professional domains dealing with human behavior, deal with problems that are uncertain and ambiguous (Dunn & Shriner, 1999). Because of this uncertainty it is difficult to structure practice and define improvement in these ill-structured domains (Chi, 2006). Professional domains like teaching and legal interviewing are classic ill-structured knowledge domains in that clear standards for performance are difficult to describe (Dunn & Shriner, 1999).

However, as Ericsson and Charness (1994) note, although it is challenging to apply the deliberate practice framework to professional domains, there is no reason to believe that the changes in the structure of human performance and skill are restricted to well-structured domains. Similar changes should be expected in everyday skills like thinking, comprehension, and problem solving. However, people acquire everyday skills, including those used in professional settings, under less structured conditions that do not have the strict and generalizable criteria needed for evaluation. What makes everyday skills like thinking, comprehension, and problem solving so difficult to study is that they occur covertly and are not directly observable. This is also true of skills involved in ill-structured, professional domains

(e.g., planning, evaluating, analyzing) and the knowledge that supports performance of these skills (Ericsson & Smith, 1991). For these reasons, measurement of the knowledge required to support performance in these domains is a methodological challenge.

Reflection has emerged as one of the fundamental concepts both in educational theory and in the development of professional practice (Moon, 1999; Van, 1991). Reflective judgment is inherent in the reconciliation of uncertainty that is critical to ill-structured problem solving (Jonassen, 1997). Reflection is the process in which learners manage "indeterminate zones of practice" (Schön, 1987, p. 11) that are essential to any professional domain. Indeed, reflection in some sense is just another word for thinking (Van, 1991). However, as Dewey (1910) and subsequent scholars (Moon, 1999; Zeichner & Tabachnick, 1991) have observed, reflection is difficult to define without ambiguity. Because reflection is so essential to conceptions of professional domains, the ambiguity of this concept presents an additional theoretical challenge for researchers interested in development of ill-structured professional domains.

This study attempted to address the methodological problem inherent in measuring knowledge in ill-structured domains through the use of verbal analysis. As stated earlier, evidence of thinking, comprehension, and problem solving can be obtained indirectly through spoken or written language (Chi, 2006). One of the markers of expertise in professions is the use of names and concepts that represent knowledge in these domains (Ericsson & Charness, 1994). These knowledge representations are explicated in training manuals and books with differing levels of mastery of the vocabulary that correspond to different levels of professional attainment. The relationship between the language of a domain and covert cognitive processes provides an opportunity for those who might wish to identify deliberate practice activities in ill-structured, professional domains and evaluate the effect of engaging in deliberate practice.

In this study, learners were presented with a body of terms and concepts that become more sophisticated as the course progressed. The researcher developed a coding scheme (Appendix A), that builds upon these terms and concepts but that also learner knowledge representations of effective and ineffective performances, that reflect increasingly elaborate details of their performance, and that identify proposals for alternate courses of action. This coding scheme was reliably applied by two coders with strong inter-rater agreement: Cohen's (1960) Kappa ( $K = 0.8769$ ).

Increasing elaboration was represented by the Unrelated Concept, Concept, and Upper-Level Concept codes: Unrelated Concept segments represented the absence of lawyer interviewing skill concepts, Concept segments represented the presence of such concepts along with simple, evaluative language, and Upper-Level concepts represented detail about legal interviewing theory, the particular details of the performance, the effect on the client or information about an alternate, future plan of action for the student. Very little research on the application of verbal analysis in combination with video annotation has been conducted within ill-structured professional domains (Stocker, 2008).

The results of this study suggest that verbal analysis may be appropriate for future consideration as a means of analyzing the varied types of verbal data that can be obtained in such studies.

One unexpected finding during the study was the need to address self-evaluation text that was not consistent with legal interviewing concepts (Unrelated Concepts) but that was present in the data. While this data was clearly not showing evidence of the target knowledge it was present across each case. However, in light of the limited body of research utilizing verbal analysis

within an ill-structured, professional domain, it is difficult to say what else this verbal data might signify.

