The purpose of this study was to examine the origin and role of non-literal language used by expert golf instructors in their professional practice. Specifically, it identified the frequency of use, the purposes for presenting non-literal language to students, and when and how examples were derived. In addition, student understanding of the non-literal language presented by the instructors was also explored. Fourteen expert golf instructors participated in this study, and each was asked to recruit a student. The data were collected through videotaping, interview, and stimulated recall procedures. Frequency measures were calculated from the videotapes. Qualitative analysis was performed on all of the data collected using the constant comparative method in order to identify the dominant themes and commonalties that existed.

The findings indicated that for these expert golf instructors, the use of non-literal language was an effective strategy to encourage student learning. Frequency measures suggested that presenting non-literal language to students was not a primary instructional behavior, but was a useful pedagogical tool for these teachers. Metaphors, similes, and analogies were presented to provide students with a mental picture, to express ideas that literal terms could not, to increase personal relevance, to make language more efficient, and to enhance student understanding. Each of these reasons for using non-literal language is consistent within a framework of characteristics of expert teachers, who display high levels of content knowledge and pedagogical content knowledge. Specifically, these expert golf instructors have superior knowledge in their domain and derive an intimate understanding of their students' needs. With this knowledge they
develop a variety of teaching strategies to meet their students' needs. Evidence of this is provided by the fact that these expert golf instructors also provided reasons not to use non-literal language. Further supporting this notion is evidence that a high percentage of the non-literal language presented during lessons was understood by the students in the way that the instructors intended. The exact origin of the non-literal language used by these instructors was difficult to ascertain, but most examples were borrowed from others in the sport of golf, and some were self-derived.

Several issues arose during data collection and analysis regarding factors that may affect the use of non-literal language by expert golf instructors. The use of technology and physical teaching aids, along with student experience with the sport of golf may be changing the language patterns of expert golf instructors. Recommendations provided by this study include a call for further examination into factors that may affect the use of non-literal language during golf instruction.

INDEX WORDS: Non-literal Language, Expertise, Golf Instruction, Metaphor
THE ORIGIN AND ROLE OF NON-LITERAL LANGUAGE
IN EXPERT GOLF INSTRUCTION

by

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of The University of Georgia in Partial Fulfillment
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DOCTOR OF PHILOSOPHY

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CHAPTER 1
INTRODUCTION

The "rocking chair" is rhythm. Here's the thing on the short game. As you get closer to the hole you get tighter. Those little dink shots... you get [players] in a tournament and they get so stiff. If you listen to Byron Nelson, if you hit your pitch shot he'll say "rocking chair." (CN)

After noticing that his student was not hitting pitch shots with any consistency on the lesson tee, one of the Top 100 golf instructors in the United States brought out the "rocking chair". Within minutes the same student was pitching balls at a target with skillful consistency. The instructor didn't really bring a piece of furniture onto the tee, he provided the student with the image of a rocking chair in the form of a metaphor. Two words were all that was necessary to promote student understanding.

Metaphors are used regularly in daily conversation, and some say that they are an integral part of language. Every day we use metaphors without even realizing it. For instance, time is often associated with concepts related to money. We budget time, set it aside, waste it, and save it, even though none of these are really possible. Metaphoric language is ingrained in our culture. Indeed, in their seminal work Metaphors We Live By, Lakoff and Johnson (1980) believe that we may not be able to get along without metaphor; that it is "pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature" (p. 3).
Our current educational system relies on language to convey the knowledge and ideas that students are supposed to learn. With metaphor so intimately tied to language in our culture, it can't help but affect the way we educate our students. Teachers present knowledge and instruction to students using several different methods, but primarily with the help of a common language. While every subject can be taught using the literal terms of that language, many studies report enhanced student understanding and performance through the use of non-literal language (NLL) in the form of metaphor, analogy, and simile (Efran, Lesser, & Spiller, 1994; Gallini, Seaman, & Terry, 1995; Weller, 1970).

This is especially true in subject areas such as biology, chemistry, physics, psychology, and statistics, where complex theories and concepts are frequently introduced (Paris, 1999). We have all heard the phrase “like water through a garden hose” to describe the flow of electricity, or “the atom is a miniature solar system”. Although there is frequent use of NLL by teachers, “there remain sharp conflicts over the exact nature and use of metaphor in education” (Petrie & Oshlag, 1993, p. 580).

Several figures of speech are included under the umbrella term "non-literal language", including metaphor, analogy, simile, and parables. Each of these terms have one important element in common; the comparison of two ideas or objects that on the surface have nothing in common at all, but somehow encourage better understanding through deep-level cognitive thinking. Several authors use the term "metaphor" as a catch-all phrase for several types of NLL for the purpose of ease of reading. Throughout the text of this study the term "non-literal language" (NLL) will be used wherever possible. However, when the term "metaphor" appears it is because the author of the
cited work used this term. Some authors cited in the following text focused exclusively on metaphor, but a majority used the term "metaphor" to encompass all instances of NLL.

Ortony (1993) defined metaphor as a “statement of non-literal similarity wherein two terms of a disparate nature are compared” (p. 7). The terms or objects are unlike in nature but possess a common bond. Similarly, Gorden (1978) described metaphor as throwing new light on one thing by expressing it in terms of another. There is evidence that pedagogical NLL may be useful in teaching novel and difficult concepts, and that they function by relating new concepts to familiar information. Pugh (1989) provided an excellent interpretation of this when she wrote that “metaphors can be powerful devices for extending understanding and knowledge by building bridges from the known to the unknown through deep level comparisons” (p. 95).

In 1975, Andrew Ortony proposed that the incompatibility of the two terms or ideas in non-literal language set up a "tension" in the mind of the listener. Since the statements cannot be understood in literal terms, they encourage the listener to resolve the tension through cognitive activity. Griffey, Housner and Williams (1986) extended on this notion when they suggested that "nonliteral forms beg the hearer to construct a rational bridge between what is know and what is unknown and decipher the intent of the speaker. By constructing such a bridge, the hearer is brought to new understanding and knowledge" (p. 136). Driver and Erickson (1983) reported that cognitive conflict is a precursor to conceptual change, and the use of NLL is one way to create cognitive conflict (Duit, 1991).

It has been suggested that the same type of deep level thinking encouraged in resolving the tension created by metaphors is also important in mediating student learning
and achievement (Wittrock, 1986). Teachers are potentially in the most influential position to stimulate cognitive thought in their students, and often present metaphors, similes and analogies to aid student learning (Duit, 1991). Honeck and Temple (1992) report that metaphors serve several cognitive functions relative to teaching including: overcoming gaps in vocabulary, saying something in a compact or succinct way, putting ideas into highly memorable form, and creating new concepts. When trying to understand a new domain, NLL also serves a cognitive function by establishing a connection between the new and the familiar (Allbritton, 1995).

As far back as Aristotle, the important link between NLL and learning was apparent:

But the greatest thing, by far, is to be the master of metaphor. It is one thing that cannot be learnt from others; and it is also a sign of genius since a good metaphor implies an intuitive perception of dissimilars. Through resemblance, metaphors make things clearer. (Poetics, translated W.D. Ross, 1459, p. 5-7)

Teachers use NLL to explain, learners use them to understand, and “in virtually every aspect of education, metaphor is instrumental and should be part of instruction” (Pugh, 1989, p. 94).

Developing appropriate NLL for teaching requires knowledge on the part of the teacher, and also assumes a certain level of knowledge in the learner if they are to make the relevant connections between non-literal terms. Expert teachers with years of experience develop an enormous amount of knowledge pertaining to their subject matter (Schempp, Manross, Tan, & Fincher, 1998). Further, they are continually adding to this
by engaging in a lifelong quest to learn all they can about their field. Another
distinguishing feature of these expert teachers is the ability to present knowledge to their
students in the most meaningful way.

There was a time when the only prerequisite to being called an expert coach or
sport instructor was a history of proficiency in playing that sport. While being a
knowledgeable and accomplished performer certainly aids in teaching an activity,
competent and expert teachers and coaches also develop a different kind of knowledge
about teaching that helps their students understand better. Leinhardt (1990) called it craft
knowledge, and Shulman (1987) termed it pedagogical content knowledge (PCK). This
“craft” or pedagogical content knowledge allows experts to instruct others how to play,
perform, and learn more efficiently.

Pedagogical content knowledge includes information about learners, the goals of
the activity, curricular strategies, and most importantly for this study, knowledge of
multiple ways to present knowledge to learners. Griffin, Dodds, and Rovegno (1996)
reported that “highly successful teachers and coaches have well-developed PCK” (p. 58),
which is composed of four factors (Grossman, 1990). First, they keep the goals of the
activity clearly in mind. Second, they understand what students already know and can do.
Third, they are highly knowledgeable about curriculum content; and finally, they vary
instructional strategies to help all learners. In essence, it is the way teachers translate their
subject-matter knowledge into the practices of teaching (Schempp et al., 1998).

Expert teachers develop extensive knowledge in their domain by making a
significant investment in learning “all they can about their field of study” (Tan, 1997, p.
31). This extensive knowledge base, including pedagogical content knowledge, provides
teachers with a large array of instructional strategies to enhance the performance of their students, including literal explanations, physical demonstrations, and the use of NLL.

An interesting paradox exists in both teaching and in using NLL as an instructional tool. Are teachers teaching if their students are not learning? Not always. A teacher presents information in the hope of creating a cognitive or physical change in the performance of a student. However, if the student doesn’t understand the information, teaching is not taking place (Wittrock, 1986). A parallel exists in the world of NLL. To be considered a metaphor, simile, or analogy, a statement must be understood by the listener in the way that the speaker intends. If the listener doesn’t identify the relevant common bonds between the ideas or objects compared in the non-literal statement, the sentence is merely that – a sentence. In the worst case for the learner it becomes a confusing line of gibberish.

Armed with a formidable array of knowledge including how to present information to students, expert teachers seem to enhance the comprehension of their students through the use of metaphors. The main goal of teaching is to transfer information and ideas that result in student learning, and metaphors may be an excellent way to promote this. Unfortunately, the exact mechanisms that make metaphors effective for learning are not well understood. However, preliminary investigations are revealing that expert teachers and coaches use metaphors to strengthen their students'/athletes’ understanding. One of the goals in conducting research on expertise in teaching is the possibility that it may reveal strategies and recommendations that help all teachers improve their professional skills (Leinhardt & Putnam, 1986). While it may not be possible to ascertain exactly how or why NLL works, if expert teachers experience better
results using metaphor then less experienced teachers may also find this a useful pedagogical technique.

A recent study in the Sport Instruction Lab at The University of Georgia revealed anecdotal evidence that expert golf instructors introduce a complex skill (the golf swing) to beginning golfers by comparing it to concepts that were familiar to the students (Schempp & St Pierre, 2000a). While examining characteristics of expert golf instructors it was noticed that they used language rich in metaphor and simile. Using student information gleaned from questions asked during the opening of the lesson, the instructors continually compared aspects of the golf swing to sports and other physical activities that the students had previous experience with.

The instructors also introduced NLL with imagery that was familiar to the students. Three examples were “carrying a pizza”, “sweeping dirt from a crack”, and “airplane runways”, each a common images to college students. Drawing upon years of experience teaching golf, the instructors were able to quickly introduce metaphors that were relevant to their students' lives in terms of sport experience and everyday activity. Due to limitations in the methods of this study, student understanding as a result of NLL use could not be determined. However, in several instances there were observable changes in student posture and performance. Additionally, evidence of the memorability of NLL was evident in the answers to lesson closing questions. Several students mentioned metaphors when the instructors reviewed key learning points presented through NLL.

The use of NLL to enhance learning may be one of the characteristics of expert teaching. If the development of teaching metaphors is a learned process, beginning and
competent teachers may choose to add this strategy to their pedagogical repertoire. Although implicit inferences are often made in the literature, there is little research on the connection between NLL use and expertise. Additionally, there is a dearth of empirical research on the role that NLL plays in sport instruction. Any findings reporting the roles of NLL in sport instruction have been purely speculative or inferential. Therefore the purpose of this study was to examine the origin and roles of NLL used by expert golf instructors. Specifically, it identified the frequency of NLL use, the purposes of using NLL in teaching, and when and how the examples of NLL were derived. Additionally, this study examined student's understanding of the NLL presented during instruction. In contrast to other studies that have presented finding based on inference made by the researchers, this study was designed to examine NLL usage and understanding through the thoughts and words of the instructors and their students.

Research Questions

To address the purpose of this study, the following questions guided the data collection and analysis:

1. How often do expert golf instructors use NLL during teaching sessions?
2. Why do expert golf instructors use NLL in their teaching?
3. When in the lesson was the NLL constructed?
4. What are the origins of the NLL that the instructors use? Are they self-developed, borrowed from other instructors in golf, or borrowed from other instructional settings?
5. Do students understand the NLL in the way that the instructors intended?
Overview of Succeeding Chapters

Chapter 2 presents a review of literature related to teaching, expertise, and non-literal language. This chapter provides an overview of teaching in general, and a review of the literature specific to expertise in teaching. It also describes research into the role of non-literal language in teaching and learning. Chapter 3 presents a thorough examination of the methods to be utilized in this study, including the design, participants, and specific procedures for data collection and analysis. The findings and discussion of this study are presented in Chapter 4. Finally, Chapter 5 examines the implications and recommendations of this study.
CHAPTER 2

REVIEW OF RELATED LITERATURE

The purpose of this study was to examine the origin and roles of metaphor used during expert sport instruction. To address the research questions presented in the previous chapter it will be necessary to provide a background into the areas of teaching, expertise, and metaphor. This chapter will review literature related to effective teaching, characteristics of experts in teaching and other fields, and the role of non-literal language as a tool for learning.

Teaching

Teaching has been described as a discipline, a profession, and even an art form. Research on teaching has been ongoing for decades and has focused on a variety of measures that might distinguish good teachers from bad. From early studies attempting to correlate personal attributes of teachers with student achievement, to current studies describing the daily lives of teachers in their natural setting, research has been trying to establish what separates the great teacher from the rest.

Early attempts at research on teaching focused primarily on personal attributes of teachers such as appearance, intelligence, leadership, and enthusiasm (Brophy & Good, 1986). Although this confirmed desirable traits of effective teachers, it did not address the links between teacher behaviors and student achievement. The next phase of teacher research examined the link between teaching methods and student achievement, and reported inconclusive findings due to contradictory results (Medley, 1979). Small sample
sizes, similar methods, and differences in teacher delivery methods confounded any effects on student learning.

The mixed results of research on teaching methods led to a shift in focus to the examination of classroom climate as a predictor of student achievement. Systematic observation and process-product research methods were employed in the 1950s and 1960s to examine how classroom climate and teacher behaviors affected student achievement. Results of these studies were encouraging, and induced a proliferation of systematic observation systems (Brophy & Good, 1986). Conversely, there was also evidence presented that questioned whether teachers were necessary at all.

In 1971, W. James Popham reported the findings of a four-year study that investigated teacher competence. Popham matched formally trained and experienced teachers from public schools with matched subjects who had subject matter knowledge but no formal teacher training. Each subject was given a set of explicit learning objectives, an intact public school class, an array of instructional support materials, and nine one-hour sessions in which to teach (Locke, 1984).

In each subject area that was presented in this study (i.e. auto mechanics, electronics, social studies), the ordinary people (trades-people, housewives, and college sophomores) produced the same amount of learning as the certified teachers. Popham concluded that when given clear curricular direction (clear objectives, valid measures of student learning, and controlled classroom conditions), there appeared to be no advantage to formal teacher training. This led him to question “whether teachers have any special expertise at all” (Brophy & Good, 1986, p.330). Adding fuel to this debate was another
shift in research during the late 1960s and early 1970s toward curriculum effects rather than teacher effects on student achievement.

After a decade-long shift in focus toward curriculum issues, research returned to the investigation of teacher behaviors related to student achievement. Throughout the 1970s, several federally funded studies probed the connection between teacher behaviors and student achievement. One area of focus was the connection between teacher knowledge and student achievement. Although early educational research found little or no correlation between teachers’ subject matter knowledge and student achievement, more recent studies reported that the amount of information teachers know about their subject can influence student learning (Grossman, Wilson, & Schulman, 1989; Shulman, 1986; Schulman, 1987).

Research revealed that expert teachers in the fields of physical education, coaching, and sport instruction have amassed prodigious amounts of subject matter knowledge, also known as content knowledge. They gained this knowledge through years of teaching experience and an insatiable appetite for continued learning (DeMarco Jr. & McCullick, 1997; Manross & Templeton, 1997; Schempp, Templeton & Clark, 1999; Tan, 1997). A recent study examined the relationship between subject matter knowledge and effective teaching practices of physical education teachers (Schempp, Manross, Tan, & Fincher, 1998). Their findings indicated that teachers with subject matter expertise were more comfortable and enthusiastic in their work than teachers with less knowledge of the activities. More importantly the subject matter experts were better able to identify and remedy student’s learning problems and accommodate a wide range of learner skills and abilities.
All this subject matter knowledge would be of little importance, however, if these teachers weren’t able to effectively present it to their students. Equally important to subject matter expertise is knowledge about presenting the subject matter in the most meaningful way for each student, a body of knowledge that Schulman (1986) terms pedagogical content knowledge (PCK).

Pedagogical knowledge goes beyond knowledge of the subject matter per se to the dimensions of subject matter for teaching… Within the category of pedagogical content knowledge I include, for the most regularly taught topics in one’s subject area, the most useful forms of representations of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations - in a word, ways of representing and formulating the subject that make it comprehensible to others. Pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult; the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons. (pp. 9-10)

In essence, effective teachers first need an extensive array of content knowledge about the subject that they teach, then they need techniques to make the information meaningful for each student.

Without adequate subject matter knowledge teachers may misrepresent both the content and the nature of the discipline itself (Grossman, 1990). Without PCK, teachers have few options concerning how to present the subject matter knowledge to their students. Nikolajsen (1991) described these ways of presenting knowledge as "pathways"
(p.319), and metaphor as one available path out of many toward the understanding of a concept. Metaphorically speaking, PCK is a roadmap and learning is a destination; there are many ways to get to the same destination.

Research conducted on expert golf instructors indicated that these teachers accommodate different learners by presenting knowledge to their students in several ways (Baker, Schempp, Hardin, & Clark, 1999). One way they presented knowledge during a lesson was through nonverbal behaviors including demonstrations, and physical manipulation by the teacher to place students in a proper position for the skill to be learned. However, the primary method of knowledge representation for these instructors was verbal instruction that seemed to be tailored to each individual student.

Included in their verbal instruction was the use of language rich in metaphors, and these too seemed personalized and dependent on each student’s background and experiences. This familiarity with their students' knowledge seems to be one key in making the metaphors meaningful. As Nikolajsen (1991) confirmed, "It is important to note that the pedagogic value of metaphors will depend to some extent on the teacher's familiarity with what her students know and are likely to think of when she uses a metaphor" (p. 319). This ability to personalize instruction to each student is another example of the behavior of expert teachers, who generally know more about their students because they typically request more information (Housner & Griffey, 1985).