Reflection is a difficult concept to clarify (Moon, 1999). This study cannot resolve that problem. But the study contributions begin to address the theoretical problem by clarifying the products of reflective activity. Calandra et al. (2007) called the products of an individual's reflection such as writing or edited video, "reflective artifacts" (p. 77). In this study, such artifacts consisted of learner-generated video segments and evaluative, conceptual, and descriptive annotations. Learners used specific prompts and scaffolds that facilitated self-observation. This "abstracted replay" (p. 17) facilitated the identification of the salient features of the performance such as the types of skills and structural concepts involved, whether or not they were effective or ineffective, and how a performance might be improved (Collins et al., 1989). The conditions in which learners reflected and generated these artifacts are very similar to those required for self-explanation. Verbal analysis has been used successfully in many well-structured domains to identify the knowledge representations that result from self-explanation. This study suggests that reflection, and in particular, Schön's (1987) rich and acute perceptions of reflection in ill-structured professional domains, can be grounded through the use of Chi's (2000) verbal analysis approach (Blasi, 1995).

#### Evaluation of Professional Progress in Ill-Structured Domains

It is difficult to evaluate improvement in ill-structured professional domains. This would require researchers to identify the knowledge supporting performance and to discern changes in that knowledge which suggest greater skill and expertise. This presents a practical challenge for those who would design instruction and training programs for ill-structured professional domains in areas like education, medicine, and law.

This study has demonstrated that Chi's (1997) verbal analysis method may be useful to identify the knowledge that supports performance in ill-structured professional domains. However, given the role of knowledge in support of skill and expertise, greater development of skill and expertise presumes some change in that knowledge. Chi (2006) explained that experts not only have more knowledge but that this knowledge can be revealed through representations that are more organized, reflect greater depth, and that are related to one another in meaningful ways. Consequently, as learners become more proficient in an ill-structured professional domain we should expect their knowledge representations to become more organized, reflect greater depth, and be more meaningfully interrelated. The use of names and concepts that represent knowledge in these professional domains corresponds with increasing mastery in these areas. We can expect that a more skilled practitioner in any domain would utilize a vocabulary that corresponds to a higher level of professional attainment.

This study addressed the practical challenge of identifying progress in an ill-structured professional domain by using verbal analysis to identify knowledge representations and to discern changes over time. Overall results show that the frequency of the lowest level of legal interviewing knowledge (Unrelated Concepts) decreased for all students, that the frequency of simple description of legal interviewing concepts (Concepts) increased and then later declined, and that the frequency of segments with elaborate concepts (Concept+, Concept+Client, Concept+Lawyer) increased for all students. Along with the increase in frequencies of upper-level concepts were verbal patterns not present in lower-level concepts: how the legal interviewing concept relates to the interview structure, definition of concept or description of interviewing theory, description of legal interviewing theory, particular interview details, multiple concepts per segment, multiple segments per speaking event, description of techniques

or approaches to interviewing clients, and descriptions of client thoughts and feelings. These patterns emerged during the study and did not provide the basis for codes. However, the increase in the frequency of upper-level codes in combination with the more elaborate details of verbal pattern suggest that students developed deeper and more extensive knowledge of legal interviewing theory at the conclusion of the four exercises.

As stated in the literature review, the introduction of structure in the form of reflection prompts is associated with better reflection outcomes. These outcomes consisted of a greater volume of written reflections and written reflections of greater depth or specificity (Byra, 1996; McGovern, 1985). The present study appears to be consistent with these earlier findings: the interviewing and counseling course combined a rigorous, iterative self-evaluation process, a detailed conceptual framework for legal interviewing and a video annotation environment. Multimedia environments provide natural support for knowledge construction and monitoring during the self-evaluation process (Roy & Chi, 2005). These features may have supported the increase in detailed reflections that became more specific over the course of the four exercises studied.

As stated earlier, all students, regardless of initial knowledge level, increased the ratio of sophisticated, upper-level concepts (Concept+, Concept+Client, Concept+Lawyer) in their writing. However, some verbal patterns suggest differences. For example, the generation of multiple concept segments per speaking event began immediately for the highest-knowledge student (Student Eight), began later for the two mid-range students (Student Four, Student Two), and never began for the lowest-knowledge student. Similar results also occurred for dual-coded segments: higher-knowledge students showed evidence of this conceptually dense writing earlier and more often than lower-knowledge students.

Two unexpected findings related to the second research question were the occurrence of a range of statements of certainty and uncertainty and the presence of rehearsed interview text. Neither of these verbal patterns were subjected to the same rigor that was required to code segments. However, these verbal patterns may be helpful in future studies: the highest frequency of Concept+Lawyer statements with uncertainty occurred in the highest-knowledge student's (Student Eight) first exercise (Exercise Three). By contrast, the lowest-knowledge student (Student Six) generated the least number of similar statements and only did so in the final exercise (Exercise Eight). However, uncertainty statements may indicate a conflict and provide an occasion for analysis and reflection (Chi, 2000; Zeichner & Liston, 1996). Another unexpected finding was the presence of text that appeared to "rehearse" future lawyer questions and statements. In Concept+Lawyer segments, neither the lowest- (Student Six) nor the highest-knowledge student (Student Eight) generated rehearsed interview text. However, both mid-range students produced such self-evaluation writing. The student who exhibited the greatest increase in the number of upper-level concepts per segment (0.58 to 1.6), generated the highest number of segments with rehearsed interview text.

The results of the verbal analysis approach used in this study suggest that it is possible to evaluate the progress of knowledge attainment in an ill-structured professional domain. The domain of interest for this study was legal interviewing. The coding scheme used in the study utilized an existing vocabulary of legal interviewing skill and structure concepts that learners used to annotate and describe their performance. With this as a basis, the coding scheme also accounted for learner evaluations of whether or not a particular speaking event was effective or not, if it showed evidence of conceptual elaboration, if it had impact on the client, and if it showed evidence of alternate plans for future speaking events. However, the approach taken

towards the evaluation of progress in legal interviewing should also be applicable to other ill-structured professional domains. As described in the literature review, video has been used to support professional reflection and self-evaluation in other professional domains that involve oral communication such as teaching, nursing, and counseling. Because of the similarities in these professional domains, with their ambiguous standards of performance and goals, their emphasis on oral communication, and the existence of a professional vocabulary to describe domain-specific concepts, the verbal analysis approach used in this study suggests that it is possible to evaluate professional progress in an ill-structured domain.

### Summary of Contributions

In summary, this study made several contributions to the existing literature. First, this study made a theoretical contribution by demonstrating an approach that identifies the contents of reflective artifacts. In this study, these artifacts were composed of evaluative, categorical, and descriptive annotations to video. The analysis of these artifacts provides a means of revealing the covert objects of the reflection process itself. Second, this study made a methodological contribution to the evaluation of progress in ill-structured professional domains. As discussed earlier, the defining characteristics of ill-structured professional domains are their lack of clear performance standards and goals. Moreover, much of the professional activities in these domains involves planning, evaluating, and other activities that are covert and therefore difficult to observe directly. However, the relationship between the language of a domain and covert cognitive processes provides an opportunity to evaluate the knowledge and progress of a learner in a domain. The coding scheme that was developed for this study was applied with strong reliability ( $K = 0.8769$ ) could be used as the basis for coding schemes in other ill-structured professional domains. Finally, this study also made practical contributions. Beyond having

methodological value, the coding scheme that was developed for this study suggests an approach that could be used to evaluate the progress of learners in other ill-structured professional domains like education, nursing, and counseling.

### Limitations

Certain limitations were inherent in the design of this study. First, despite the multiple cases that were analyzed in this study, the small sample size makes it difficult to generalize the results of this study. However, multiple case studies enable the researcher to explore the differences within and between cases. In this study, cases were intentionally chosen so that similar or contrasting results could be shown across different cases based on theory. While the results of this study do have implications for other domains, further research needs to be conducted to verify the applicability of the methods and findings. Second, the design of the study looked at knowledge representations generated during the process of self-evaluation; the literature explains that such knowledge representations should correspond to increasing proficiency within a certain domain (e.g., legal interviewing). However, this study did not examine the performance of legal interviewing by each case. Future studies could evaluate the proficiency of cases in legal interviewing through the use of video recordings and approaches taken in prior studies (Hoagland, 2006).

### Conclusion and Future Research

This study is a preliminary attempt to describe how a mixed method approach, verbal analysis, that has a basis identifying knowledge and knowledge change for learners in well-defined domains can be used to similar effect in an ill-structured, professional domain. It also represents an attempt to suggest the appropriateness of rich, multimedia environments, like the video annotation software described in the study, can support the development of knowledge in

such domains. The results of this study have some implications for future studies. Verbal data that includes video annotation data could be explored further. First, the verbal data could be further scaled to reflect differences in depth and specificity; the verbal levels in this study could be broken down further. Second, the textual self-evaluation data in this study could be linked to video or audio. Verbal analysis could also be used to code the performances of students thereby associating the execution of specific skills with a student's written self-evaluation data.