The search for characteristics that make some teachers more effective than others continues. There is a growing body of evidence that teachers who develop superior knowledge of the subject matter in their domain are better able to present this knowledge to their students. The combination of superior subject matter knowledge and pedagogical
content knowledge, including the use of non-literal language, may be a significant ingredient in characterizing teachers we label as experts.

Expertise

There is considerable debate regarding the term expertise. Who determines what an expert is? What qualities do experts possess? How does one become an expert? The study of expertise is growing rapidly as researchers try to understand what makes some individuals consistently superior performers in their domain. From the earliest work with chess players to pioneering research on golf and tennis instruction, the study of expertise is beginning to identify characteristics common to the people we call experts.

Early studies seeking to identify characteristics of superior performers focused on general and specific inherited characteristics. These included genetics, general cognitive processes, and intelligence measures such as IQ (Ericsson & Smith, 1994). The design of the studies and difficulty in defining cognitive tasks resulted in inconclusive findings. Other investigations focused on stable individual characteristics such as personality, motivation and perceptual style (Ericsson & Smith, 1994).

One of the characteristics of expertise seems to be domain specificity. That is, expertise in one area does not necessarily translate into expertise in other areas. Tan (1997) reported that “expert performance is thus defined as consistently superior performance on a set of relevant tasks in a specific field of human activity” (p.30). Experts perform at a consistently higher level with less effort than the majority, and share some common characteristics that allow them to be exceptional in their domain.

Another distinguishing characteristics of experts is the development of automatic, reflexive, and repetitive behaviors (Bloom, 1986). Experts do things automatically that
non-experts can only do with great effort, if at all (Baker, Schempp, Hardin, & Clark, 1999). These automatic behaviors develop over time, and it has been suggested that sustained, deliberate practice for at least 10 years is required to reach the level of expert (Ericsson, Krampe, & Tesch-Romer, 1993).

In a study of expert golf instructors, Baker and colleagues (1999) reported that the automatic behaviors of these teachers were revealed in the consistency of their routines and rituals of instruction. Twenty-three instructors were videotaped teaching a full-swing lesson to a beginning golfer. The tapes were then reviewed to determine if there were similarities in pedagogical strategies. The researchers identified several consistent trends in the activities and actions of these instructors including: a) lesson openings, b) goal setting, c) verbal instruction, d) feedback patterns, e) pacing, and f) positioning.

One of the more interesting findings in this study was the use of language rich in metaphor by a majority of the instructors. Additional analysis of the videotapes revealed that the instructors’ use of metaphors seemed to serve several different purposes. These included: (a) metaphor to evoke a vivid mental image, (b) as an economical explanation, (c) as an expression of the inexpressible, (d) as an aid to learning transfer, and (e) to promote personal relevance, meaning, and motivation. Unfortunately, the conclusions about the role and function of the metaphors were purely speculative since the analysis was based only on the review of videotaped lessons (Schempp & St Pierre, 2000a).

Recent work in the area of narrative writing is beginning to reveal a connection between the use of metaphor and expertise. Williams-Whitney, Mio, and Whitney (1992) reported that as writers become more experienced, they tend to use more novel metaphors. At least some of the impetus for using new metaphors is that through
repetitive use, metaphors lose their power because of familiarity. Is it possible that experts are better at devising new metaphors as familiar ones become less effective?

Voss, Kennett, Wiley, and Schooler (1992) presented evidence that in addition to developing new metaphors, experts also find new ways to present old metaphors in different ways. During the United States Senate debate on the Persian Gulf Crisis in 1991, experts in political rhetoric used metaphors extensively. Records of the Gulf Crisis debate were analyzed and indicated that senators used metaphors to support claims, and to restate particular issues for simplicity, emphasis, or personalization. An interesting finding was that opposing sides to support different viewpoints used some of the same metaphors.

Cooke and Bartha (1992) conducted another investigation concerning the effects of experience on metaphor use. Undergraduates (inexperienced) and PhD students (experienced) in psychology were asked to read summaries of four hypothetical psychology experiments. They were then asked to formulate and write explanations for the results of each experiment. Although few students in either group expressed novel metaphors, the explanations of the experienced students contained more metaphors than the inexperienced student explanations. Further, the experienced students were able to supplement their psychological metaphors with everyday metaphors for more clarity.

The study of NLL use by experts is a young and growing field. Some researchers believe that there is a strong connection between NLL and expertise. In his introduction to a special issue of the journal Metaphor and Symbolic Activity that was dedicated to the topic of expertise and metaphor, Robert Hoffman (1992) suggested that experts often rely heavily on NLL. His final argument suggested the intimate connection that metaphor and
expertise share. "I am convinced that metaphor will be a useful, if not necessary, tool in the analysis of expertise, in the process of capturing, representing, preserving, and disseminating the knowledge and skills of experts" (p. 116). It may be possible that the use of non-literal language is a fundamental characteristic of expertise.

A clear definition of expertise has been elusive, but research has identified several characteristics that individuals labeled as experts have in common in a variety of fields. From master chess players to experts in physics, extensive domain-specific knowledge, automaticity of behaviors, and the ability to identify and solve problems more quickly seem to be common traits. For expert teachers, additional traits include the ability to represent subject matter knowledge in the most meaningful way for each learner. To do this a teacher must have a repertoire of instructional strategies including verbal and nonverbal behaviors. One of the more interesting verbal behaviors that experts use is language rich in NLL, although there is little research to support why they use it.

**Non-literal Language**

Non-literal language has been a part of language since the advent of the spoken word. In their seminal work *Metaphors We Live By*, Lakoff and Johnson (1980) argue that metaphor is more than a singular characteristic of language and “most of our ordinary conceptual system is fundamentally metaphorical in nature… human thought processes are largely metaphorical” (p. 6). There are others who disagree, reporting that NLL is not necessary at all (Green, 1979).

In order for NLL to be effective, they must contain three elements: the topic, ground, and vehicle (Bischofshausen, Makoid, & Cole, 1989). The topic is the subject of the metaphor. Referring back to the example of NLL that opened this dissertation (the
rocking chair), the topic would be the golf swing during pitch shots. The vehicle is the
term to which the topic is compared, in this case a rocking chair. The ground is the shared
relationship between the topic and vehicle. As is the case with most metaphors, the
comparison of the golf swing and rocking chair elicits many common bonds including:
(a) each one is rhythmical, and (b) each is slow and smooth in action. However, there are
several attributes that the pitch shot and rocking chair do not share, and this becomes
important in understanding effective NLL.

Pugh (1992) described a three-step process for developing metaphors for
teaching. First, the teacher needs a thorough understanding of the concept. Second,
several alternative examples of NLL need to be explored to examine the consistencies
and ambiguities between the metaphor and concept. The final step is presenting the best
NLL in a given situation.

While the topic and vehicle of NLL may share several attributes, rarely do they
share every attribute. This means that there will be remaining attributes that may confuse
the listener. For instance, in comparing a pitch shot and rocking chair, golfers don't sit
down while swinging, and are not made of curved pieces of wood. Shared attributes
between the topic and vehicle must be understood by the speaker and listener for the
metaphor to be effective. If the listener cannot make the connection that the speaker is
implying, the NLL cannot be interpreted, or may be interpreted incorrectly.

Comprehension of NLL by students is imperative if metaphors and other figures
of speech are to be effective for teaching. But what makes one example more
understandable than another? Part of the answer comes from a teacher's knowledge about
and familiarity with their students. In addition, the shared characteristics between the
objects/ideas compared in NLL have a significant effect on how people understand them. Ortony (1979) described the nature of metaphorical comprehension with the salience imbalance hypothesis. This hypothesis suggested that for metaphors to be effective, the common bonds shared by the topic and vehicle must have different relevance (salience) to each. For instance, golf instructors use the metaphor "your [club] grip is an open tube of toothpaste" to give their students a sense of the hand pressure necessary for a good golf swing. Characteristics of the topic, grip, could include round, rubber, firm, handle, and the possibility to squeeze it with different degrees of pressure. For the vehicle term, an open tube of toothpaste, one of the first characteristics that comes to mind is not to squeeze too hard.

The shared or salient characteristic related to the topic and vehicle from the metaphor above is the notion of hand pressure when holding either one. An imbalance between the topic and vehicle occurs because hand pressure is low in salience (relevance) to the club grip, and high in salience to the tube of toothpaste. The metaphor can be comprehended when the low (topic) / high (vehicle) imbalance occurs in this direction. The salient characteristic must be low to the topic and high to the vehicle. If this imbalance is reversed to high (topic) / low (vehicle) then there is no metaphor. For example, the phrase "an open tube of toothpaste is your [club] grip" has no meaning. The degree of salience imbalance between the topic and vehicle also helps make the metaphor more memorable.

One of the more prominent theories describing how metaphors stimulate learning through the formation of new knowledge was proposed by Richards (1936) and revisited more recently by Ortony (1975). This theory suggested that the literal incompatibility of
the topic and vehicle of a metaphor create a tension in the mind of the listener. Through deep level cognitive activity the listener resolves this tension by deducing the common bonds suggested by the metaphor. Ortony (1979) proposed that higher degrees of difference in the salience of the commonalities shared by the terms in the comparison result in stronger, and possibly more memorable, metaphors.

There is some evidence in the literature that memory for NLL is different than memory for literal statements. Reyna (1996) conducted several studies that examined memory recognition differences between verbatim and gist (metaphorical) statements. Results indicated that verbatim and gist representations in the memory were independent of one another. Both adults and children were able to recognize the exact wording of metaphors better than literal statements, even after a delay of 12 days.

Whether memory for NLL is different from that of literal statements or not, the retention of non-literal language seems to be longer lasting and more meaningful to learners. Williams (1983) suggested that one of the advantages of using NLL as a teaching tool was that it was an efficient vehicle for organizing and retaining information. She offered two other advantages that may help explain why NLL is more memorable. First, examples of NLL are more engaging than literal language because they clarify concepts and stimulate further mental exploration. Second, NLL becomes more meaningful because the concepts can be presented in terms of the students’ own experiences.

The importance of NLL as an instructional tool has been suggested by theorists (Ortony, 1975), and many journal articles allude to the effectiveness of NLL for better learning (Gassner, 1999). However, there is little empirical research regarding the effects
of non-literal language on learning and performance. A search of related literature revealed only six studies that reported the influence of using NLL as a learning aid.

Gallini, Seaman, and Terry (1995) investigated the effects of metaphors on text processing among college graduate students. Students were assigned to one of three treatment groups and asked to read an expository essay. The first group read the essay with an advanced metaphor passage preceding the target passage. The second group read an essay with the same metaphor imbedded within the target passage. The third group read an essay with no metaphorical content. Differences in comprehension and overall number of ideas were trivial among the three groups. However, certain ideas were recalled more by the metaphor groups, prompting the researchers to conclude that metaphors can direct the reader’s attention to certain types of ideas.

A second study conducted with college students examined the extent to which metaphors affected the learning of statistical principles (Evans, 1987). Two different versions of a lecture were presented to separate sections of the same course, one with metaphor included and the other without metaphor. The students who received the "metaphor" lecture were better able to make appropriate inferences about statistical concepts, and were superior in problem-solving ability compared to the students who received the lecture without metaphor. This study provided evidence that learning through metaphors produces new knowledge structures rather than new perspectives on existing knowledge.

In one of four studies that combined metaphor and sports, Efran, Lesser and Spiller (1994) examined the role of metaphor in coaching tennis with two groups of youths enrolled in a tennis program. During normal instruction the first group was taught
with a metaphor method for eliminating distractions. They were asked to visualize themselves in a “bubble” or “cocoon” that separated them from non-task stimuli. The control group was not given any metaphor. Results indicated that the youths in the metaphor group improved significantly in terms of performance criteria and ability to concentrate. After this experimental study, an interesting exchange was overheard by one of the researchers that suggested learning had taken place as a result of the metaphors. At least one of the youths in the experimental group was using the same "cocoon" metaphor to block out distractions while working in study hall at school. This happened with no prompting by the coaches or researchers.

In an unpublished doctoral dissertation, Gassner and Sachs (1997, in Gassner, 1999) presented evidence that metaphors could also enhance sport performance in both power and endurance activities. Using seated shot-put (power) and push-ups to exhaustion (endurance), experimental groups were given the metaphor "Explode outward like a bomb" (shot-put), and "Pump it up" (push-ups). Control groups were given no metaphors. In each case the experimental group improved significantly in performance over the control group.

The third study of metaphor and sport activity reported on coaches’ use of NLL during practice sessions (Griffey, Housner, & Williams, 1986). The researchers reported that high-level college coaches used NLL frequently, with up to 60 percent of the language used during training sessions being metaphorical in nature. During this investigation of national coaches in a variety of sports, NLL was found to serve three main purposes: (a) to express ideas that are literally inexpressible, (b) to make communication compact, and (c) to use language more vivid than discursive language.
The authors concluded that “metaphor can make coaching more vivid, direct, and efficient,” with the potential to be “a powerful tool in teaching sport performance” (p. 136).

The findings of this study also led the researchers to call for continued study into non-literal language in coaching, and provided several new questions to examine including (a) how coaches make decisions about presenting information to athletes, and (b) how athletes understand these forms of expression (non-literal language). The researchers could not answer these questions because data analysis was derived from the transcriptions of audiotapes. Therefore the findings of this study were based on inference and speculation.

The anecdotal findings reported by Griffey and colleagues (1986) support the theories of one of the pioneers in the NLL field. Andrew Ortony (1975) proposed three theses regarding the role of metaphors in a paper entitled Why metaphors are necessary and not just nice: (a) the compactness thesis, (b) the inexpressibility thesis, and (c) the vividness thesis. The compactness thesis contends that metaphor is a quick, concise way to convey common characteristics from the familiar to the unfamiliar. The inexpressibility thesis maintains that metaphor can help explain ideas that literal terms can not describe. The vividness thesis suggests that the mental processing of vivid images prescribed by metaphors promote memorable learning. A more recent investigation in the field of sport instruction presented additional support for these three theses.

Schempp and St Pierre (2000a) in a study of expert golf instructors presented evidence of the importance of NLL in expert sport instruction. Video analysis of twenty-three Ladies Professional Golf Association instructors indicated that these experts used
NLL extensively during instruction. Further investigation revealed five major functions that these metaphor served: (a) to provide a vivid mental image, (b) to offer an economical explanation, (c) to express the inexpressible, (d) to promote learning transfer, and (e) to instill personal relevance and motivation. Preliminary data analysis from another study conducted by the University of Georgia Sport Instruction Research Lab provided anecdotal evidence that expert tennis instructors also use non-literal language frequently while teaching.

Non-literal language seems to play a role in cognitive processing, especially in learning novel or complicated tasks. However, there are some who believe that it is not necessary when learning something new. Green (1979) suggested that “learning something radically new is quite understandable – as understandable as it can be – without the introduction of metaphor at all. Metaphors are nice; sometimes they are needed; oftentimes they are useful; but epistemologically necessary they are not” (p.251). Evidence from empirical research has yet to determine if metaphor is necessary, but does suggest that the use of NLL by teachers is one effective strategy to enhance student learning.

Research does indicate that when teaching complex subjects such as biology, physics, and chemistry, the use of NLL serves to stimulate student thinking and promote learning. The literature on the use of NLL in sport instruction, while sparse, also suggests that it promotes efficient learning through deep level thinking. Research combining metaphor and expertise, as well as metaphor and sport instruction, are in a preliminary phase.
Although investigations have been conducted into the presentation of NLL as an instructional tool, there is no mention of how these phrases originated. Beyond stimulating cognitive processing, any conclusions regarding the teacher’s reasoning behind using metaphors has been strictly inferential. Therefore the purpose of this study is to examine the origin and roles of non-literal language in the instructional practices of expert golf instructors.
CHAPTER 3

METHODS AND PROCEDURES

The purpose of this study was to examine the role and origins of non-literal language used by expert golf instructors during a lesson. Further, the study examined student comprehension of the examples of NLL presented by their teachers. In this chapter the methods and procedures selected for use in this study are presented in the following sequence: (a) design of the study, (b) participant selection, (c) data collection, (d) data analysis, (e) pilot study, (f) reliability, and (g) generalizability.

Design of the Study

This study was a mixed design, employing both qualitative and quantitative methods of data collection and analysis. In examining the role and origins of NLL, it must be shown that teachers indeed use this language in their teaching. For this reason there is one quantitative data gathering technique included in this study. Assuming that NLL will be exhibited, this will provide a frequency measure of its use.

The primary data collection and analytic techniques employed qualitative methods. Bogden and Biklen (1982) presented several characteristics of qualitative research that provide evidence that these methods are well-suited to answering the research questions in this study. First, the researcher was more interested in gathering data in the natural setting rather than trying to manipulate behaviors. Second, the research questions were more concerned about “how” and “why” rather than “how many”. Third, the research questions were not trying to prove or disprove a hypothesis. Rather these question's focus is on teachers’ and students' perspectives in their own words.
Participant Selection

The participants in this study were fourteen expert golf instructors. Golf instructors were selected for two reasons. First, golf instruction is often conducted on a one (teacher)-to-one (student) basis, thereby allowing the researcher some control over the proceedings of the lesson, such as the space necessary and knowledge of the target of the instructor’s language. Second, the Sport Instruction Research Lab at the University of Georgia has developed a working relationship with the LPGA, Golf Magazine, and PGA, allowing access to many of the top instructors in the United States. Additionally, Schempp and St Pierre's (2000a) preliminary analysis of expert golf instructors suggested that metaphors serve several roles during instruction.

Recruitment of the participants began with a search to identify golf instructors who were selected by Golf Magazine as one of the top 100 instructors in the country in 2000 and 2001, and who were within an accessible distance of The University of Georgia campus. Instructors were then contacted through telephone, fax, mail, or e-mail. Instructors were then chosen who most closely fit the label of expert according to the characteristics suggested by Baker, Schempp, Hardin, and Clark (1999). These include: (a) ten or more years of teaching experience, (b) Professional Golf Association or Ladies Professional Golf Association certification, (c) formal recognition for the quality of their instruction, and (d) their student’s golfing success.

Once the instructors were identified and agreed to participate, they were mailed an informed consent form (Appendix A). Upon receipt of the completed consent form by the researcher, the instructors were scheduled for the data collection session.
Data collection took place at a location convenient to the instructor, and lasted approximately three hours for each participant.

The individual instructors recruited the students for each lesson. Before participating in the lesson each student also completed an informed consent form and a questionnaire (Appendix E). These questions were designed to provide the researcher with background information that may account for possible differences in instruction during the lessons including: (a) ability or skill level, (b) age, (c) gender, (d) years of golfing experience, (e) recent practice and playing patterns, and (f) number of previous lessons. The total time for data collection for each student, including the lesson and either stimulated recall or one-week follow-up telephone interview, was approximately two hours.

Data Collection

Data were collected using videotaping, a stimulated recall procedure, semi-structured interviews, and a metaphor construction task. The data collected with these techniques was sufficient to answer the research questions and allow triangulation of the findings.

Videotaping

The instructors were asked to teach a lesson up to 45 minutes in length to a student of their choice. This lesson was videotaped with a camera set on a tripod thirty feet behind the point of instruction, and the instructor wore a microphone to record all utterances. On a micro-cassette recorder and on a notepad, the researcher documented the exact times that the instructors used NLL during the lesson. Additionally, the researcher manually recorded the videotape counter number on a notepad. This information was
later used in reviewing each videotape. The videotapes were reviewed by the researcher immediately following the lesson in preparation for the stimulated recall phase of data collection.

In order to determine the frequency of NLL use, the videotapes were reviewed by the researcher upon return to the Sport Instruction Research Lab to quantitatively record the number of incidences that examples were used. Prior to formal recording of this quantitative data, intra- and interobserver reliability protocols were performed as described in a subsequent segment of this section titled "Reliability".

**Stimulated Recall**

Immediately following the lesson and the initial videotape review by the researcher, eight of the students were asked to participate in a stimulated recall procedure (Appendix D). The students and the researcher reviewed selected segments of the lesson cooperatively. The segments were selected based on the time recordings and notations made by the researcher regarding incidences of NLL used during the lesson, and also on other segments identified during the researcher’s initial review of the videotape. Up to five instances of NLL were identified (when possible) by the researcher to be used during this procedure.

Students were asked what came to mind when the instructor used NLL, and were also asked what concept or idea they believe the instructor was trying to convey by doing so. Further, the students were asked if they made any adjustments in their performance based on the NLL. The data that was gathered during the student stimulated recall procedure proved useful in determining whether the students understood the occurrences of NLL in the way that the instructor intended. This procedure was successfully used in
previous studies of teaching expertise in physical education and sport instruction (Baker et al., 1999; Griffey & Housner, 1991).

Following the student stimulated recall procedure, the instructor and the researcher reviewed selected segments of the lesson, also using the stimulated recall procedure (Appendix D). The only difference was that the guiding questions for the instructors were structured to determine why instructors used examples of NLL, when they constructed them during the lesson, and the origins of this language in their teaching. Dodds (1994) described four problems in conducting research on teaching expertise. The first three problems concerned defining and labeling "expertise" and have been addressed in previous sections of this paper. The fourth problem is that experts often rely on implicit or unconscious knowledge, so they may not be aware of everything they know and do. She suggested that researchers must rely on retrospective techniques, such as stimulated recall to access data that the instructors may not be consciously aware of during a lesson. During the mutual videotape review, the instructors were asked if they were aware of their use of non-literal language, and to describe why they used it in each instance. They were also asked to describe the concepts or ideas that they intended the students to understand from each instance. Further, the instructors were asked to recall at what point in the lesson the particular examples were derived.

Finally, the instructors were prompted to recall the origin of each example of NLL as it was added into their teaching repertoire. A recent analysis of expert golf instructors revealed that their primary sources of knowledge were other teachers and teaching experience (Schempp, Templeton, & Clark, 1999). If expert sport instructors learn NLL that positively affects their teaching from other instructors, it may be possible that
beginning and competent teachers can also learn them and add this teaching strategy to their repertoire. However, if effective examples of NLL are only developed through years of teaching experience, non-experts may only be able to develop them over time.

Semi-structured Instructor Interviews

A second source of data that helped to answer the questions of why teachers use NLL, when they construct them, and their origins were instructor responses to a series of open-ended questions (Appendix B). Subsequent to the instructor's stimulated recall session, a forty-five minute interview was conducted, and it was structured to gain insight into their use of NLL during teaching. The interviewer attempted to induce the instructors to describe in detail why they used NLL, when they started using them, and how they were derived. Open-ended and conversational in nature, the interview permitted the instructors to tell the story in their own words. Interview questions were derived from: (a) the research questions for this study, (b) the literature review conducted for this study, and (c) the pilot testing for this study.

Semi-structured Student Interviews

Student interview questions were structured to gain insight into student understanding of the NLL presented by the instructors. Prior to the student stimulated recall procedure, the six students participating in this protocol were asked two interview questions: (a) to recall their most vivid memories from the golf lesson, and (b) to determine their understanding of the term "non-literal language" (Appendix B). This provided the researcher with information regarding the memorability of the language used during the lesson, and also encouraged relevant answers to the queries guiding the stimulated recall procedure that immediately followed these questions.
Semi-structured Telephone Interviews

Four students did not participate in the stimulated recall procedure immediately following the lesson. They were contacted by phone by the researcher one week after the videotaped lesson. They were asked the same two interview questions that the stimulated recall group were presented prior to that protocol, and for the same reasons. Additionally, these students were asked a series of questions to examine their understanding of the NLL used by the instructors, including images that came to mind after hearing each occurrence, and what they believed the instructor was trying to convey through that language (Appendix B). The phone calls were recorded and transcribed, and the researcher also took written notes manually during the phone interviews.

Constructing Metaphors

An additional source of data that may have yielded some insight into when NLL is constructed during a lesson, and also the origins of the NLL used during instruction, was a metaphor constructing task. The instructors were given a set of cards, each with sentences related to the golf swing (Appendix C). Each sentence included a blank space where the instructor was asked to provide as many examples of non-literal language as he or she could for that situation, or to produce new ones that they could develop within thirty seconds. The sentences were based on several examples of NLL that were evident on videotapes from a previous study of expert golf instructors (Schempp & St Pierre, 2000a). This session was audio-taped, and the tapes transcribed. This procedure was designed to reveal a broad repertoire of common golf instruction metaphors, and also to provide some insight into the construction of metaphors when none exist in a teacher’s memory.
Data Analysis

Quantitative Analysis

The videotapes were reviewed to determine the number of instances that each instructor used NLL. The total time of the lesson in number of minutes was divided by the number of occurrences to obtain a measure of the frequency of use of non-literal language. Identification of NLL was guided by definitions suggested by Gorden (1978), Ortony (1985), and Pugh (1989). The primary identifier was a comparison of two dissimilar terms or actions that share a common bond. Intra- and intercoder reliability in identifying metaphors are addressed in the subsequent section titled "Reliability".

Qualitative Analysis

At the completion of data collection for each instructor in this study, interview and stimulated recall data were transcribed. Data from student interviews and stimulated recall sessions were transcribed as soon as possible after the last contact (one week following the lesson in the case of the phone interview group). Data from all sources was reviewed and analyzed inductively using the constant comparative method presented by Glaser and Strauss (1967). This method has a systematic procedure for analyzing data into categories and themes. Data from all sources were coded and grouped into initial categories through repetitive comparisons. Data that did not fit into these initial categories were split into additional categories. This process continued throughout the entire data analysis process until all data had been placed into central categories. The central categories summarized recurrent themes and regularities.

Additional analysis compared the central categories to determine relationships between categories identified in previous stages. Determining relationships between
several categories provided a better picture of the phenomenon under investigation, and led to the development of final themes through refinement and integration. Subsequent comparison and analysis within each theme led to the development of sub-themes (Glaser & Strauss, 1967). The themes and sub-themes that emerged from the analytic induction process provided insight into why teachers used NLL, when they constructed them during golf lessons, the origins of the NLL in their teaching, and student understanding of the NLL presented. The constant comparative method of analysis was employed for each data source as the transcripts became available, and was ongoing throughout data collection and analysis.

Pilot Study

A pilot study was performed at golf instruction facilities close to the University of Georgia to test the video and audiotaping methods, the stimulated recall protocol, and to refine the questions for the semi-structured interviews and follow-up telephone interviews. The metaphor construction task was a novel protocol. It was pilot tested to determine: (a) if the content and format produce useful data, (b) the ease of understanding by instructors, and (c) the time requirements of the task.

The participants in this testing were local golf instructors who volunteered. They were asked to conduct a 30-45 minute lesson with a student of their choice. Immediately following the lesson the instructors participated in a stimulated recall session and an interview with the researcher. Finally the instructors were asked to complete a metaphor construction task. The students chosen for each lesson were recruited by the instructors and also participated in either a stimulated recall session and brief interview, or a follow-up semi-structured telephone interview one week post-lesson.
Reliability

Reliability is a measure of consistency or agreement, and in research it is the extent to which findings can be replicated. Quantitative findings are usually substantiated through statistical methods that provide numerical measures of reliability. Qualitative data is rarely collected in controlled environments, and therefore can be problematic in terms of replication of findings. In the case of this study, each golf instructor was teaching a unique student of varying ability and experience. Further, the focus of each lesson was tailored to the needs of that particular student on that particular day. Replicating all the conditions of these lessons would be impossible, therefore reliability in qualitative research is not based on traditional methods.

Quantitative Data

To obtain reliability measures for the frequency of NLL occurrence, two videotapes were reviewed by the researcher and one of these by a second person trained in the identification of metaphorical language. Two measures of reliability, also called observer agreement (Darst, Zakrajsek, & Mancini, 1989) were performed. Observer agreement refers to the degree to which observers viewing the same event concur. Again, the criteria for identifying metaphors was the comparison of two dissimilar terms or actions that shared a common bond.

The first reliability procedure was intraobserver agreement, where the researcher compared observations from one videotape with a second observation of the same tape at a later time; in this case seven days later. The second procedure was interobserver agreement, where the researcher compared observations from one videotape with observations of a second person that viewed the same tape. The videotape used for
interobserver agreement was different from the videotape used to derive intraobserver agreement. To be considered reliable, the intra- and interobserver agreement were at least 80%. To calculate these reliability measures, the total number of agreements between two observers (or two separate observations of a single observer), was divided by the sum of agreements and disagreements. The resulting number was multiplied by 100 to provide a percentage figure (Darst, Zakrajsek, and Mancini, 1989).

**Qualitative Data**

Unlike quantitative research designs that establish reliability through statistical methods, qualitative analysis demonstrates reliability through trustworthiness and consistency. The critical issue in qualitative research is “whether the results are consistent with the data collected” (Merriam, 1998). Therefore, two separate strategies were employed to establish consistency of the qualitative findings: a) triangulation, and b) an audit trail.

**Triangulation.** In the same way that land surveyors can locate themselves using the intersection of three separate points, the qualitative researcher can enhance the consistency of findings through the intersection of data from at least three different collection methods (Janesick, 1994). Comparison of the data from three or more collection methods in this study was used to identify emerging themes, or a lack thereof, for each of the four research questions contingent on this type of analysis.

**Audit Trail.** Although it may be impossible to accurately replicate the conditions of this study, careful documentation of the of the raw data, data collection methods, and data analysis procedures provided enough “evidence that interested parties can reconstruct the process by which the investigators reached their conclusion.” (Morse,
The researcher kept a detailed journal documenting all aspects of data collection, analysis, and writing. During data collection, the journal reflected on events that may have influenced the process such as the weather, the facilities, last-minute student changes, equipment malfunctions, and the focus of the lesson (e.g. short irons, driving, curing a slice). There was also mention of the decisions made by the researcher in terms of participant selection and contact, and personal impressions of the data collection process. During data analysis and writing, the researcher noted any preliminary hunches and impressions regarding initial themes. Also, the journal recorded any problems that arose concerning the data such as poor video or audiotape quality, and the exact storage procedures to ensure confidentiality and ease of retrieval.

**Generalizability**

One of the popular notions of research is the idea of generalizability, or “the extent to which the findings from one study can be applied to other situations” (Merriam, 1998, p. 207). While quantitative data analysis through statistics provides numerical evidence about the generalizability of findings, qualitative designs struggle with the issue of transferring conclusions from one situation to another.

Walsh, Tobin, and Graue (1993) argue that the meaning and worth of qualitative studies lie more with the readers than with the authors. “Good interpretive work invites readers to enter into a critical dialog with the researcher and the researched… and the meaning and worth of the research emerge in the interaction of reader and text” (p. 472). Much of this is due to the situational uniqueness of qualitative research design (Krefting, 1991). Qualitative researchers examine small groups of participants in certain situations at particular times. Although the researcher can provide detailed information concerning
the participants, data collection and analysis procedures, and information about the settings and contexts involved, the uniqueness of these and other factors limits the transfer of findings to other situations. Ultimately, “our readers will decide whether they find our studies interesting, meaningful, and useful” (Tobin & Davidson, 1990, p. 282).

Limitations of the Study

As Patton (1990) noted "There are no perfect research designs. There are always trade-offs" (p. 162). Both the quantitative and qualitative findings provided by this study have limitations. First, limiting the total number of instructors to 14 was required to keep the scope of the study manageable and possible within the time requirements of a Ph.D. program. This number represents a small fraction of the golf instructors who qualify in the target population. Therefore, results of this study are not intended to speak for every golf instructor that fits the required characteristics, only those who participated.

Second, golf instruction is generally presented in a one-on-one setting. This study followed the general trend of one teacher/one student ratio to control for the activities of the instructor, the target of their instruction, and the space requirements for data collection. Results of this study may not be generalizable to instruction in a group setting.

Third, although some would say that "good teaching is good teaching", this study focused solely on expert golf instructors. It is quite possible that the instructional demands in other sports, even those that subscribe to similar one-on-one teaching paradigms, are entirely different than golf instruction. This is certainly true in the area of content knowledge, and there is the possibility that language use by other sport instructors in not consistent with golf instruction.
CHAPTER 4
FINDINGS AND DISCUSSION

The purpose of this study was to examine the origin and role of non-literal language (NLL) in the pedagogical practices of expert golf instructors. This chapter will present the themes and sub-themes that emerged from the analytic induction process, providing insight into why teachers use NLL, when they construct it during golf lessons, the origins of the NLL in their teaching, and student understanding of the NLL presented. Two quantitative measures will also be presented: a frequency measure of NLL use across the fourteen golf lessons included in this study, and a second frequency measure taking into account only the lessons in which teachers used NLL.

Prologue

The results and discussion presented in this chapter must be tempered by the fact that data collection did not proceed exactly as planned. Several circumstances arose that precluded the collection of data as specifically described in the methods section. These problems will be outlined here so that the reader will be informed before they proceed, and will understand these issues as they read.

The first situation that revealed itself was the relative scarcity of NLL use by the instructors. After watching the videotapes from a previous study of expert golf instructors who used NLL frequently (Baker, Schempp, Hardin, & Clark, 1999), it was not expected that several of the teachers in this study would not use it at all. Fourteen instructors are included in this study and five did not use NLL during the observed lesson. For the teachers who did not use NLL, the stimulated recall procedure could not be performed,
and several of the interview questions became irrelevant. An added consequence was that for the students of these five instructors, the stimulated recall questions were also moot, as were most of the student interview questions.

The second situation that altered data collection was the absence of students in two cases. One student never showed up (forgot), and one cancelled at the last minute. Neither of these scheduled data collection sessions was conducted as planned, with the resulting data from both the teacher and student stimulated recall and interview questions missing or compromised.

A third situation arose regarding space limitations in the lesson area, and the movement from indoor-to-outdoor (and vice-versa) settings during the same lesson. The majority of the instructors in this study had access to both indoor and outdoor facilities, and several used high-tech equipment that inhibited the use of videotape on the part of this researcher. The instructors or their staff produced three of the videotapes that were used for data analysis during the lesson. In all three cases the researcher had no choice in the matter and had to accept the product supplied. The information from these three tapes is generally incomplete for the purposes of this project.

One final consideration that may have affected the data in this study concerns the teachers' behaviors in light of being observed. On two occasions there were remarks made that caused me to question whether I was seeing their "normal" instructional practices. During one interview with a student of a teacher who used NLL during the lesson, the following exchange took place:

Interviewer:  Ok, he just didn't use a whole lot [of NLL] today.

Student:  Maybe you were a little of a hindrance to that.
I: That's a possibility. Do you usually have a different rapport with him?

S: No, the same.

I: He was on better behavior today?

S: No, he was a little more formal. I thought.

Since this episode occurred during one of my last data collection session, I wondered how many teachers might have deviated from their usual teaching style. A review of the videotapes provided another glimpse once I understood that this phenomenon might be occurring. One teacher turned toward my camera and his last statement added credence to the above student's quote - "It's a little staged, but…" (KE) These two episodes provide evidence that while the teachers were being observed they may have changed their instructional behaviors. Since they had no idea what I was looking for during the videotaped lesson, it may have influenced how and what they taught.

The student phone interviews presented at least two dilemmas. First, a time and date to call the student one-week following the lesson was set immediately following the lesson. However, in several cases the researcher ended up playing "phone tag" with the student, and the interview was not completed for up to three weeks after the lesson. By this time at least two students had participated in another lesson, thereby possibly affecting the interview answers. Second, during the phone interview the researcher manually wrote answers to the interview questions since there was no way to tape-record the transaction. Shorthand note-taking procedures ruled out the possibility of verbatim transcriptions of these interviews.

Due to scheduling conflicts, cancellations, and time constraints, the number of instructors included in this study totaled fourteen rather than the planned total of sixteen.
It is believed, however, that the information collected from the fourteen instructors is adequate to answer the questions of this study.

Pilot Study

Two golf instructors local to the University of Georgia agreed to participate in a pilot study to evaluate the methods and questions of the proposed study. Both teachers have over ten years of experience in golf instruction, but have not received formal recognition for their teaching. Both exhibited some of the characteristics that help identify expert instructors, and each would be classified as a proficient teacher in terms of content knowledge, pedagogical content knowledge, and the overall quality of their instruction.

The first teacher that I observed used no NLL during the first fifteen minutes of the lesson, but then used several before the lesson ended. The questions for the interview and stimulated recall procedure following the lesson elicited the type of responses I was expecting; open-ended answers to the questions that provided insight into NLL use in golf instruction. The teacher and student were easily able to recall specific instances of NLL and respond to questions about them in a detailed manner.

The second pilot test session started just as the first did, there was no NLL use during the first fifteen minutes. However, in this lesson the next thirty-five minutes were no different than the first fifteen – there were no examples of NLL presented at all. This session had two teenage students taking a lesson at the same time, and the teacher did not use NLL even once. This came as a surprise, and at this point I was unaware of how to proceed with the stimulated recall procedure and many of the interview questions. The
design of the questions incorrectly assumed that every teacher would use NLL during instruction.

For the teacher that used NLL during instruction, the methods and protocol were well designed. The second pilot session presented a few problems. I was not able to use the stimulated recall procedure, and some of the instructor interview questions were irrelevant. Additionally, most of the student interview questions were based on the assumption that every instructor would utter some NLL during each lesson. After continuing with the planned protocol to the best of my ability, I found that useful information could still be elicited with some modification to the interview and follow-up questions. Unfortunately, if an instructor did not use any NLL during the lesson I observed, then the stimulated recall procedure could not be used at all.

After the second pilot session I added questions that might elicit information about NLL even if the instructors hadn't used any on the day I observed. Students in this situation were asked whether or not their instructors had used NLL in the past, and also if they remembered any examples from previous lessons. Instructors were asked why they chose not to use NLL, if this behavior was intentional, and whether there were situations that they would choose to present NLL to a student. As it turns out, the pilot study was a precursor of events to come during actual data collection. The changes to the student and instructor interview questions as a result of the pilot study resulted in less anxiety in the field, and in the collection of information that helped answer the questions of this study, especially from the instructors who did not use NLL during the lessons that I observed. The importance of conducting this pilot study cannot be underestimated, as my first data
collection session with a Top 100 golf instructor included no NLL use, but did yield valuable responses that helped answer my research questions.