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## APPENDIX A. CODING DEFINITIONS

### Segment

A segment is a single or collection of phrases and/or sentences that: 1) address or describe the same interview skill or structure concept. Segments are associated with specific speaking events. Speaking events are all parts of a video-recorded legal interview during which the lawyer speaks and are manually identified by study participants.

### Segment Types

#### Unrelated Target

Segments that have been coded as Unrelated Concept lack any terms, synonymous phrases, or references to other segments that show evidence of knowledge of legal interviewing skill or structure concepts.

#### Effective Performance

Segments that have been coded as Effective Performance include mention or elaboration of a lawyer interviewing concept and that describe a desired, exemplary, or good interviewing performance.

#### Level Two

Concept. Segments that contain one or more concepts as described in Appendix B. These segments may contain simple evaluative language (good/bad, poorly/well, helpful/unhelpful, useful/not useful, etc.) or descriptive language.

#### Level Three

Concept+. Segments that contain one or more concepts as described in Appendix B and also show deeper insight into the nature of the concept but that do not concern effects on the client or self-regulation on the part of the lawyer. Concept+ goes beyond simple evaluative

language (good/bad, poorly/well, helpful/unhelpful, useful/not useful, etc.) and/or contains a rationale for why it was effective or ineffective (because..., in this way...).

Concept+Client. Segments that contain one or more concepts as described in Appendix B and contain sentences or phrases that show evidence of possible impact of concept on client engagement, focus, orientation, and guidance. Client must be mentioned explicitly.

Concept+Lawyer. Segments that contain one or more concepts as described in Appendix B and that show evidence of effort to change or self-regulate lawyer's role during the interview process. Such segments may contain information about alternate, future approaches.

#### Ineffective Performance

Segments that include mention or elaboration of a lawyer interviewing concept and that describe an ineffective or undesired performance.

#### Level Two

Concept. Segments that contain one or more concepts as described in Appendix B. These segments may contain simple evaluative language (good/bad, poorly/well, helpful/unhelpful, useful/not useful, etc.) or descriptive language.

#### Level Three

Concept+. Segments that contain one or more concepts as described in Appendix B and also show deeper insight into the nature of the concept.

Concept+Client. Segments that contain one or more concepts as described in Appendix B and contain sentences or phrases that show evidence of possible impact of concept on client engagement, focus, orientation, and guidance.

Concept+Lawyer. Segments that contain one or more concepts as described in Appendix B and that show evidence of effort to change or self-regulate lawyer's role during the interview process.

Concept+Improvement. Segments that describe an alternate approach to a particular speaking event or overall interview.

APPENDIX B. LEGAL INTERVIEWING CONCEPTS

<b>Lawyer Skill or Structure Term</b>	<b>Definition</b>	<b>Exercise</b>
Encouraging the Narrative	Brief lawyer responses (silence, pause) or statements (minimal prompts, open questions) intended to encourage the client to continue a narrative statement.	3
Open Question	A question that broadly asks the client to tell you what he or she knows about a target topic or some related subpart of the target topic	3
Closed Question	Typically narrow questions (usually, questions of fact) for which a brief answer would be an appropriate response.	3
Summary	All lawyer statements that review and check the lawyer's understanding of client supplied information.	3
Anything Else Question	Identifies lawyer attempts to insure that an event has been fully explored before moving the discussion to the next topic.	3
Narrative Request	Event in which you frame your question to (a) provide context for the question and (b) encourage the client to provide a narrative statement of his/her problem.	3

Note-taking	Note taking activities by the lawyer that could potentially interfere with client rapport. These could include excessive note taking, long periods in which the lawyer's attention is solely focused on the note taking process, mechanically responding to the client while taking notes, missing information the client is providing on a new topic while taking notes on a prior topic, etc.	3
Timeline Frame	Framing statement that describe and request a time line narrative from the client on some aspect of the client's problem.	4
Question Frame	Lawyer statements that tell the client why the lawyer is asking the question; always paired in an event with an Open Question and Closed Question tags.	4
Summary Frame	Identifies lawyer statements that introduce a summary.	4
Transition Frame	Frames signal the end of a topic or active and introduce the next topic, question or activity.	4