Profile of the Instructors

Forty expert golf instructors were selected as potential participants for this study based on the following criteria. First, they fit the profile of expert identified by Baker, Schempp, Hardin, and Clark (1999), who described characteristics of expert golf instructors including: (a) ten or more years of teaching experience, (b) Professional Golf Association or Ladies Professional Golf Association certification, (c) formal recognition for the quality of their instruction, and (d) their student’s golfing success. Second, they were all selected as one of the Top 100 instructors by Golf Magazine in 2000 or 2001 (February 2001; February, 2000). Finally, instructors were chosen who were within an accessible driving distance of the University of Georgia campus during the time of data collection.

A packet was sent to each of these instructors that included an introductory letter, a schedule of the time requirements expected for the teachers and students, and two articles published by the University of Georgia Sport Research Instruction Lab concerning expert golf instruction. Follow-up calls were made after 10 days to inquire about each instructor's possible participation in this study. Surprisingly, only one replied negatively, and most were exceptionally inviting. Scheduling of data collection sessions was begun with a priority on geographic areas with a large concentration of instructors, particularly in the Orlando and Ft. Lauderdale areas of Florida. Additionally, those within an easy commute to Athens, Georgia were also given priority. The Southeast was chosen
as the target area because it was accessible by automobile from the University of Georgia.

Of the fourteen instructors who participated in this study, thirteen were male and one female. All were Caucasian. This closely matches the demographics of the Top 100 instructors presented in the 2001 issue of Golf Magazine, who are predominantly Caucasian and over 90% male (February, 2001). The Top 100 Instructors list includes nine women, resulting in a male-to-female ratio of eleven-to-one. Two female instructors who were potential participants never returned follow-up calls, and another cancelled due to a time shortage in her schedule. It was hoped that there would be a better representation of female instructors so that comparisons could be made between the previous studies of LPGA teachers (Baker et al., 1999) and the participants in this study.

The instructors represented in this study taught at three different types of facilities. The majority of instructors taught at practice facilities within public and private golf courses and country clubs. Two instructors taught at large scale teaching facilities with access to adjacent golf courses. Only one instructor taught at a dedicated practice facility, and he has since moved to a job at a private golf course.

Student Profiles

In a previous study of expert golf instructors at the University of Georgia in which the teachers used language rich in NLL (Baker et al., 1999), the students who were given lessons had to fit certain criteria. These included: (a) they were all college-age females, (b) they had no golf experience, and (c) they had to show some physical aptitude by having sport experience in high school or college. One of the limitations of the previous study was that the controlled conditions for student selection might have affected the use
of NLL by the instructors. For this study, each instructor was allowed to choose their own student for the lessons I observed. This was done to investigate the possibility of three student factor’s influence on the use of NLL by expert golf instructors: (a) gender, (b) ability level, and (c) overall experience with golf.

Before the lesson began, I asked each student a series of questions regarding their golfing ability, golf practice schedule, and basic personal information (see Appendix E). Two students did not show up for their lessons and substitutes could not be found due to time constraints. I also failed to remember to fill out one student questionnaire, which resulted in a total of eleven completed questionnaires. The students ranged in age from twenty to seventy years old, with an average age of forty-four. Two of the students were female and nine were male, and all were Caucasian. In terms of ability level, the students ranged from a plus two (+2, very highly-skilled) to a thirty-three (33, low-skilled) handicap. The average handicap was close to ten, so as a group the students were fairly talented players. The students also represented a wide range of golf experience, from one-and-a-half to sixty-three years, with an average of over twenty-nine years playing golf.

Each student in this study had taken professional lessons in the past, either from the instructor observed or others. The average number of professional lessons taken by the students was nearly twenty-four. For five of the students this was their first lesson with the instructor I observed. For the remaining six students, the average number of lessons taken with the instructors I observed was almost eighteen apiece.

The students in this study represented both genders, a wide range of age and ability levels, and different levels of experience with their instructors. These differences
will address one of the limitations of the earlier expert golf instruction studies. In presenting the findings, these differences will be noted where appropriate.

**Frequency of Use**

A measure of the importance of a teaching tool is how often it is used during instruction. More frequent use would suggest that a certain strategy might play a larger role in improving student learning. There is evidence to show that NLL is used extensively during sport instruction, accounting for up to 60% of utterances by collegiate coaches during practice time (Griffey, Housner, & Williams, 1986). Data analysis of the present study did not find NLL to be a frequently used tool in teaching by expert golf instructors.

Fourteen lessons were videotaped, and subsequently reviewed to reveal the number of non-literal utterances by each instructor. There were some instructors who did not use NLL during their lessons. Further, the majority of those who did use NLL did so sparingly (less than five occurrences). Two frequency measures are included in this analysis. First, to answer the research question consistent with the methods of this study, a composite of NLL across all fourteen teachers will be presented. Second, to address the intent of this study, a measure of frequency among only the teachers who used NLL during the lessons I observed will be presented.

Prior to frequency analysis, intracoder and intercoder reliability measures were performed. To establish intracoder reliability, one videotape (CS) was chosen to be viewed by the researcher, then reviewed again after one week had passed. During each viewing of this videotape the researcher noted seven occurrences of NLL, resulting in an intracoder reliability of 100%. A second videotape (HJ) was selected to establish
intercoder reliability. The researcher and a second person familiar with identifying NLL each viewed this videotape at separate times and locations for occurrences of NLL. The researcher noted fourteen occurrences of NLL, and the second viewer recorded twelve occurrences. The twelve occurrences recorded by the second observer were all in agreement with the observations of the researcher, resulting in a disagreement of two occurrences. Using the formula presented by Darst, Zakrjsek, and Mancini (1989), the total number of agreements was divided by the total number of agreements plus disagreements (12/14). This resulted in an intercoder reliability of 86%. Both intracoder and intercoder reliability measures were within the criteria set in the design of this study (at least 80%).

Of the fourteen instructors, nine used NLL during videotaped observation and five did not. The total elapsed time for videotaped observations was 759 minutes. The total time for the five teachers who did not use NLL during instruction was 249 minutes, leaving 510 total minutes for teachers who uttered at least one example of NLL. The total number of instances of NLL uttered was fifty-two. Most of these were novel metaphors, meaning that they were presented only once during a lesson. During the lessons of three teachers, particular examples of NLL were revisited one or more times.

The first frequency measure that was calculated takes into account all the teachers in the study. With a total observation time of 759 minutes, and with 52 utterances of NLL, the frequency of NLL use by expert golf instructors was one for every 14.6 minutes of lesson time. A typical private golf lesson lasts approximately 45 minutes, and these instructors were no different, averaging nearly 49 minutes for the observed lessons. Therefore, as a group these expert instructors averaged approximately three utterance of
NLL during each lesson. This information must be tempered by the fact that five of the instructors did not use NLL at all. A more valid frequency measure would only take into account only the teachers who did use NLL in the observed lessons.

To get a better picture of the frequency of NLL use by expert golf instructors, a second analysis was performed. For this measure, only the total time of the teachers who used NLL was employed. During the 510 minutes of videotaped observation, the instructors who uttered NLL averaged one instance every 9.8 minutes. This means that during a typical 45-minute lesson they would utter approximately 4.5 examples of NLL.

No clear trends were apparent in terms of frequency of NLL use by these instructors when taking into account the golf experience and background of the teachers or students. Consistent with the findings of previous studies of expert golf instruction, the female instructor in this study did teach using NLL (Baker et al., 1999; Schempp & St Pierre, 2000a). Student age, gender, ability level, and experience with an instructor also seemed to have little effect on the frequency of NLL use in expert golf instruction.

Of the two male instructors who taught female students in the lessons I observed, one used NLL and one did not. In three of the lessons with students over fifty-five years of age, two instructors used NLL and one did not. NLL was used in lessons with very highly skilled players and with the lowest ability student. It must be noted here that only one student in this study would be considered low skilled, and his lesson included the use of NLL. This issue will be addressed more closely in Chapter Five. Finally, in two lessons with students having more than thirty lessons with the instructor I observed them with, one was taught with NLL, and one was not.
It is clear that not every teacher uses NLL during instruction. However, two-thirds of the instructors in this study did use some type of NLL, which suggests that while it is not necessary, it may be useful in teaching golf. Teacher and student characteristics do not seem to play any role in the frequency of use among these expert golf instructors, although the comments of a few suggested that there may be differences in NLL use depending on the experience level of the student. Since this was not a focus of the study but does seem to have some significance, student experience and NLL use will be addressed in detail in the next chapter. Although it was not used as frequently as reported in other studies of NLL in sport (Griffey et al., 1986; Schempp et al., 1999), analysis of the data beyond frequency measures revealed that NLL does serve as one method of enhancing student learning in expert golf instruction, and for a variety of reasons. The next section will examine why expert instructors find NLL useful in teaching, when they use it, and how it came to be included in their repertoire of teaching tools.

Reasons for Using NLL

Audiotapes from the instructor and student interviews, stimulated recall sessions, and the instructor metaphor construction task were transcribed as soon as possible after the last contact (one week following the lesson in the case of the phone interview group). Data from all sources were reviewed and analyzed inductively using the constant comparative method presented by Glaser and Strauss (1967). This method has a systematic procedure for analyzing data into categories and themes.

A qualitative data analysis and writing technique was chosen as the primary method of reporting the results for two reasons; the findings could be (a) presented in, and (b) supported by the actual words of the participants. This method helps to alleviate
some of the inherent bias of the researcher during data analysis, and also lessens the chance of reporting information out of the context originally intended. As the quantitative data reveal, NLL use was sparse among this group of expert golf instructors. However, even those instructors who didn't use NLL during the lessons I observed provided information that helped answer the qualitative research questions. The words of the participants in the study will be utilized whenever possible to support and corroborate the findings of the researcher.

During the process of data collection and preliminary analysis, it became apparent that the use of NLL was not a primary teaching tool, but rather is grounded within expert teaching characteristics. Expert golf instructors are like expert teachers in any field. Their instruction is based on a formidable foundation of domain-specific content knowledge, acute perceptual capabilities, automatic behaviors, and especially pedagogical content knowledge (PCK) (DeMarco & McCullick, 1997; Manross & Templeton, 1997; Tan, 1997).

It was within the framework of these characteristics that the decisions to use NLL or not were made. In essence, NLL is one teaching tool in the large pedagogical tool chests of these instructors. Some chose to use this tool and some did not, but every instructor knew that it existed and made their choice based on sound educational principles. The following sections endeavor to answer the research questions of this study. First, why do expert golf instructors use NLL? Second, when do they construct examples during a lesson? Third, what are the origins of NLL that they use, and finally, do students understand the NLL in the way that the teacher intended?
Why do expert golf instructors use NLL?

If NLL is considered an important teaching tool, then expert teachers should be able to describe the reasons for including it in their lessons. An interesting trend developed during data collection and analysis regarding this research question. Many instructors could not describe specific reasons for using NLL in general, but more important and without prompting, several instructors described why they didn't use it in their teaching.

The responses to this question revealed that the use of NLL by expert golf instructors is not a primary teaching strategy. As one teacher noted, "Well, when a teacher works with a student, it's not always necessary to use a metaphor, but that's what most of us have in our inventory." (SN) This became a consistent trend in the answers to this and the following research questions. A major theme that emerged and permeated the transcripts was that these instructors displayed all the characteristics of expert teachers as described by Bell (1997), DeMarco and McCullick (1997), and Manross and Templeton (1997). Their use of NLL while teaching is grounded within these elements of expertise. To these golf instructors the use of NLL was only one strategy out of many that was employed to encourage student understanding.

One instructor's description of how NLL fits into an expert teacher's typical lesson reflects the sentiments of most:

Sometimes what they'll do, and I think this is why metaphoric style instruction has a place in motor skill learning, good instructors will go to metaphors first to see if that would take care of it. So like you just said "the pizza tray", and then all of a sudden he's right there, you may give that pizza tray and some other guy may
go like this [wrong form]. What you do is you don’t say anything, but you know that that didn’t click with him so now you can't use a metaphor. Maybe you have to put him where you want to, and then the light bulb goes on and he says "oh yeah, I know what you mean by that". So sometimes when you're doing things you might try, as an instructor, to go the metaphoric route first because it's a little more simplistic. And maybe he winds up doing it without having to actually have a mechanical feel. (CE)

This theme can also be seen through the instructional behaviors of the teachers on the videotapes. When one teaching method didn't work, they seamlessly moved to a different strategy based on the student's reactions. To do this, the instructors must possess a large amount of content knowledge and teaching experience. This is consistent with the findings of Manross and Templeton (1997), who suggested that extensive knowledge and teaching experience "allows expert teachers to develop a variety of teaching strategies… to facilitate learning by altering lessons when situations merit a different strategy" (p.34).

Just as content knowledge is important in teaching, so is the ability to transmit that knowledge effectively to the student. Shulman (1986) described this as pedagogical content knowledge (PCK); in essence, this is how teachers translate their understanding of a subject matter into practice. Expert golf instructors acquire or develop several pedagogical tools as part of PCK including physical manipulation, demonstration, discursive language, and technology. The use of NLL seems to be another one of these tools in the toolbox of an expert golf instructor's PCK. A tool that some teachers use often, others use on occasion, and some never use at all.
Teaching has often been called an art, and just as every painter prefers certain brushes, colors and textures, expert teachers prefer different teaching strategies depending on their own personal style and the individual needs of each student. This may help explain the disparity in NLL use between the instructors included in this study.

Support for this notion is provided by the response of one of the instructors:

it's not always necessary to use a metaphor, but that's what most of us have in our inventory… So depending on what the teacher likes, they pick up what supports their system, what they like to see their student do. Some will change from one student to another. (SN)

Two pioneers in the study of metaphor in language believe that everything we say and think is ultimately metaphorical in nature (Lakoff and Johnson, 1980). Support for this thinking, and for the significance of this study, was provided by one teacher's response to the question on why he used metaphor.

Everything we do in sport we play to images. In other words, if I shoot a basketball, at the subconscious level I've got to picture the height of the ball and the distance. If you and I sit here and play catch like this, what is it inside of us that let's us throw that ball at the same height, the same distance? In reality aren't we performing into an image? …So once we get them [students] set up then we work a lot on the images. I believe that you've got to play to images. (KE)

During the interview process, the general question was asked, "why do you use NLL during instruction?" Several of the instructors seemed to have no valid reason for using NLL during lessons. However, when later asked why they had chosen to use specific metaphors or analogies, the instructors were able to describe the reason for using
them with a particular student. In the case of one teacher who did not use NLL during the lesson that was observed, this question elicited the response "did I use any?" (FB) This may not seem important except that during the interviews with himself and his student, it became evident that he did use NLL on occasion.

Another instructor's answer to the same question provided some insight into the previous statement, and also afforded a hint as to why these teachers often don't realize they used NLL in general. "I'm not particularly aware of it. Most of the time it's just a response or an instinct. I've done it so long. There's so much to teaching, so much conversation of golf is comparative descriptions." (HK) One distinguishing characteristics of experts in any field is that they become automatic in many of their behaviors, and especially those that are practiced often (Bloom, 1986). The previous two responses are excellent examples of this phenomenon.

Expert teachers develop automaticity of behavior (Bell, 1997; Manross & Templeton, 1997). From lesson pacing to goal setting, lesson openings to verbal instruction and feedback patterns, expert teachers often display behaviors that they are unaware of at the time. In terms of NLL use, another example of the concept of automaticity can be found in the following exchange between one instructor and myself.

Interviewer: Are you aware that you use metaphorical…

DT: "I just do what I do."

I: Why do you use metaphors in instruction?

DT: "It just seems to be the thing to do. The thing to me is that I try to communicate… What I know is not important, it's what I get the player to understand, it's what I get them to try to do."
To this instructor, NLL was just another way to communicate his ideas to the student. A second instructor responding to the question "are you aware that you use NLL?" furnished another example of this process.

You know, I'm sure I do. I don't know that I do. You try to paint whatever example you can for the student so they've got an understanding of what you're trying to get them to do. My biggest concern is that I don't think people have a clear-cut image of what they're trying to do. (NX)

The use of NLL in general by the instructors in this study seems to be an automatic, reflexive teaching behavior in response to a student's individual needs. Many teachers were unaware that they even used NLL during the lessons I observed. However, when reminded of particular NLL that they uttered, they were easily able to recall it and describe why they used it.

The exact role of metaphor in language and teaching has been surmised in literature but never studied empirically. Andrew Ortony (1975), one of the seminal writers in the metaphor field, proposed three theses concerning the role of metaphor in language. The compactness thesis contends that metaphor is a quick, concise way to convey common characteristics from the familiar to the unfamiliar. The inexpressibility thesis maintains that metaphor can help explain ideas that literal terms cannot describe. The vividness thesis suggests that the mental processing of vivid images prescribed by metaphors promote memorable learning. Schempp and St Pierre (2000a) provided anecdotal support for each of these theses in a study of expert LPGA golf instructors, and further suggested that metaphors were used in teaching to provide personal relevance for the students. Direct support for these theses is now added through the voices of expert
golf instructors. The instructors in this study reported using NLL for five distinct reasons: (a) to provide students with a mental "picture", (b) to express the inexpressible, (c) to develop a connection to golf through personal relevance, (d) to make language more efficient, and (e) to enhance learning.

To provide the student with a mental "picture". Literature suggests that one of the roles of NLL in teaching is to provide students with a vivid mental image (Griffey, Housner, & Williams, 1986; Ortony, 1975; Schempp & St Pierre, 2000a). However, this notion has been based on theory, indirect evidence, or anecdotal data. This study provides the first evidence that teachers intentionally use NLL to provide students with mental images.

When asked why a particular metaphor was used during a lesson, one instructor replied: "to create a word picture. And then take them [students] into the experience by the word picture when you can't take them physically into that." (QN) One example provided by this instructor involved getting a student into the correct posture at address. Rather than describing the relationship of body parts to each other and where body weight should be balanced, this teacher first asks the student if they have ever seen a Sumo wrestling match. If the response is affirmative the student is asked to imitate the starting position of the Sumo wrestler. This gives the student a vivid image to relate to the proper posture while addressing the ball.

A second instructor used the same description as the first in answering the question regarding why he used metaphors. "Metaphor is not a term that I would associate and I probably do. I am aware of trying to create word pictures. I am aware of trying to draw on past experiences the person has had." (IK) One example from his lesson
that illustrates this concept was a common metaphor related to baseball that several instructors used in this study. The student was told to aim toward second base and swing toward first base. The instructor knew that this student had played baseball and would be able to construct this image in his mind.

A third example is presented through the "rocking chair" metaphor that begins this dissertation. "What I try to do is use what I call word pictures; like the rocking chair. I want to get the student to relax." (CN) By presenting the "rocking chair" image to his student, this instructor hoped to change the performance to a relaxed and rhythmical behavior. A review of the videotaped lesson showed that each time the student went back to his old habits when pitching the ball, the instructor reminded him of the rocking chair. A qualitative change in student performance was observed as a result of this metaphor each time, presumably due to the mental picture of rocking in a chair that came to his mind.