Transition	A sequence of lawyer actions intended to move the interview from one activity or topic to another. Elements may include a (a) summary of what was covered in the current topic or activity, (b) one or more anything else questions, (c) a statement to signal the end to the topic or activity, (d) a frame to signal movement to the next topic or activity which may include a roadmap or signpost.	4
Focus Frame	Statements that refocus the client on a target topic or timeline.	4
T-Funnel Frame	All events that include framing statements used to introduce t-funnels on client objectives, concerns, actions or on follow-up topics after the PPI process concludes.	4
Client-Centered Frame	Identifies events in which you make comments that (a) welcome the client's active participation in the consultation, (b) help the client to understand the importance of client engagement, (c) communicate a desire to help, (d) facilitate client engagement, (e) communicate information about the nature of the professional relationship or (f) communicate an interest in the non-legal aspects of the clients problem.	4

Client Participation Frame	Identifies events that include statements that invite client participation in the lawyer/client dialogue, e.g. requests for additions or corrections when framing a summary statement, requests of possible solutions the client has considered, requests for the client's opinion on some topic, etc. Purpose statements are typically coded with the more encompassing Client-Centered Frame tag.	4
Activity Purpose Frame	Identifies events that include statements that describe the lawyer's reasons for engaging in the current activity with the client. Purpose statements are components of PPI, T-Funnel, Timeline, Summary and Question Frames and, therefore, they are typically not tagged separately.	4
Timeline Frame	Identifies events that include framing statements that describe and request a time line narrative from the client on some aspect of the client's problem.	4
Narrative Frame	Statements that include framing designed to encourage the client to provide a narrative statement of his/her problem.	4
Anything Else Frame	Statements that preface "anything else" questions used to probe for additional information before leaving a topic.	4

Roadmap Frame	Statements that provide the client with orienting information about the nature and sequence of consultation activities.	5
Signpost Frame	Statements that remind the client of the focus or purpose of the current activity.	5
End T-Funnel	Identifies the events that end each t-funnel whether or not you explicitly say something to conclude the t-funnel.	5
Empathy	Lawyer comments that are intended to convey concern, compassion, empathy, a willingness to help and other ways in which the lawyer responds to the client's situation and statement of the problem.	5
Empathic Statement	Lawyer comments that are intended to convey concern, compassion, empathy, a willingness to help and other ways in which the lawyer responds to the client's situation and statement of the problem.	6
Transition to Detailed Fact Gathering	Identifies the event in which the lawyer frames a transition from the time line to detailed fact gathering.	6
PPI Overview Frame	Identifies an event that includes a framing statement requesting a narrative overview the client's problem.	6
PPI Objectives Frame	Lawyer requests information about client objectives.	6
PPI Concerns Frame	Lawyer requests information about client concerns.	6

PPI Actions Frame	Lawyer requests information about actions the client has already taken to deal with the problem.	6
PPI Solutions Frame	Lawyer requests information, if applicable, about actions the client is contemplating to deal with or resolve the problem.	6
End PPI	Event that concludes the PPI process.	6
Begin T-Funnel	All events in which you begin a t-funnel process.	7
End Time Line	Event that concludes the time line process.	7
Begin T-Funnel	Events that include framing statements used to introduce t-funnels on follow-up topics after the time line narrative has concluded.	7
Begin Client Greeting	Event in which you begin to get acquainted with the client.	8
Begin Preliminary Matters Discussion	Event in which you begin to get acquainted with the client.	8
Begin PPI - Overview	Event in which you ask for an overview of the client's problem.	8
Begin PPI - Objectives	Event in which you ask for client objectives.	8
Begin PPI - Concerns	Event in which you ask for ask for client concerns.	8
Begin PPI - Actions	Event in which you ask for ask for client actions.	8

End	Event in which you make a statement that signals the end of an interview phase (PPI, Getting Details, or Theory Development) or an interview process (t-funnel, time line or summary process).	8
Begin Theory Development	Event in which you begin to gather information to fill in your legal theories.	8
Roadmap/Signpost	Use this tag to identify any event that provides the client with structural and topical guidance in order to facilitate the client's understanding of the process and provides signposts to keep the client oriented within interview activities.	8
Begin Time Line	Events in which you begin a timeline process.	8
Begin Getting Details of Client's Problem	Use this tag to identify the event in which you begin to gather detailed information about the client's problem.	8