There is some evidence presented in motor learning theory which suggests that mental imagery can improve performance in two ways: through neuromuscular activity and cognitive activity (Magill, 2001). Bakker, Boschker, and Chung (1996) presented evidence that imagery stimulated muscular activity, even though performers were only imagining rather than performing a skill. This suggests that the images presented by NLL may prepare the neuromuscular system before the actual motor behavior occurs. Magill (2001) proposed that the use of imagery appears to be an effective instructional strategy for learning motor skills, and NLL is an excellent medium to present mental pictures.

These examples illustrate how teachers use metaphors to provide students with mental images. However, they also reflect the level of understanding that the instructors
have of their students. If the first student had never seen a Sumo wrestling match, and the second had never played baseball, the odds of them constructing the proper mental image would be remote. In either case the metaphors would have made little sense to the students. A vivid example of this was evident in the response of a different instructor who didn't use the baseball metaphor above because he knew the background of his student: "Carol doesn't play baseball, so to use the metaphor "swing out to first base", she wouldn't understand." (FB)

In addition to providing a word picture for his student, the instructor who presented the rocking chair had a second reason for presenting this metaphor: "The rocking chair is a word picture, but it also let's them know what it feels like." (CN) "Feel" was a common notion that permeated the transcripts in this study, and was intimately related to the next theme.

To express the inexpressible. There are some things that words cannot describe well, if at all. It has been suggested that one function of NLL is to provide images and present ideas that words can't explain (Griffey, Housner, & Williams, 1986; Ortony, 1975; Schempp & St Pierre, 2000a). The concept of feel in golf provides an example of this. How do you tell a student exactly what something is supposed to feel like when each person is different in this respect?

An instructor in this study who did not use NLL during the lesson I observed expressed that there were times when he deemed them appropriate. His statement also revealed that NLL could function as an avenue for feel.

A good metaphor to me articulates in a verbal form, but also somehow gives the person an image and a feel all at the same time. It's like great wording, great
visual, and a great feel for "I know exactly what you're talking about". [I try to make it] kinesthetic and visual. If I use a metaphor then I'm trying to hit all those at one time. Whereas if I don't feel like a metaphor is going to get all three I try to avoid it. (FB)

The most common example used in golf concerns grip pressure during the swing. One instructor outlined the problem.

Say if you've got someone who's a really bad Type 'A' personality, he might be really tight and tense and what you think should be a two [on a scale of one to five] is actually a five in his mind. And then you have some people, like ladies, if they're not very strong physically, and they're sort of 'B' personalities. You have to be careful not to tell them to hold it like a bird because we're already holding it too soft. If they hold it like a bird they'll lose the club. So it depends... you have to be careful what you tell to whom. I tend to use bird and [toothpaste] tube less because… each student is different. (CE)

Two common metaphors in golf instruction that are used to help students get the idea of correct grip pressure are "holding a baby bird" and "holding an open tube of toothpaste". The baby bird metaphor was introduced a number of times during interviews and generally is supported with the following words: "hold it tight enough so that it can't escape, but gentle enough that you don’t hurt it." Another example that was mentioned a number of times in respect to grip pressure was grasping the club handle like it was a tube of toothpaste with the cap removed. Teachers told the students to hold the club with light enough pressure that no toothpaste would be squeezed from the tube.
Although some teachers had reservations about using the "holding the baby bird" and the "open tube of toothpaste" metaphors relating to grip pressure, many of the instructors used NLL to try and give their students a concept related to feel. In most cases this was done because there weren't words to adequately or easily describe the proper feeling. One instructor illuminated this behavior during an interview. Although it was not a golf metaphor, the concept behind using NLL instead of discursive language during teaching was explained. "Let’s say if you are trying to teach someone how to drive a stick shift car, there is no way to get them to learn that by just telling them." (QN) When words aren't able to describe an important idea, these expert instructors often turned to NLL to provide students with an understanding that enhanced performance.

**Personal relevance.** Experts in any field are life-long learners (Tan, 1997). They try to find out everything they can about their area of excellence. For expert teachers students are part of this area of excellence, and teachers find out all they can about them. This information allows teachers to tailor each lesson to the individual. Schempp and St Pierre (2000a) postulated on the roles of metaphor from a study of expert golf instructors and reported that they seem to be effective partly due to their personal relevance to the students. Not only did teachers use NLL that compared golf concepts to common themes, they also tailored them to the experiences of individual students.

This phenomenon was also evident in the present study. One instructor noted that the sports background of students is one factor in his decision to introduce NLL.

I think you have to use them [metaphor] to give them some of that imagery because they can relate to this. I try and find out with people I don't know what
kind of other sports they play. [One example would be] the similar motion between a golf swing and tennis is a cross-court forehand with top-spin. (HK)

The personal information about students is generally developed through brief introductory "fact finding" conversations, and also through continued dialogue during the course of each lesson. One instructor echoed the thoughts of many in this regard, stating that he acquires this information by "…asking about their favorite subject in school. Asking about their hobbies. That is not a very formal way of doing it but it's just to get an early insight." (IK) Supplied with personal information about their students, the teachers are able to decide what is pertinent and may help the student understand better. The teachers understand that the comparisons made through NLL are much more salient when matched to the student's background.

An example of the importance of personal relevance was also provided in the response of one student, who related a story about a previous lesson from a different instructor. Just as the baseball metaphor might have confused her, a metaphor from the previous lesson certainly did due to her limited knowledge of professional golfers. "You know, I went to golf school long before I met NQ… [They] used a lot more imagery. [They said] to me, "Finish like Mrs. Freddy Couples. Have that finish", and I thought "what the hell does that mean?" (student of NQ) Without knowledge of Freddy Couples, a professional on the PGA tour at that time, this student couldn't possibly emulate the smooth, rhythmical follow-through that this simile suggested.

By providing NLL that is personally relevant, expert golf instructors make learning more meaningful. One instructor noted that personally relevant comparisons made through NLL provided a faster avenue to learning.
Well, I always try to draw on past experience, especially if there are muscle patterns involved. Motor patterns involved I guess would be a more accurate term. If they are there it is easier to modify something that someone is familiar with doing. It was obvious that Tim was an athlete and had probably done some throwing, if not pitching. So, to relate that [golf swing] to a past experience, especially to a motor pattern that he has developed is just a way to accelerate the process. (IK)

After gaining knowledge of their students through initial conversations and continued dialog, expert golf instructors use NLL to motivate students and encourage learning by presenting language and images that are relevant to each individual. This finding corroborates those of a study conducted by Laugier and Cadopi (1996), who reported that people remember movements that are high in meaningfulness. When combined with Magill’s (2001) assertion that “one of the most commonly used strategies to provide meaningfulness of a movement involves the use of imagery” (p. 159), the effectiveness of NLL as a teaching strategy becomes clearer.

To make language more efficient. Theoretical and anecdotal reports suggest that NLL can make language more efficient (Griffey, Housner, & Williams, 1986; Ortony, 1975; Schempp & St Pierre, 2000a). Rather than presenting a long and complicated literal statement, teachers often use NLL to make language more succinct. As one teacher in this study pointed out, "Remember, if it takes less than 2 seconds to swing his club, how much can we talk about it?" (DT) In a previous study of LPGA expert instructors, metaphors were introduced with an explanation the first time, then brought back later in the lesson as short snippets (Schempp & St Pierre, 2000a). One student having trouble
with hand position at the end of the back swing was asked if she had ever had a pizza delivered to her. When she replied yes, the teacher asked "how did the person carry the pizza on the tray?" and the student immediately placed her right hand into the proper position. From then on in the lesson the teacher only had to say pizza tray to elicit an appropriate response.

Authentic evidence of this phenomenon is provided by this study. One student was having trouble hitting consistent pitch shots during a lesson. His instructor noticed quickly and decided to present NLL to his student in this way: "Feel like a rocking chair. Arms going up and down at the same pace." (CN) The student immediately began hitting consistent pitch shots. A review of the videotape of this lesson showed that the instructor revisited this metaphor several times, but only had to say rocking chair to evoke the proper response.

A second example of a metaphor that was presented several times during the course of a lesson concerned a student who kept going back to a previous bad habit. Instead of keeping his right knee slightly flexed during the back swing, the student would straighten it into a rigid position. The instructor stopped this the first time by asking the student to throw a few golf balls down the range while paying attention to his right leg. Then he said "If this knee being flexed in pitching [throwing] is more powerful, it'll also be more powerful in the golf swing… keep that flex… sit into your right knee." (IK) This metaphor was revisited five more times during the lesson when the student reverted back to the straight leg, but each time the instructor only had to say "sit into it" or "sit into your right knee" to elicit the proper performance.
In each of these two cases the instructors saved time during their lessons. After the preliminary description of the NLL with clarifying details, they only had to say a few words in the form of metaphors to let the students know what to do in correcting a performance flaw.

To enhance student understanding. Providing students with a vivid mental image and kinesthetic feel are both part of a larger picture in teaching golf. One function of a teacher in any field is to encourage student understanding. For the teachers in this study, NLL was one of the ways they simplified concepts and enhanced student understanding. The following exchange provides an example.

Interviewer: Charlie does use a lot of metaphors.

Student: And it helps. It makes me understand, in layman's terms.

I: Did it make it easier for you to learn some of the technical…

S: Yes... like the caboose outrunning the engine. It seems to be a lot easier to remember that than trying to say "you shifted your body too far forward too soon."

This student reported that remembering certain concepts from the lesson was easier when his teacher used NLL. This supports two advantages in using metaphor as a teaching tool presented by Williams (1983). One advantage was that they made ideas more memorable. Williams suggested that metaphors are more engaging than literal language because they clarify concepts and stimulate further mental exploration. In this student's case the NLL chosen by the teacher put a technical concept into more understandable language.
A second advantage of using NLL presented by Williams (1983) was that metaphors become more meaningful because the concepts can be presented in terms of the students’ own experiences. Several responses from teachers noted that a particular student's experiences or background affected the NLL used in a lesson. One instructor explained:

Metaphor is not a term that I would associate and I probably do. I am aware of trying to create word pictures. I am aware of trying to draw on past experiences the person has had but it is more instinctive than a conscious application to that methodology. (IK)

This same instructor elaborated with his following comment describing the type of student he might use NLL with:

I don't know that it would relate to different skill levels. It probably relates to any kind of early signs that I pick up related to how a person might learn best. Metaphors seem to work best with visual people. So if I get the impression that a person has a bent for visual learning I might be more inclined to use metaphor. (IK)

The use of NLL by expert golf instructors can enhance student understanding. The key to this seems to be in making the concepts more memorable. As one instructor stated "And they seem to remember the rhymes. Rather than going through a whole bunch of technical garbage." (DT) The responses of this instructor's student to my interview question about understanding NLL are presented on the previous page, and suggest that NLL is easier to remember than technical jargon. Additional evidence of this phenomenon came from two telephone interviews conducted with different students. The
first question I asked after identifying myself was "what is your most vivid memory from the lesson?"

Both students that I contacted by phone took little time in recalling an instance of NLL as their most vivid memory. "My most vivid memory was when Hank mentioned the pitcher. This got me thinking about bending my right knee as if I was throwing a ball. By bending my right leg I was able to get more power." (student of IK) This particular instructor spent well over an hour on the lesson tee with his student and the most memorable event in the eyes of the student was a metaphor.

A phone call to a second student resulted in the same situation. After commenting that "it was really cold outside", he explained his most vivid memory.

As far as the lesson, the thing I remember most was working on my rhythm for my short shots. I tend to rush and Bobby told me to feel like I was in a rocking chair, you know, going back and forth at the same slow pace. (student of CN)

In the two cases where students didn't have the possibility of being "tainted" by another lesson before I was able to contact them for the interview, both found an instance of NLL to be the most memorable part of the lesson I observed. One factor that may have made these the most memorable events in both lessons was the fact that each metaphor was revisited a number of times during their respective lessons. In both cases the NLL presented by the teachers augmented student performance, and the memorability of the metaphors suggests that learning was also enhanced. These findings are in agreement with those of Reyna (1996), who suggested that metaphors are more memorable than literal language.
In addition to enhanced learning through memorability, the effects of NLL on learning could also be observed through student behaviors. A review of the videotapes supported my personal observations during the lessons in regard to NLL positively affecting student performance. In the majority of instances that students understood the NLL in the way that the instructor intended, there were immediate improvements in skill performance. Magill (2001) defines learning in regard to motor skills as “a change in the capability of a person to perform a skill” (p. 169). From the rocking chair to sewing to not breaking the “eggs” in a sock, when instructors presented NLL, students changed their behaviors in a way that improved their golf performance. In terms of both memorability and improved skill performance, NLL enhanced learning for the students of these expert golf instructors.

Although expert golf instructors have a difficult time recalling why they use NLL in general, they are acutely aware of using particular NLL with specific students. Their use of NLL in general seems to be an automatic behavior that is elicited when the teacher feels that a particular student may benefit from it. When asked to recall why they used certain NLL with their student, they were easily able to describe in detail several reasons behind the words. Each incidence of NLL was introduced to change student behaviors and enhance performance. The metaphors, similes and analogies presented by these instructors accomplished this task in several ways. NLL provided students with a vivid picture, helped present ideas that words couldn't describe, made language more efficient, and enhanced learning by making golf personally relevant and memorable.

While the use of NLL can positively enhance student performance, it can also lead to confusion on the part of the student when they can’t make the connection between
the common bonds shared by the two terms being compared. One finding of this study reinforces the impression that the use of NLL is not a characteristic of exceptional teaching; several teachers chose not to use it during their lessons. The instructors in this study were keenly aware of student needs and matched their teaching to these needs. Whether they used NLL or not during the lesson I observed, every instructor was able to identify reasons for not including verbal imagery while teaching, and the primary reason was to avoid confusing their student. The following section presents an unexpected theme that supports the notion of excellence in teaching through a thorough understanding of pedagogical principles.

Reasons for Not Using NLL

One of the more interesting trends that emerged while analyzing the responses to the question of why these instructors used NLL was a variety of reasons that teachers did not use it. Even more fascinating is the fact that these responses came not only from teachers who did not use NLL in their lesson, but also from those who did. In reading these responses it became evident that the instructors had nothing against NLL in particular, they were just aware of individual student needs, and their reasons were backed by strong understanding of pedagogical principles.

Each of the instructors in this study took about five minutes at the beginning of their lessons to conduct a short conversation with their student. This is consistent with the findings of Baker and colleagues (1999), who reported that expert golf instructors began lessons by "asking a series of questions designed to ascertain background information about the student" (p. 275). Between the lesson-opening questions, additional questions asked during the lessons, and observation of student behaviors, the expert golf instructors
in this study were able to determine the learning style and past experiences of each student.

The following response illustrates this knowledge search and the pedagogical strategies used in response as one lesson progressed.

As soon as I look at their ball and their divot and see what's happening to the ball, and listen to what they want, I then calculate in my brain and it sees what needs to happen in order for them to get what they've said they wanted and what we both want ultimately. I immediately go into that [NLL] and if the metaphor doesn't create the picture that I want then I just go to something else. Be it a verbal metaphor or a physical metaphor. Sometimes just because it doesn't work for one person…. You've got to know where you want to go. You have to know where they want to go. Then you have to know where you want to go to get there, and then you just have to throw things out there to see what works. Like with Larry, I tried a couple of different things that really didn't work. They were the same. Like the board didn't work at all… [but we were able to] get his backside higher and a little more open and more on top of it just by doing another little thing.

(QN)

This passage again reflects the quality of pedagogical content knowledge that these instructors possess, or what Schempp and colleagues (1998) characterized as the way teachers translate their subject-matter knowledge into the practices of teaching. Their behaviors are consistent with four factors that Grossman (1990) uses to define PCK. First, they keep the goals of the activity clearly in mind. Second, they understand what
students already know and can do. Third, they are highly knowledgeable about curriculum content; and finally, they vary instructional strategies to help all learners.

Armed with a vast amount of content knowledge and knowledge of their students, the instructors in this study were able to adapt their teaching style to best suit each individual. This included the use of NLL, and teachers consciously made three types of decisions through the course of the lesson in this respect:

1. Whether or not to use NLL.
2. Which NLL would be useful.
3. Which NLL would be detrimental.

The teachers in the present study seemed particularly aware that certain NLL might have deleterious effects on student learning. Instructor responses that presented reasons for not using NLL fell into three categories: (a) not using NLL in general, (b) not using particular NLL, and (c) not using particular NLL with specific students.

Not using NLL in general

Several instructors in this study chose not to use NLL during the lessons I observed. For two of these teachers this behavior was consistent with every lesson they teach; they don't ever use NLL with their students. For the others the lack of NLL was a choice they made during the lesson I videotaped. It became apparent during the interviews with this second group of instructors that there were times when they did furnish NLL to their students. One finding was consistent across all of these instructors who chose not to use NLL while I was observing; they had explicit reasons for doing so.

It became evident through the interviews of these teachers that there are sound reasons for not using NLL in general with some or all of their students. Evidence of this
phenomenon is presented through three examples from distinctly different data collection sessions: (a) from a teacher who did use NLL during his lesson, (b) from a teacher whose student cancelled at the last minute (no lesson to observe), and (c) from a teacher who did not use NLL during the lesson I observed. In each case the information was elicited through semi-structured interviews. It is important to note a common theme for all three examples: the fact that each instructor utilized rational pedagogical principles when deciding whether or not to use NLL in teaching.

When asked whether he would use NLL more with students of one skill level versus another (e.g. high versus low handicap), the first teacher commented

It would depend entirely on the individual and their non-golf background. If they are from some background, either education or other sports experience, yes. But I don't think that is necessarily relevant to the skill level. It's relevant to the rest of their background. If you have a person who is not athletic and has never played any sport, it is pretty pointless to use a sports metaphor with that person because they can't relate to it. (IK)

This notion of student experience and knowledge was a common theme in the instructors' responses. For this instructor who does used NLL at times, background information from the student is a key factor in deciding whether to use NLL.

For other teachers, understanding the personality of his students was more important in deciding when to present NLL. While discussing grip pressure with a second teacher, the following response was reported.

So sometimes you have to be a little careful with metaphors. Say if you've got someone who's a really bad type A personality, he might be really tight and tense
and what you think should be a two [on a scale of one to five] is actually a five in his mind. And then you have some people, like ladies, if they're not very strong physically, and they're sort of B personalities. You have to be careful not to tell them to hold it like a bird because we're already holding it too soft. If they hold it like a bird they'll loose the club. So it depends... you have to be careful what you tell to whom. I tend to use bird and [toothpaste] tube less because... each student is different. (CE)

Again the instructor was very aware of meeting the needs of each student, first by understanding physical abilities, then by understanding different personality styles.

The third teacher, who did not use NLL at all during the lesson I observed, again mentioned student characteristics when describing why he doesn't use NLL. Through personal experience, this instructor decided somewhere along his career path that NLL held the possibility of confusing students at times, and that was enough reason to omit them from his teaching.

I don't use those very much at all. I don't say "the golf swing is like a clock", or "imagine it being a pendulum". I don't use that very much because I think that if I use that they may interpret it differently. I did an experiment one time to kind of find out about that. I had about 15 people on the range that day and none of them were my students. I walked up to each one of them and I whispered to them the same thing. What I whispered to them was "take it straight back". I said don't swing yet... just wait. I went to each one, then I stood back and said "everybody go ahead and hit". I saw 15 different versions of... "take it straight back". They all had their own interpretation of that. (CS)
Three different teachers in three different teaching situations all came to the same conclusion. Each understood that the possibility exists that NLL may be interpreted incorrectly, leading to decreased student understanding. Each instructor had personal experience that corroborated this belief, and each grounded this belief in sound PCK; extensive knowledge of the golf swing, knowledge of their students, and a variety of teaching strategies to meet the needs of each student. Two instructors decided that the risk of confusing students was too great in all cases, and never use NLL during teaching. The rest understand that while there is the possibility of confusion when presenting NLL, there are times when it can be a useful tool for student learning.

**Not using particular NLL**

Expert golf instructors presented a number of reasons to exclude the use of NLL in general based on sound pedagogical principles, the most important being that their students may become confused by metaphorical language. A majority of the instructors in this study continue to use NLL in light of this fact. However, those instructors who view NLL as a valid tool for teaching use the same reasoning for excluding certain metaphors, similes, and analogies from their "toolbox". Teaching experience played a larger role in deciding when not to present a particular example of NLL to a student.

When asked if he would compare a similar motion such as a baseball or tennis swing of a player from those respective sports to the golf swing, an instructor who did not use NLL remarked:

Maybe. I would say that would be rare. And the reason why I don't, again, if you compare similar motions, I've found that they don't do it exactly the way I want
them to. What someone feels like they're doing and what they're really doing are usually very different. Very different. (CS)

The following exchange during an interview with a second instructor provides another vivid example.

Interviewer: You've heard the one about sitting on the stool…

QN: "I hate that one."

I: Really, how come?

QN: "Because it gets your center of gravity back and you're back on your heels. To me that's a terrible one. I think that's the worst metaphor I've ever heard… I hate to say that, but… And see, your rear end is two to three inches behind your heels here and you don't have any tension in your legs then. You feel totally different from a Sumo [wrestler], a metaphor that was used during this lesson] than you do sitting on a stool."

In a third example, a different instructor brings his own personal experience into one of the most commonly used metaphors in golf. This one relates to how much grip pressure to use while swing a golf club. It is often heard on the golf practice tee that you hold the club like you're holding a baby bird, tight enough so it can't get away, but not so tight that you crush it.

I mean, in essence, you hear the metaphor "holding the bird". There are certain metaphors that are out there. Personally I've never held a bird so I don’t know what that means. I can imagine what that might be. One of the metaphors that I'll use, speaking of grip pressure would be… Sam Snead often used the metaphor…. "your grip pressure is just like having a tube of toothpaste with the cap off, aimed
at you. Now don't get any on you. Don’t get messy." So I can understand what that would feel like, I’ve done that. OK, that makes some sense to me. (NX)

A fourth teacher brought a unique personal experience into the discussion of the baby bird metaphor. I asked him about common metaphors and this exchange took place

FB: I avoid those. Some of them are really stupid. Have you ever held a bird?
I: No.

FB: The analogy is … it's a neat visual, but how hard do you hold a bird? Well I used to have a canary as a kid, and that thing would wiggle out of your hands if you didn’t have some firmness to it. And you actually did that to where it wouldn't claw you too. So if you ever held a bird, you probably don't hold it that lightly. You don’t squeeze the tube of toothpaste, so I guess that makes sense, but some of those I never really understood.

Through personal experience this teacher decided that one of the most commonly heard phrases of NLL in golf, "holding a baby bird", was not accurate and might cause confusion in the mind of the student.

The choice of not using particular NLL seems to be based on personal experience and trial-and-error for these teachers. It is also based on sound teaching skills. These instructors avoid what hasn't worked for them in the past, and are acutely aware that students may become confused if certain examples of NLL are used.

Not using particular NLL with specific students

Reasons for not using NLL in general were based mainly in sound pedagogy. Reasons for not using particular metaphors were more a result of personal experience, either with the topic of the metaphor or previous use of certain NLL. Not using particular
NLL with *specific* students refers back to one aspect of sound PCK: an intimate knowledge of individual student needs. Expert golf instructors ask questions and carefully observe their students to gain as much knowledge about them as possible. They use this knowledge to shape the content and direction of each lesson. During the course of the first lesson with a new student, one instructor decided that using a particular common metaphor would not be appropriate.

Yeah and I didn't necessarily use this with Tim because I try to limit the amount of information and the number of things I get to in a lesson. Especially with someone with a brain like Tim's who adds six things to every one I give them. (IK)

Another instructor was teaching a student that he had provided numerous lessons to over a two-year period. He had developed a wealth of knowledge about this student and this affected his verbal interactions, including the use of NLL.

I do find myself using them on occasion. It's more the impact of "can they really visualize what I'm talking about?" Carol doesn't play baseball, so to use the metaphor "swing out to first base", she wouldn't understand. (FB)

While most teachers based their reasons for not using NLL on pedagogical principles, some teachers had other reasons for not using particular examples of NLL in their lessons. One of these was the teacher's own personality and teaching style. Responding to the question "do you use NLL in your teaching?", one teacher replied "Very, very rarely." (NQ) When asked why, he responded

You know, I think that it is very important for someone to know exactly what they are trying to do and why. That is always my big thing. I always try to explain to
everybody "why do you grip it this way", "why do you stand that way". What
difference does it make if that's back a little bit or not. So, I think I am more to
getting to the real crux of the deal and not having a lot of jingles and rhymes. That
is how my personality is. I am kind of a black and white person. There is not
much gray in the middle, so just get to the point of it. (NQ)

He then provided an example of what he meant that illustrated his point.

It's kind of like with Nancy [his student]. Like when I was explaining and when
you watched the tape of the shaft and the face being on the plane. Well, there is a
way that we did that, and the way that we did that she could go home and work on
that. When she worked on it she was on it or she wasn't. There wasn't an in-
between or a gray area so it was either good or it wasn't good and she knew that.
But she knew what she was trying to do so that's kind of the gist of what you are
saying with little sayings or whatever. I just personally don't think that they stick.
They might suffice, but I think my strength is that when somebody leaves here
and they don't know what they are working on and how to check it themselves
they just wasted their money, to be honest. (NQ)

While interviewing the student of this instructor it became evident that his teaching style
meshed well with her learning style. It also supported the notion that NLL isn't an
effective teaching tool if the student doesn't understand the common bonds between the
topic and vehicle of a metaphor.

You know, I went to golf school long before I met NQ… and it is very interesting.

It wasn't a factory, but it had a little bit of a different philosophy. [They] used a lot
more imagery. [They said] to me, "Finish like Mrs. Freddy Couples. Have that finish." And I thought "what the hell does that mean?" (student of NQ)

Whether or not they chose to use NLL, the majority of instructors in this study made the decision based on fundamental teaching practices. One teacher chose to avoid them because of his personal teaching style, but his explanation also refers back to the pedagogical principle of individual student needs and student understanding. One more interesting note about this particular teacher also provided further confirmation of previous studies of teacher expertise. Even though he claimed that his teaching style did not support the use of NLL, he commented that he would be willing to add NLL to his teaching "toolbox" if this study found that it could enhance student learning. Experts never stop learning, and never believe that they know all there is to know about their domain (Tan, 1997).

Origins of NLL

Teachers acquire knowledge in several different ways. They learn content knowledge through books; they learn strategies by watching others teach; and they learn through personal experience in the classroom (Schempp, Templeton, & Clark, 1999). This research question was designed to find out if NLL came into a teacher's repertoire via different avenues. Similar to the responses of why they used NLL in general, these instructors were typically unaware of exactly when and how NLL came to be included in their teaching. One exception was NLL that the instructors developed themselves, although even then they couldn't remember when the first instance occurred. They were often able to describe borrowing some NLL from others in golf instruction either through personal experience or reading, but could not narrow down a time frame when they
picked them up. This research question was designed to examine three main channels through which NLL could be included in their knowledge base: (a) were they self-developed? (b) were they borrowed from others in the field of golf? and (c) were they borrowed from other settings?

### Self developed

Many examples of NLL that the instructors in this study could recall were self-developed. Not one instructor was able to recall exactly when these events happened, and they often could not separate the self-developed from the ones they borrowed. A common theme in the responses to this question was provided by two responses to this question. "Some are original, I don’t know which ones." (KE) Another replied "No they just pop up." (CE)

A third instructor, who used numerous examples of NLL during his lesson, provided an illustration of NLL that had been self-developed. He had a student who was relatively new to golf and said to him "the caboose is outrunning the engine". This meant that the student's hips were ahead of his hands during the swing. I asked the instructor later if he had made up that metaphor and he replied "I guess, I've never heard it before." (DT) I then asked if any examples of NLL ever came to him during a lesson.

Some do. I'll come up with some rhymes and things during the lesson that are new. But most of them, they're not learned as such, but I'll come up with them at two o'clock in the morning. Four o'clock in the morning. I'm writing something - I love to write - and I'm writing something and "hey, that makes sense, I'll write that down." (DT)
An instructor who chose not to use NLL during the lesson I observed revealed that the examples he developed and uses on occasion are personally relevant to him. He contends that he can make a better connection to students who have similar experiences to his own.

I think the ones that I make up are the ones that I've had… Baseball, football… and experience I've had, where I can… I figure if they've done the same thing sport-wise that I have, there's probably a correlation because they'd understand what I was saying. (FB)

The previous response again revisits the notion of PCK and knowledge of students, and this seems to be a key element in developing and presenting NLL while teaching. As one instructor reported, "An awful lot of them are created spontaneously based on the student, their background, and what the specific need is." (IK)

Expert golf instructors seem to develop their own examples of NLL based on the particular needs of students. This is sometimes done during lessons, but also happens away from the lesson tee. When put on the spot to identify a time frame when NLL was developed, not one teacher even ventured a guess. This may indicate that for these teachers, it doesn't really matter where the information comes from. Remembering where NLL came from was much less important than understanding when and why it would help their students learn.

The instructors in this study were able to provide several examples of NLL that were self-developed, but a far greater number were borrowed from other sources. The words of one instructor in particular reveal how most NLL becomes included in the teaching methods of expert golf instructors.
Most of what's taught is stolen, picked up through somebody else. I've got a wonderful instructional library, about 700-800 golf instruction books that I've bought over the years. I've gone to a lot of seminars, given a lot of them. (KE)

Borrowed from other instructors in golf

A primary source of knowledge for expert teachers is other teachers (Schempp, Templeton, & Clark, 1999). Therefore it was not surprising that many of the instructors in this study recalled learning NLL from other experienced teachers in the golf world. One instructor noted, "I think they are acquired either through experience or talking with other teachers or just trying to be creative in terms of trying to help someone. I had the great fortune to teach around a lot of great teachers." (IK)

After hearing that three out of the first four teachers started their careers by going to watch the best instructors of their time, I began asking about this as part of the interview process. The exact question was "Did you go to watch other professional golf instructors at the beginning of your teaching career?" The majority of teachers responded affirmatively, and one cited a common theme. "There are certain metaphors that are out there. I don’t know that any of mine are original. I think that you pick things up through experience. Through watching other people teach or instruct." (NX) Another instructor related a story about how he picked up one example of NLL that he still uses while teaching. "Louise Suggs told me years ago: 'Charlie, put the left thumb in the right ear, and the right thumb in the left ear'… And we learn from that. Again, that's thievery versus research." (DT)

Many of the expert golf instructors in this study are professionally familiar with each other, and often come into contact at conferences and teaching seminars. One
response that reflects the importance of borrowing teaching strategies was provided by an instructor whose student didn't show up for the lesson I was supposed to observe. The extra time for the interview process allowed us to explore the phenomenon of NLL in more detail than with other teachers. Commenting on my question about borrowing NLL from other teachers, he stated

Sometime what will happen, and this is why I wish the PGA would do more of it… the University and you should do a learning seminar and invite all the top instructors from around the country. I think that you would be very surprised. When you have a seminar like that, people would have things… how do you metaphor this to a student? And how do you metaphor that to a student? Maybe if it was the grip pressure thing we were just talking about, someone would say "hold it like a bird", "hold it so you don’t squeeze the toothpaste out of the tube". What would happen is all those top instructors would come away from there with different metaphors. (CE)

Effective examples of NLL seem to be passed down through other golf instructors, both expert and less experienced. Instructors often put these through a trial-and-error process and keep the ones they feel can help their students. Consistent with findings of other research which reported that expert teachers cited other teachers as a primary source of knowledge (Schempp, Templeton & Clark, 1999), the instructors in this study learned the majority of NLL from other teachers in their field.

Borrowed from other instructional settings

There were no responses by the instructors in this study that suggested the NLL was derived from any arena other than personal development or others in the golf
industry. This is not surprising considering the fact that golf is a unique activity with its own skills and language. The instructors did use NLL that compared the golf swing to other sport activities such as the baseball swing and shooting a free throw in basketball. However, they did not, or possibly they did not remember, borrowing NLL from instructional settings of other sports or activities.

Expert coaches and sport instructors amass vast amounts of content knowledge through years of study and practice (DeMarco Jr. & McCullick, 1997; Manross & Templeton, 1997; Schempp, Templeton & Clark, 1998; Tan, 1997). It is also reported that expertise is domain specific (Tan, 1997). It would seem to make sense that in the course of becoming expert golf instructors, the teachers in this study focused solely on golf. Experts find out all they can about their field (Tan, 1997), amassing large libraries of books, and in the case of golf instructors, videos also. Almost invariably these teacher volunteered that they began their careers by observing the great golf instructors of their time. Many remarked that they still observe great teachers every chance they get. Most of them also attend and present sessions at golf seminars and conferences, where even informal conversation turns to golf instruction. The responses to this question were consistent with the findings of Schempp, Templeton, and Clark (1999), who reported that the most influential sources of knowledge for expert golf instructors were their own teaching experience and other teachers.

When in the lesson was the metaphor constructed?

Expert teachers find out all they can about their students (Baker et al., 1999). In the case of expert golf instructors, they conduct a brief data collection conversation with every student prior to each lesson, and then use this information to enhance student
learning during the lesson. It is possible that teachers have examples of NLL already in mind as they begin a lesson, based on the brief conversation prior to instruction. The data from this study suggest that the instructors do indeed have a variety of NLL available. However, the use of NLL seems predominantly dependent on the individual needs of the students and events of the lesson. There were no clear trends that emerged in regard to this research question.

Student Understanding of NLL

Pugh (1992) described a three-step process for developing metaphors for teaching. First, the teacher needs a thorough understanding of the concept. Second, several alternative metaphors need to be explored to examine the consistencies and ambiguities between the metaphor and concept. The final step is presenting the best metaphor in a given situation.

One defining point concerning NLL is that to be effective, the listener must understand the concept in the way that the speaker intends. If the student does not understand the NLL presented by the teacher, they could become more confused or may react to the wrong bond between ideas, thereby inhibiting learning. This question was designed to examine the extent to which students understood the ideas that the instructors presented. During the stimulated recall procedure I asked the instructors to remember what they intended the student to learn for up to five instances of NLL in each lesson. Although some instructors were only asked to recall two or three occasions, in the majority of cases the students understood the NLL exactly as the teacher intended. There were only two cases among the NLL that I asked teachers to recall that were not understood in the way that they were intended.
Made the right connection

In all but two instances that teachers were asked to recall, their students made the right connections between the common bonds of the topic and vehicle of the NLL. The high ratio of understanding can be attributed to at least two primary factors: (a) the teachers gained knowledge about their student's background and learning styles, and (b) the NLL used was based on that student knowledge and presented in a way to best reach the learner. The following exchange between one teacher and student provides an example of the process.

While discussing how the lesson was progressing through three distinct stages of practice (mechanics, feel, and game-like shot-making) the teacher asked his student if he had ever driven a stick shift car. (HK) He went on to explain how you learn to drive a car with a manual transmission: "Car in neutral, handbrake on, turn on the engine, depress the clutch with your left foot, now put it in gear". When I asked the instructor later what he intended the student to gain from asking about driving a stick shift car, he said "learn it, remember it, forget it". I asked his student the same question and got this reply

He was trying to make a point that I was getting, in the learning process you're talking about 'do this, do that, do that.' He was making a point of just going ahead and letting some of that natural ability take over and just flow. (student of HK)

The common bond between driving a stick shift car and proper golf practice is that you start with mechanics, then move to feel, and finally you become automatic, performing the skill without much thought. A direct question to the student stimulated the use of NLL in this instance.
At another point in the same lesson, a student behavior was the stimulus for another metaphor. After watching the student warm up with some iron shots the instructor handed him a driver and said "I'm going to throw you in the deep end." Here was his reasoning

Well I think there's a tendency… what I do when I'm teaching is I have them hit all clubs. He wasn't feeling very confident, and he was kind of making little excuses for what he was doing. He wasn't very far away he needed to be. Most of the time that's the case with decent players. That was my way of saying "you have to get up there with the stick that everyone is interested in, really." (HK)

The "stick that everyone is interested in" is the one that hits the ball the farthest - the driver. The instructor understood that a lack of confidence would clearly show when using the most difficult club to control - the driver. From his answer to my question of what he thought the teacher meant, it was clear that the student made the proper connection: "He just wanted to take a look at some longer shots. The driver, for most people tend to think that that's the toughest club in the bag to hit." (student of HK)

The instructor in the two previous examples gained information from his student in three ways. He asked the student direct questions, he perceived through student behavior, and finally he observed the student's physical actions, as seen in the following exchange. While discussing the proper hand and finger position on the golf club, the instructor noticed improper position of the student's thumbs and said "kind of like you're sewing." When asked later what he meant by this, he replied
I was talking about the position of his thumb. Because you don’t want the tip of the thumb down on the shaft - it wants to be up off the shaft so the contact point is the pad. What I was showing him was the shape of the thumb. (HK)

When I asked the student what he thought the instructor meant, his answer was very close to the instructor’s: "It was the grip. I had this thumb pressing pretty much like this on the grip [tip on the shaft] instead of holding it like you're sewing. So that tells me that this thumb needs to be more like this [tip off the shaft], not pressed down like that… just like you would hold a needle." I also asked the student if this image had changed his behavior during the rest of the lesson and he laughingly answered "Yeah, I'm not a big sewer, but I got the point."

The responses presented above represent answers provided immediately following lessons. The memorability of NLL is again evident in the responses of the two students who participated in the interview process one week after their actual lessons. Each was easily able to describe their thought process concerning NLL that their instructor had presented a week earlier. One instructor chose to use a metaphor borrowed from a famous golfer from another era, again based on a physical observation of his student hitting short pitch shots.

His biggest problem is rhythm. His transitions are very rough and very fast with the lower body causing it. The rocking chair is rhythm. Here's the thing on the short game. As you get closer to the hole you get tighter. Those little dink shots… you get them in a tournament and they get so stiff. If you listen to Byron Nelson, if you hit your pitch shot he'll say rocking chair. (CN)
I asked this instructor what image he was trying to convey to the student and he replied "Rhythm. It's gotta flow." The student picked this up immediately, evident by a change in the motion of his swing. It was clear from my view on the practice tee that the student became more rhythmic and his performance was more consistent.