<p>Frame</p>	<p>This tag consolidates the concepts covered by various framing tags used in prior exercises. Use this tag to identify framing statements used to (a) transition between interview phases, (b) provide the lawyer’s reasons for a question, (c) provide context for a question, (d) keep the discussion focused on the current topic, (e) introduce an activity or topic or (f) conclude an activity or topic.</p>	<p>8</p>
<p>Empathic or Client-Centered Statement</p>	<p>Use this tag to identify comments that are intended to convey concern, compassion, empathy, willingness to help and other non-verbal ways in which you express empathy for the client’s situation. In addition, this category includes statements by the lawyer that welcome the client's active participation in the consultation.</p>	<p>8</p>

## APPENDIX C. CODING GUIDELINES

### Segment

A segment is a single or collection of phrases and/or sentences that form part or all of chunks of self-evaluation writing that are associated with specific speaking events. Speaking events are all parts of a video-recorded legal interview during which the lawyer speaks. By definition, segments address only one lawyer interviewing skill or structure concept (see Appendix B for a complete list of concepts).

There are three types of verbal evidence that indicate the presence of a concept: 1) the presence of a concept term (e.g., “T-Funnel Frame”) or term variant (e.g., “frame”); 2) a synonymous phrase (e.g., ) that can be linked to a “lawyer skill tag” applied by a student; or a 3) reference to a concept in another phrase or sentence within the same speaking event.

There are three types of segments: 1) those that show evidence of positive evaluation of target legal interviewing concepts; 2) those that show evidence of negative evaluation of target legal interviewing concepts; and 3) those that lack evidence of target interviewing concepts.

Example: // [SEGMENT ONE] I don't think my question here is as clear as it could be.

In the future I will word the question better instead of just saying "tell me what you want to happen." I think that the question I asked was a little to vague. // [SEGMENT TWO] I put effective performance here because I asked a concise, framed question letting the client know why I was asking the question.

\_Requires Improvement\_

\_Effective Performance\_

Rationale: The first two sentences of the segment comprise one segment since they are contiguous and show evidence of a negative evaluation (in italics). The third sentence is

a separate segment because it shows evidence of a positive evaluation (in italics).

Example: // [SEGMENT ONE] I put requires improvement because I got mixed up and said "cease and assist." I won't say that in the future. I do think that I provided a good summary.

\_Requires Improvement\_

Rationale: The first two sentences of the segment comprise one segment since they are contiguous and lack evidence of a legal interviewing concept (in italics). However, the third sentence is not a separate segment even though it shows evidence of a positive evaluation (in italics) because there is no accompanying Effective Performance Evaluation Tag.

### Segment Types

#### Unrelated Concept

Segments that have been coded as Unrelated Concept lack any: 1) concepts that demonstrate knowledge of legal interviewing skill or structure terms, 2) descriptions of how those terms relate to and affect the evolving structure of the interview, 3) descriptions how deployment of skills affects or structural components affect the client and the lawyer.

Guidelines: Absence of any mention or elaboration of a lawyer interviewing concept (i.e., Concept, Concept+, Concept+Client, Concept+Lawyer).

#### Effective Performance

Segments that include mention or elaboration of a lawyer interviewing concept and that describe a desired, exemplary, or good interviewing performance.

Guidelines: These segments can be identified by looking for the presence of descriptions or assessments of desired, exemplary, or good performance and/or occur within speaking

events that the participant has categorized using the Effective Performance Evaluation Tag and that contain no contrary description or assessment.

Example: I put effective performance here because I asked a concise, framed question letting the client know why I was asking the question.

Effective Performance

Rationale: This is an Effective Performance segment due to: 1) evidence of a lawyer interviewing concept, "...framed, question..." and 2) the presence of an Effective Performance Evaluation Tag and 2) the presence of "Effective:..." which indicates that the student was describing the segment as such.

## Level Two

Concept. Segments that contain one or more concepts as described in Appendix B. These segments may contain simple evaluative language (good/bad, poorly/well, helpful/unhelpful, useful/not useful, etc.) or descriptive language.

Guidelines: The Concept feature can be identified by the use of lawyer interviewing concept within a segment.

Example: Next time, I will summarize what we had talked about at the end of each T-Funnel.

Rationale: The words "summarize" and "T-Funnel" are both evidence of legal interviewing concepts identified in Appendix B.

## Level Three

Concept+. Segments that contain one or more concepts as described in Appendix B and also show deeper insight into the nature of the concept.

Guidelines: These segments or phrases usually bear the following patterns: legal

interviewing concepts and a modifier phrase.

Example: Effective: I tried to frame the next questions by restating what the client had already told me.