A review of the videotape of this lesson showed that the instructor revisited this metaphor several times, and whenever he mentioned "rocking chair" again, the movement and performance of the student changed qualitatively. When I asked the student what idea he thought the instructor was trying to get across by saying rocking chair, his response mirrored that of the teacher. "He wanted me to be more rhythmic with my swing. My upper and lower body move at different paces and the rhythm gets them moving together." Even after a week had passed, this student clearly demonstrated how well NLL is retained in memory, which is a good measure of the meaningfulness of these figures of speech.

The second student I called one-week post-lesson provided further evidence that NLL can be a powerful learning tool through their memorability. During one part of the lesson the instructor was focusing on hand position on the club as part of a set-up routine. After getting the left hand position set, he mentioned to the student "with your right hand just like you are shaking hands." I asked what the instructor wanted the student to get from that and he replied

Because he had adjusted his left hand in a clockwise direction to his right made it stronger with the thumb more behind the shaft. The natural tendency would be for the right hand to follow it underneath the club, which would be incorrect. So what I was trying to get him to do was just put his hand over on the side of the club just
in the same position it would be in if you reached to shake someone's hand. Just another word picture, if you will. (IK)

When I asked the student one-week later what he thought the teacher intended him to understand, the student replied

What I took from that, and this is also very important from that lesson, is the pre-shot routine. Hank gave me a routine to get set up with little effort. It is important to get your left and right hands on the club correctly, and shaking hands let me naturally place them in the correct position without thinking too much. (student of IK)

Another fun example from the same lesson had little to do with golf, but again showed the wonderful understanding of their students these expert instructors develop. Keeping in mind that this was the first time the instructor had worked with this student, the following responses seem amazing. Toward the end of the lesson, the instructor said "That would be like driving down the street trying to miss the cars that are parked on the side. Just see where you want to go and don’t let anything distract you." The student's response to the intention of this statement?

Hank picked up really early that I was a thinker… I tend to over-think. Hank was trying to tell me "don’t think so much". Instead of trying not to hit the cars on the side of the road, just drive - you don’t have to think about not hitting them. The same with my swing. Instead of trying not to slice, just let the swing happen. (student of IK)

In all but two cases that I revisited with both students and teachers during the stimulated recall procedure, students made the right connections between the common
bonds of the NLL and the golf concept it applied to. Students understood the NLL in the way it was intended by the instructors in most instances. This can be primarily attributed to the instructors’ knowledge developed through years of experience. They develop an uncanny understanding of their students, even during first lessons. They also have a remarkable foundation of knowledge regarding what works and does not work, especially with different types of students depending on their needs. This is not to say that these instructors are infallible when it comes to finding the right NLL for each situation, but they seldom present NLL that their students won’t understand.

**Did not make the correct connection**

Although most instances of NLL use by these instructors were understood as intended by the instructors, there were at least two occasions when students did not make the right connections between the common bonds of the topic and vehicle. In each case the students were lower ability players with less than three years of golfing experience.

One instructor who uses rhymes, physical props, and imagery throughout his lessons told his student “this is the same cadence as a waltz.” (DT) When I asked him about it during the stimulated recall procedure he described the reasoning behind this simile.

It is. It's one-two-three, one-two-three. The back-swing has three cadence counts, one-two-three. One to get back to the ball. The reason is that from the completion of the back-swing to impact is about one-fifth of a second. So from the completion of the back-swing, talking about swinging the club at 90 m.p.h., from the completion of the back-swing back to the ball is about one-fifth of a second. (DT)
Rhythm is important in performing a golf swing correctly, and this instructor was complimenting his “one-two-three” counts with hand clapping to the same rhythm. The “one-two-three” seemed to be the most important feature that he was trying to present to the student. Unfortunately the student did not quite get that message. “The tempo of the swing. Not jerking it down and twisting around, just swing easy. That's what came to mind.” The student had made a connection that almost matched the instructor’s intent (rhythm of the swing), but missed the primary bond that the teacher was trying to convey.

When the instructor saw that the student did not grasp the correct concept, he immediately began a rhythm building drill using an old sock and a metronome. The change in the student’s rhythm and understanding was easy to see during this drill, as evidenced by the following exchange.

I: You were getting the sock drill very well. When he brought the metronome out with the clicking sound you were right with it after a few swings. Were you thinking about the rhythm of waltz at all? The three count.

D: Never. Now I'll remember it.

In the previous example of non-connection between teacher intent and student understanding, the student came close to making the proper connection. In the second example of a student not understanding NLL, there was no connection made at all. The following exchange took place during the stimulated recall session with the student immediately following the lesson.

I: I think [NX] said something about "don't get run over by the bus." Did that make sense to you what he meant? You were looking at the swing plane…he drew a blue line. Do you know what he meant by not getting run over by the bus?
During the exchange between the teacher and student in this instance, both were viewing the student’s swing using instructional software and computer enhancement. The instructor was describing how this student’s club shaft was below (under, or "run over") the optimal position noted by a blue line superimposed on the screen (the bus) during the back-swing. The instructor, saying “don’t get run over by the bus”, was trying to tell the student to change the motion of his back-swing so that the shaft would be above the blue line during subsequent attempts.

In at least two cases out of fifty-two instance of NLL, the students did not make the correct connections based on their instructor’s intent. Since both students had relatively little experience with golf in terms of time and playing ability, this may have affected their understanding of the concepts. Even if this is not the case, the ratio of NLL understood by students to that of NLL not understood shows that expert golf instructors choose appropriate NLL for their students a majority of the time. Any instructional tool that increases student understanding in the majority of cases belongs in the toolbox of every teacher.

Metaphor Construction

A novel task was designed for this study that was intended to yield some insight into when NLL is constructed during a lesson, and also the origins of NLL used during instruction. Each instructor was given a set of cards, each with a sentence related to the golf swing (Appendix C). The sentences included a blank space where the instructors were asked to provide as many examples of NLL as they could for that situation, or to produce new ones that they could derive within 30 seconds. The sentences were based on
several of the metaphors that were evident on videotapes from a previous study of expert
golf instructors (Schempp & St Pierre, 2000a). An additional intent of this task was to
potentially reveal a broad repertoire of NLL common to golf instruction, and also to
provide some insight into the construction of NLL when none exists in a teacher’s
memory.

This protocol was ill designed from the planning to the implementation stage, but
the reasons for this wouldn't be known until a majority of the data were collected and
trends began to appear. Again, the design of the metaphor construction task was based on
the assumption that NLL was a commonly used teaching strategy. Once it became clear
that the use of NLL was primarily based on the instructor's knowledge of the individual
learner and the student's individual needs, the results from this task could be better
understood.

As reported in a previous section, the golf instructors in this study based the
presentation of NLL on the needs of individual students. During this protocol one
instructor provided the best evidence of why it wouldn't work well. When asked if he
could complete one sentence with an example of NLL, he replied "I don't have one right
on the top of my brain because I never think about it." (IK) When taken out of the context
of teaching, the instructors seemed to have a hard time retrieving NLL related to the
situations that were presented in this protocol. One exception was the statement
concerning the handhold, or grip pressure. The most likely reason for this exception was
that two of the most commonly used metaphors in golf, and in this study, pertain to grip
pressure. One trend that emerged from the responses to the metaphor construction task
was that instructors presented literal language regarding each situation even though they were asked to provide examples of NLL.

One instructor that used numerous examples of NLL during the lesson I observed presented the following statement when asked to complete the sentence "The full golf swing is...". "Any movement you can make that has rhythm and balance, can be repeated, hit the shot desired, with minimum compensation. That's the good golf swing." (DT) Another instructor replying to the same card stated that "the golf swing is a balanced motion. On the back-swing, I am assuming this is a right-handed player, on the back-swing the left arm feels a little extended." (IK) Each of these teachers used NLL in their lessons, and each was instructed to provide examples of NLL for this task. The previous two statements either show that these teachers did not understand the concept of NLL, or they support the notion that the use NLL is an example of the automaticity of behavior that is a characteristic of expert teachers. It is possible that the instructors only retrieve this information during the act of teaching, and in a predominantly subconscious manner in reaction to student needs.

One other factor that may have played a part in the responses to this task is the experience level of the students in this study. The protocol was designed from the results of a study that used students with no golf experience (Baker et al., 1999). Every student in the present study, with one exception, had several years of golf experience. The issue of student experience and NLL will be addressed in more detail in the next chapter.

Although there were a few examples of NLL given by these instructors for the four situations described on the metaphor construction cards, there were no clear trends or common metaphors provided except in the case of "correct hand-hold pressure".
Many of the instructors in this study gave similar examples of NLL relating to the concept of grip pressure. The two most common examples were presented earlier in this chapter: (a) the baby bird, and (b) the open tube of toothpaste. A variation of the toothpaste example was holding a stick of butter without squeezing it through your fingers. There are two reasons that may explain the wealth of NLL used for grip pressure in this study, and the relative dearth of commonality concerning other topics.

First, throughout the data collection process the most commonly compared topic was grip pressure. Whether comparing it on a scale of one-to-five or to a baby bird, this was easily the most prevalent example of NLL use among these instructors. It is quite possible that examples of NLL for grip pressure are the most common in golf instruction, because the grip is one of the foundations of the swing and comparisons have been around for over 50 years. (e.g. Sam Snead and the baby bird). Second, since grip pressure was the most prevalent topic of comparison expressed in this study, it is also possible that the instructors who had just used it as an example in their lessons or during the interview process were easily able to recall it during the metaphor construction task.

It was hoped that this protocol would elicit a number of examples of NLL common to golf instruction. In the case of grip pressure this did occur, but for the other situations presented in the protocol it did not. One possible outcome of finding common metaphors was that they could be shared with non-expert golf instructors who could add them to their foundation of content knowledge, thereby adding an additional teaching resource for reaching more learners. It was also hoped that the protocol might encourage the creation of new NLL that may have benefited all instructors. A comment presented earlier by one of the instructors supports this notion. While describing where he
accumulated some of the NLL in his repertoire, he commented that a future seminar among golf instructors would be a great place to share ideas. "What would happen is all those top instructors would come away from there with different metaphors." (CE)

Although the metaphor construction task did not elicit the types of responses that were hoped for, the information gathered through other methods in this study does provide the opportunity for golf instructors of all levels to benefit. The use of NLL by expert golf instructors can enhance student learning and performance for a number of reasons. There are also a variety of common metaphors that exist which have been proven through time and experience to provide students with a better understanding of golf concepts and ideas. Further, expert golf instructors have the ability and knowledge to create novel NLL when they deem it necessary, although they are generally unaware of exactly how and when they do it. What they do realize and can rationalize is why they create new examples of NLL; so their students have a better chance of success. For teachers who have an adequate understanding of their student's needs and learning style, NLL may be an excellent avenue to promote learning in a memorable and personally relevant way. For some teachers and students NLL may not be appropriate at all, but for many it can be an excellent tool for enhancing performance and understanding.

Summary

The expert golf instructors in this study used non-literal language with enough frequency to merit the title of "useful teaching strategy". Almost two-thirds (nine out of fourteen) of the instructors presented NLL to their students. Among all fourteen instructors, lessons averaged approximately three examples of NLL per lesson. When taking into account only the instructors who presented NLL to their students, the average
number of NLL per lesson jumped to four-and-a half. In a typical forty-five minute lesson, this would equate to at least one example of NLL uttered every ten minutes.

The major theme that emerged during data collection and analysis was that the use of NLL was not a primary teaching strategy. Rather, it was one pedagogical tool out of many that each of these teachers possesses. The decision to use NLL or not during a lesson, and also choosing the most appropriate ones to use were based on several characteristics of expert teachers that these instructors exhibited. The fact that they presented NLL during the lesson without really being able to describe why shows automaticity of behavior. The fact that they used particular examples with specific students revealed several aspects of well-developed pedagogical content knowledge, especially an intimate understanding of students' needs.

Non-literal language was presented to students for several different reasons. First, to give students a mental "picture". Second, to express ideas and concepts such as "feel" that could not be expressed in literal terms. Third, to give their students a sense of personal relevance to the activity. Fourth, to make language more economical, and finally, to enhance learning. Three of these reasons are consistent with research in the motor learning field. Athletes who find activities more relevant perform better, and imagery is an excellent way to make activities more meaningful, thereby enhancing learning.

Through knowledge and experience, these instructors also understood that presenting certain examples of NLL might be detrimental to learning. Another interesting trend that revealed the depth of knowledge that these instructors derive regarding their students emerged in the reasons they gave for not presenting NLL. This was an
unexpected and unprompted finding that again were grounded in elements of teaching expertise. Even for instructors that were seeing their student for the first time, it became evident that they learned as much as they could about them through pre-lesson conversations, careful observation, and continued dialog during the lesson. This information was the primary factor in deciding if and when NLL would be effective.

The effectiveness of NLL was clearly evident by the high ratio of examples that were understood as intended versus those that were not. In only two cases that were reviewed during the stimulated recall procedure did students not make the proper connection between the common elements of the topic and vehicle of the NLL. The high ratio of student understanding was most likely due to two primary factors related to expert teachers: (a) a thorough understanding of their domain (golf) and their students, and (b) a well-developed knowledge regarding the best way to meet each student's individual needs.
CHAPTER 5
IMPLICATIONS FOR FUTURE RESEARCH

The findings of this study reveal that not every expert golf instructor uses NLL as a teaching strategy. In fact, even among the teachers who did use NLL in this study, the frequency was low. This result was quite different from anecdotal evidence presented in an earlier study of teaching expertise conducted with expert LPGA golf instructors (Baker et al., 1999), the majority of whom used NLL, and with much higher frequency. Two major factors may account for this difference in NLL use between the LPGA instructors of the earlier study and the instructors in this study. First, several conditions were controlled by the researchers in the LPGA study to decrease the risk of student and teacher variability affecting the results. The controlled factors for students were age, gender, and golfing ability. Two teaching criteria that were controlled were lesson content and the number of physical teaching aides that they could use during the lesson. The second factor that may account for differences between the NLL use in the two studies was that the LPGA instructors were teaching at a place unfamiliar to them, and without the equipment available to them at their home teaching facilities.

In the LPGA study, student selection was controlled for gender, age, and golfing ability. Every student was female, college-age, and had no golf experience. The content of the lesson was also controlled, with each teacher asked to teach the full golf swing. This was contrary to how some of the instructors would progress with an absolute beginner during an initial golf lesson. A third condition was that the instructors could
bring only one teaching aid to use during the lesson. Few teachers chose to use any equipment other than the student, golf clubs and balls.

The controlled variables may have contributed to the LPGA instructors teaching differently than they would in their normal setting with their own students. Several trends emerged from observation and questioning of the instructors in this study that may have resulted in the dearth of NLL during instruction. Three themes emerged from the observations and interviews: (a) the use of video and other technology as a teaching aide, (b) the use of physical props and toys, and (c) the skill level of the students.

Is Technology Replacing Verbal Imagery?

While collecting data for this study it became readily apparent that most of the instructors use some form of technology while teaching golf. At least two instructor's lessons were dominated by the use of technology, and several others used it to a high degree. In most cases the technology was represented by at least a digital video camera. Several teachers complimented this with specialized golf-instruction software that allowed them to compare the video of their current student with earlier video of the same student, or in comparison to a professional player's swing. At the extreme end of the technology scale were the use of high-speed video capture from multiple angles, and force plates in the floor to measure weight distribution during the swing. Specialized software programs also featured composite computer overlays that could be drawn over a student video to show the exact difference between their swing and a “model” swing.

The use of video during instruction in sports has existed for several decades (Schempp & St Pierre, 2000b). National Football League teams routinely review films to improve their own team's play and to obtain information about upcoming opponents.
With their relatively low cost, ease of use, and range of special functions, digital video cameras have become commonplace in golf instruction. Schempp and St Pierre (2000b) reported that the use of videotape by trained teachers can enhance student performance, but it seems to be less effective with beginners than for more advanced players. The reason that video feedback is less useful for beginners is that they lack the knowledge to recognize critical components of their swing. Melville (1993) contends that beginners need help assessing the fundamentals of their swing and identifying areas that need correction.

As it became apparent that this phenomenon was consistent among the first five lessons I observed, and may have affected the verbal "imagery" of NLL, I started asking the instructors about their use of technology in teaching golf. One question kept coming to mind as I watched and listened; is it possible that the true images provided by these cameras and technology are replacing the verbal imagery of NLL? Two studies of expert sport instructors indicated that one reason teachers might use NLL is to provide students with a vivid mental image (Griffey, Housner, and Williams, 1986; Schempp and St Pierre, 2000a). The responses of several instructors to the question of video use in teaching provide some insight which suggests that technology may indeed be replacing the verbal imagery of NLL.

Usually I use the video. Video is included in every lesson… for imagery. And I might even get up and I swing one time, and I'll show them their swing - then show them my swing and I'll say "what did you see different there?" And they'll pick out something and I'll be able to back it up and try to show them the cause of the problem. But even with the beginner I'll have them hit a golf ball without me
saying a word. And they may ask me, say 'Brad, I don't know how to hold it'. And I'll say "hold it any way you want to". What I'm looking for there is what kind of basic motion do they have. What do I have to work with here - are they an athlete, do they make some motion that looks like an athletic move or are they not very athletic at all? So give me something to go off of, I needed a little background, a little history. (CS)

Two important features of video for this teacher are the ability collect additional information about the student, and the availability of a comparative or ideal image for the student to imitate. This reduces the need for using verbal imagery.

Much of the golf swing takes place out of the view of the golfer. During a critical time in the swing, the hands and club are behind the golfer, requiring the player to use kinesthetic "feel" to gauge body and club position. Until players develop consistent feel with the help of an instructor, they often end up in the wrong position at the end of the back-swing. This occurs even when students 'feel' that they are in the right place. One teacher used a combination of video and physical manipulation for added emphasis in terms of feel:

I use the video a lot so they can see what I'm trying to do. I show them the good and the bad. I say "this is where you've been" and I move them there. "This is where I want you". A lot of time I'll use "this is yours, this is ours" "this is yours, this is ours". I use 'our' because I want them to feel like a partnership. (CS)

There is no question that seeing the actual movement of your own swing will be more accurate than trying to get to the same position through verbal imagery. Even if a teacher were able to use NLL to accomplish the same performance, the real images of video
feedback would probably be a more efficient method in regard to time. This is especially true when taking into account student perceptions that rarely match their actual performance:

Because what they [students] think they do and what they really do are usually not the same. It's the same for all of us. The closer you can get your imagery to be exactly what you're doing, you're going to play better. In our school [there is] no question. (NX)

When faced with the same dilemma on the lesson tee, the teachers in the LPGA study had no access to video equipment, possibly requiring the use of NLL to give their students the image that video may have provided (Baker et al., 1999). One example from the LPGA study provides a vivid example. A student was not achieving the correct hand position at the top of her back-swing, when her hands were out of her own field of vision. The instructor asked her "have you ever had a pizza delivered? How did they carry the pizza tray?" The student immediately placed her hand into the proper position. Would the student have understood better if she had seen it on video? Would the teacher have used video if it were available? Those are questions that cannot be answered. The fact that video was so prominent in the lessons that I observed for this study prompts a call for additional research in this area.