Rationale: The presence of the legal interviewing concept, "frame" matches concepts found in Appendix B. The pattern for Concept+ consists of legal interviewing concept and a modifier phrase. In this case the concept is "frame" and the modifier phrase is "by restating what the client had already told me" which describes how the framing was executed.

Concept+Client. Segments that contain one or more concepts as described in Appendix B and contain sentences or phrases that show evidence of possible impact of concept on client engagement, focus, orientation, and guidance.

Guidelines: These segments or phrases usually bear the following pattern: legal interviewing concept and effect on client.

Example: ..started with an open question, inviting the client to provide more information.

Rationale: In this example "open question" matches the legal interviewing concept for "open question". "Inviting the client to provide more information" describes the intended effect on the client.

Concept+Lawyer. Segments that contain one or more concepts as described in Appendix B and that show evidence of effort to change or self-regulate lawyer's role during the interview process.

Guidelines: These segments or phrases usually bear the following pattern: legal interviewing concept and effect on lawyer's behavior.

Example: Watching the follow-on, I did not get distracted by taking detailed notes but

instead listened the client.

Rationale: In this example, "taking detailed notes" is a phrase that contains the variant for the "Note-Taking" Lawyer Skill. And "did not get distracted" and "but instead listened to the client" are both phrases that show the effect on the lawyer.

### Ineffective Performance

Segments that include mention or elaboration of a legal interviewing concept and that describe a desired, exemplary, or good interviewing performance.

Guidelines: These segments contain descriptions or assessments of ineffective or undesired performance and/or within speaking events that the participant has categorized using the Ineffective Performance Evaluation Tag and that contain no contrary description or assessment.

### Level Two

Concept. Segments that contain one or more concepts as described in Appendix B. These segments may contain simple evaluative language (good/bad, poorly/well, helpful/unhelpful, useful/not useful, etc.) or descriptive language.

Guidelines: The Concept feature can be identified by the use of legal interviewing concepts within a segment.

Example: I didn't frame this well

\_Requires Improvement\_

Rationale: This segment mentions a concept, "frame", but does not elaborate it.

### Level Three

Concept+. Segments that contain one or more concepts as described in Appendix B and also show deeper insight into the nature of the concept.

Identification Guidelines: These segments or phrases usually bear the following patterns: legal interviewing concepts and a modifier phrase.

Example: Requires Improvement: I should have restated what the client had already told me - instead, this was like an initial question instead of a T-frame.

Rationale: In this segment, "T-frame" is a legal interviewing concept and the phrase "This was like an initial question" is a modifier phrase for that concept.

Concept+Client. Segments or phrases intended to facilitate client engagement, focus, orientation, and guidance through the interview. These segments or phrases demonstrate both knowledge of a technique and its intended influence on the client.

Guidelines: These segments or phrases usually bear the following pattern: legal interviewing concept and effect on client.

Example: Requires Improvement: I need more eye contact as I begin asking the question - I also check the clock after asking the question - which disturbs the client.

Rationale: In this example, "question", which appears twice, is the interview skill or structure terms term variant and "which disturbs the client" is the effect on the client.

Concept+Lawyer. Segments or phrases that demonstrate knowledge of effective or ineffective lawyer actions in the interview process. These segments or phrases demonstrate effort to change or self-regulate lawyer's role during the interview process.

Guidelines: These segments or phrases usually bear the following pattern: legal interviewing concept and effect on lawyer's behavior.

Example: I put requires improvement because I think that I again cut off the client while he was speaking. In the future before I begin speaking.

\_Summary\_

\_Anything Else Question\_

Rationale: In this segment, “cut off the client” is a synonymous phrase for one of the one of the concepts described in the Lawyer Skill Tags (i.e., Summary, Anything Else Question). The next sentence describes an effort to change or self-regulate the lawyer’s behavior in the future.

## VITA

William Taggart Monroe, Jr. was born in Baton Rouge, Louisiana in 1974, the son of William Taggart Monroe and Linda Hundley Monroe. He graduated from Cheyenne Mountain High School, Colorado Springs, Colorado, in 1992. He received a Bachelor of Arts degree in Spanish Literature in December, 1996 from Colorado State University, Fort Collins, Colorado. He pursued and was awarded a Master of Library and Information Science degree from Louisiana State University in August, 2002. He was awarded the Sidone Walker Memorial Scholarship in 2001 and Louisiana Library Association Scholarship in 2002. He currently serves as Head of Instructional Technology at Louisiana State University Law School, Baton Rouge, Louisiana.