Another teacher with advanced technology chose to use the real imagery of video and mechanical feedback (from force plates in the floor) over verbal imagery, believing that technology is the most efficient way to teach. However, he also suggests that there is a place for NLL also:
Over time, when we get your body in your right position, then we might have to do some adjustment in the imagery or the feel that creates those positions, and that would be where we tend to use metaphors. But because I have equipment, and because I am a biomechanist technician rather than a "watch me do it and do it like me" type teacher, that's why my system is different. (SN)

This is not to say that video is an integral part of being an expert golf instructor, but rather that expert teachers find as many ways to provide information to students as possible. This is further evidence that expert teachers have well-developed PCK, as Griffin, Dodds, and Rovegno (1996) reported in a study of physical education teachers.

Another example that video is viewed by these instructors as a teaching aide rather than a primary teaching tool was presented by one teacher who did not use video during the lesson I observed. Although he did not use any technology during the lesson, he commented during our interview that he generally does use video in his lessons. His response is a wonderful illustration of the awareness that these teachers possess in terms of student needs:

I've been teaching her husband. He just started coming in late in the fall. I've had him on [video] quite a few times. She's [student] been coming two years… I didn't put her on film yet. I don't see a need in it. But him, he had five million thoughts going on when I got him with a good grip and set up and started talking about a few things. He was so skewed on what was really supposed to happen that I wanted him to see what was going on, and it really made a difference. (NQ)
For this instructor, the decision to use video was entirely dependent on his students and their needs. A similar sentiment was echoed by another teacher who did use video during the lesson I observed.

In Tim's case it surfaced up pretty quick, the flare. But once you take them back and look at it [on the monitor] and they go "I can't believe I haven't gotten there yet". I say "let's try it again". As they get a little more receptive to what you're saying… without that tool [video] that's being used like that, there is no way I could get 100% of my students to do what I want them to do. (HK)

The earlier study of LPGA expert golf instructors Baker and colleagues (1999) used a contrived situation to control for teaching content, but more importantly it limited the teachers in terms of location and equipment. Teachers in that study participated at The University of Georgia golf practice facility, a location where they had never taught, negating the use of any special technology that they may have used had they been at their regular teaching facility. It is quite possible that several of these teachers do use technology in normal teaching situations, but when put into a situation that took it away, they had to find a different way to provide students with mental images. The use of NLL was one way that they may have chosen to do this. I had the opportunity to visit one of the LPGA professional teachers while collecting data for this study, and when I arrived she was reviewing video with her student! While one teacher is not a valid number to make conclusions in this respect, it does merit future examination.

The most telling example of the effects of technology on NLL use was evident in the response of one teacher to two questions in the following exchange during the interview process:
I: Before video, did you give your students an image in another way?

HK: Most of the time… this is another thing that the PGA in Britain had us doing. They insisted, in fact, that if we were going to become decent teachers, we first of all had to be decent players, and that we had to be able to imitate their movements so that we could do explanation, demonstration and application. And hit shots. That is a skill that has not been taught to instructors. So there are a lot of metaphors used, a lot of examples… imagery.

I: Before you had the video available to you did you give the students any verbal imagery, or liken it to anything?

HK: I'm sure I did. A lot.

This teacher has been using video for over twenty years and still uses metaphor while teaching. Again, this is a characteristic of expert teachers, who find as many ways to enhance student learning as they can.

Video and more advanced technology in golf instruction can provide an additional teaching resource to furnish students with vivid mental images. There is some evidence that the real imagery provided by video cameras is replacing the verbal imagery of NLL. However, teachers aspiring to become more proficient should note that technology alone may not make a better teacher, it has to be backed up with sound teaching fundamentals. The following two remarks illustrate this point. An instructor who did not use any technology during the lesson I observed, but who does use video on occasion, reported that "video usually screws people up. It's a wonderful tool that can completely, absolutely ruin people." (FB). This teacher understands that individual students have individual needs, and for some the use of video provides too much information to think about.
The second response should make teachers more wary of using video just for its own sake. "Here's another thing. People don’t know how to use their video equipment very well. They don’t know how to use it as a tool." (HK) This sentiment is consistent with the findings of a study on the effectiveness of video analysis by Eckrich, Widule, Schrader, and Maver (1994). They concluded that teachers who were trained to use video were much more effective than untrained teachers. The instructor in this study added that when he first got his new video equipment he experienced many of the problems he sees among new golf instructors using this technology while teaching:

of course I got out there… I'd read how to film and draw lines and do all this stuff. And they use this teaching video. How most people teach is to show them before and after, and hopefully the change in between. I don’t do that, because when I did that I'd have to show them before and explain… and then after they'd look exactly the same. I was in a panic because I'd just spent 4500 dollars on this piece of equipment that I know how to operate, but don’t know how to use. I called Sony in a panic and said “how do you use it?” They said "we don’t know. It's a tool for you. You're the expert, you're supposed to know how to use it.” (HK)

Video can be an effective tool in a teacher's arsenal, but its use must be backed up by a fundamental knowledge of teaching. It has the ability to provide students with a real image of what is happening during their golf swing, and may be reducing the need for teachers to provide this imagery through verbal interactions, including NLL. Future research in this area might try comparing teachers who use video and those who don’t to see if there is any difference in their use of NLL. It may also be valuable to revisit the
original teachers from the LPGA studies to find out if and how they were using technology at the time of that study.

Are Props and Toys "Physical Metaphors"?

While visiting and observing the expert golf instructors for this study, I noticed several implements that the instructors called "props" and "toys" that were used during lessons with students. From a piece of pipe-insulating foam that presented students with a concept of proper grip pressure, to golf club shafts with tennis racquet heads and baseball bat grips, these implements were quite effective. With these toys, expert golf instructors created golf imagery through physical accessories rather than verbal discourse. The subject of "non-verbal" metaphor was discussed during the analysis of the videotapes from the original study of LPGA professional instructors, but was disregarded because a metaphor by nature requires language (Schempp & St Pierre, 2000a).

A quick glance through several major golf magazines will reveal several examples of imagery through physical props. The cover of the February, 1999 issue of Golf Magazine shows a Top 100 teacher with a table-tennis paddle attached to his right arm to "fine tune" clubface alignment. Two other tips from different Top 100 instructors in the same issue show a test tube attached to a club shaft for chipping, and a basketball drill for driving accuracy. From major media to the lesson tee, physical props are illustrated and used by expert golf instructors to enhance learning, and seem especially effective in providing vivid images and conveying "feel".

The nature of these physical props and accessories used during the lessons in this study again stimulated discussion about the use of physical equipment to create mental imagery. If words can be used to create images, can toys and props do the same? The
answer seems to be yes. The parallels between using metaphors to create vivid mental images, and using physical props to accomplish the same goal are uncanny. In each case teachers use words or items completely unrelated to golf to teach students how to perform better. As one teacher explained:

Whatever examples I might come up with - toys that we use… the broom, the tennis racquet, Bubba's Belt, the posture necklace… the "board of education". Anything that we can come up with to make them reach the impact condition, that's what it's all about. (DT)

When I mentioned a common metaphor for grip pressure to one instructor (CS) he rushed off to his back room, returned with a piece of foam pipe insulation and handed it to me. I took it into my hand with very little pressure because it was quite light. The instructor then told me that the pressure I was using to hold the foam insulation was the same pressure I should use when holding a golf club. This vivid image is now imprinted in my memory.

The student of a different teacher was having trouble understanding the concept of accelerating through the ball at impact, then following through along the target line. The instructor (QN) brought out a weighted ball and had the student toss the ball against a wall using the same posture and motion as a golf swing. To reach the wall with the weighted ball, the student was forced to accelerate through the point of impact and follow through along the target line.

A comparison to ideas and concepts familiar to the students exists in both cases. To get a better picture of this, the following example is presented. One teacher in the LPGA study used the metaphor "sweep the dirt from a crack" to give her student an
image of the golf club accelerating through the ball. If another teacher handed a real broom to a student and said "show me how you would sweep the dirt from a crack", would the student get the same mental image? The following statement may shed some light on this:

Your brain can't make your body make a movement that your body is unfamiliar with. So you have to put a person in a situation for them to make their correct movements, for their nervous system to recognize what is going on and to start to build or refine a motor pattern to cause that movement. (IK)

It appears that as long as a student has experience with the idea or object compared to the golf concept, NLL or a physical prop could provide an avenue for student understanding.

One teacher in this study used verbal imagery in combination with a physical prop (DT). His student wasn't making a full shoulder turn on the back-swing or through-swing, so this instructor pulled out an old sock with three golf balls inside and handed it to the student saying "these are boiled eggs in the sock". The student grasped the sock on the open end with a grip similar to that of holding a golf club. The rest of the sock with the golf balls in it hung straight down like a golf club shaft in the address position. The instructor asked the student to swing the sock continuously through a full arc, landing the balls softly into the small of his back at the completion of each turn. I asked both the student and instructor about this metaphor to check for student understanding. The instructor replied this way:

Yup, I don’t want him to break the eggs. The first time we used the sock we talked about "don’t bruise the apple". We used to use apples. Apples spoil after a while so I began to use golf balls. And I don’t want them to ever hurt their back,
so we just want to make sure the back accepts with a very light, gentle touch on the back. Not the backstop [with a loud clap of his hands]. The purpose of that drill was to make sure the shoulders are continuing to rotate as the arms swing back. When the shoulders stop rotating, arms and hands stop swinging. … if you don’t get that back to the target then those ball are going to hit your back. And it'll hurt. (DT)

The student understood the physical prop and the metaphor. Within three swings of the sock he was gently catching the "eggs" on his back and swinging with excellent rhythm. When I asked the student what point he thought the instructor was trying to get across when he said "those are boiled eggs", he replied

if he puts eggs in them and you do it right, you can swing it and you won't hit your back and you won’t break the eggs. That's the whole idea of the exercise, the easier you swing it… you try to catch it with your shoulder so it doesn't hit hard in your back. (student of DT)

Many of the teachers in this study either used physical props during the lesson, or admitted that they have them available when necessary. One instructor commented:

My teaching tee, by the end of the day if I have a full schedule of lessons, looks like a homecoming float. There is everything imaginable up there. One of the reasons I use so much of that stuff, I use brooms and hockey sticks and all kinds of things. I want my students, at least at times, to think about what they are doing with their body and not so much the outcome hitting a ball. If you hand someone a golf club the first thing they look for is a ball to hit with it. So if I am not going to let them hit a ball, then I don't want to give them a club. I hand them a broom
and they don’t look for a ball to hit with it because that isn’t what you use a broom for. So I might have them swinging a broom, I might have them dragging a mop to feel the lag in their hands and all kinds of things like that. (IK)

Just as with the use of video, the choice to use physical toys and props seems dependent on individual student needs. The teacher that made the previous statement used only one prop during the hour-long lesson that I observed. The decision to use physical implements to create mental imagery is another example of providing the student with a variety of methods to reach the same point, improved performance. Whether they affect the use of NLL is not clear from the findings of this study.

Metaphors and similes are linguistic comparisons to encourage understanding through common bonds. The props and toys used by expert golf instructors on the lesson tee seem to encourage the same type of understanding through physical means. Both NLL and physical props are similar in nature and seem to stimulate learning by helping students to make cognitive comparisons that lead to learning.

Does the use of physical props affect the use of NLL in expert golf instruction? The answer to this question deserves further study. Future research may look into differences in student understanding between the use of physical props and NLL. It may be possible to gain some insight by asking a teacher who uses both methods to teach different students with one method or the other. It is worth noting here that the teacher who used the most props was one of the instructors who used NLL more frequently during the lesson I observed.

In a similar situation to the previous section on video and technology, the teachers in the LPGA study (Baker et al, 1999) may have changed their typical teaching
techniques due to the unique demands of the situation in that study. Although some of these instructors elected not to use them, several brought one teaching aide (prop) with them, as allowed by the protocol. It is possible that these instructors have a large complement of physical props that support their teaching and were limited by this control factor. They may have decided to use the mental imagery of NLL to accomplish the same goals.

Future research in this area may focus on physical props, examining their role in teaching, where the ideas came from, and why teachers and students find them effective for learning. It may also be possible to examine the level of understanding that each method provides, although as noted earlier, differences in student learning styles and needs may affect the amount and type deemed appropriate by each instructor.

Can the Level of Student Experience Affect NLL Use in Teaching?

In the previous chapter it was noted that the frequency of NLL use by the instructors in this study did not seem to be affected by a student's golfing experience. Two factors need to be addressed in this respect before concluding that this trend is consistent among all expert golf instructors. First, only one of the students in this study would be considered a low-ability player, which is not a reliable sample size to make sweeping conclusions. Second, the comments made by several instructors during the interview process and informal conversation lead me to believe that a student's level of golf experience may indeed have an effect on NLL use by expert golf instructors.

Like any endeavor, golf is a sport that has its own unique language. Words like "par", "leading edge", "bunker", and "swing plane" are common to experienced players who have had some professional instruction. Although it is possible to play at a high level
with no instruction, most low-handicap golfers (very good players) have become good
players with the help of professional instruction. Through this instruction and experience
during practice and play, golfers learn the terms that are unique to the sport.

Beginner and novice players have not learned many of the terms of golf, and may
require more imagery-laden instruction. Anecdotal evidence of this is presented in the
LPGA instructor studies (Baker et al., 1999), where the students had no experience with
the correct terms of golf. Additionally, the instructors in that study were also restricted by
the fact that they would, more than likely, only see their students once. Although many of
the LPGA instructors did manage to instill some of the more pertinent terms, this left
little time to explain the technical aspects of the equipment and swing motion while still
accomplishing the goal of the lesson: a successful full-swing.

In the case of the LPGA teachers, they had to find ways to make golf concepts
understandable. They seemed to accomplish this through comparisons to ideas familiar to
the students. For example, proper finger positioning on the handle of the club was
compared to "hot dogs and buns"; target line was referred to as an "aircraft runway"; and
one student was asked to look at the "run in the back of her stocking" to find the correct
finishing position following ball contact. In each of these cases teachers avoided having
to explain unique terms of golf, instead relying on images familiar to their college-age
female students.

Further evidence of this phenomenon is provided in the responses of the
instructors interviewed for this study. During the interview with one instructor, he stated
that "what I've found is that the poorer student the more descriptive I was, and the better
the student the more I was into… they know what target line is. So I got a little more
scientific with them." (KE) He went on to tell me a story about another teacher on his staff that is excellent with beginning students:

I use more description and metaphor with poorer players. I think that poorer players… we've got a guy on our staff that is absolutely sensational with beginners, I mean he's just got a knack. He's out here, real bright guy, he's got fabulous descriptions. He's just wonderful. He'll say "well, it's like going to the bank. You've got to go to the bank and borrow a little money. Pay it back and add a little interest" Is that wonderful? He's just full of those kinds of things, he's terrific with beginners. I would learn from him to do that more. (KE)

During an informal conversation between two lessons, another instructor admitted that he used NLL more often with less skilled or less experienced students, and that NLL is especially helpful when teaching group seminars (GH). A different instructor noted that not all group teaching situations are suitable for the use of NLL. However, this decision was based on individual student needs rather than their level of ability:

What's hard is when you get a mixed group, like some of our golf schools. We have some very advanced people in our group and some total beginners. Then when you're talking to somebody that says they know what you're talking about, you use a metaphor and you leave the absolute beginner blank. (SN)

For these expert instructors, knowing when and how to use NLL during golf lessons seems based more on understanding student needs. As one instructor pointed out, "I don't know that it would relate to different skill levels. It probably relates to any kind of early signs that I pick up related to how a person might learn best." (IK) This is more evidence that expert golf instructors exhibit highly developed PCK. There is also enough
evidence – anecdotal from the LPGA studies and direct from this study – that expert golf instructors use verbal imagery more with lower level students who may not be aware of the unique vernacular of golf. Until players learn these terms through education or experience, teachers often present these concepts by making comparisons to ideas that students are familiar with. NLL is one way that they present these comparisons.
REFERENCES


APPENDIX A

INFORMED CONSENT FORMS
CONSENT FORM

I agree to participate in the research entitled CHARACTERISTICS OF EXPERT SPORT INSTRUCTORS, which is being conducted by Peter St Pierre, Department of Physical Education and Sport Studies, (706) 542-4210, under the direction of Dr. Paul Schempp, Sport Instruction Research Laboratory, Department of Physical Education and Sport Studies, Ramsey Center, University of Georgia, Athens, GA 30602, Tel. (706) 542-4462. I understand that this participation is voluntary; I can withdraw my consent at any time without penalty and have the results of the participation, to the extent that it can be identified as mine, returned to me, removed from the research records, or destroyed. I understand the following points:

1) The reason for the research is to examine characteristics of expert sport instructors, particularly their presentation of information to students during instruction.

2) The benefits I may expect from it are: first, sharing of the research results; and second, gaining some insight into my own teaching of sport skills.

3) The procedures of the investigation are as follows:

   I will teach a 30-45 minute lesson at a location convenient to me, with a student of my own choice. This lesson will be video and audio-taped, and following the lesson I will answer questions about the selected segments of the videotape during a stimulated recall session. Following the stimulated recall session I will participate in an interview. After the interview I will also participate in a test of language construction. The total time for data collection will be 210 minutes (3.5 hours).

4) The discomforts or stresses that may be faced during this research are: None

5) No risks are foreseen.

6) My name and the results of this participation will be public. No portion of the data nor names of the participants will be used for commercial purposes. Audio/video tapes will be used by the researcher and permanently stored in the Sport Instruction Research Laboratory in a secured location and used for future research.

7) The investigator will answer any further questions about the research, now or during the course of the project, and can be reached at: (706) 542-4210.

PLEASE SIGN BOTH COPIES OF THIS FORM. KEEP ONE AND RETURN THE OTHER TO THE INVESTIGATOR.

__________________________________________  _______________________________________
Signature of investigator. Date  Signature of Participant. Date

Research at the University of Georgia that involves human participants is overseen by the Institutional Review Board. Questions or problems regarding your rights as a participant should be addressed to Julia D. Alexander, M.A., Institutional Review Board, Office of the Vice President for Research, university of Georgia, 605A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-6514; E-Mail.
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1) The reason for the research is to examine the characteristics of expert sport instructors, particularly their presentation of information to students during instruction.

2) The benefits I may expect from it are: sharing of the research results.

3) The procedures of the investigation are as follows:

   I will complete a Student Information Questionnaire. I will also participate in a 30-45 minute golf lesson. This lesson will be video and audio-taped. Following the lesson I will answer two interview questions, then review selected segments of the videotape cooperatively with the researcher during a stimulated recall session. The interview and stimulated recall procedures will also be audio-taped.

4) The discomforts or stresses that may be faced during this research are: None

5) No risks are foreseen.

6) The results of this participation will be public. No portion of the data nor names of the participants will be used for commercial purposes. Audio/video tapes will be used by the researcher and permanently stored in the Sport Instruction Research Laboratory in a secured location and used for future research.

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8) The reason for the research is to examine the characteristics of expert sport instructors, particularly their presentation of information to students during instruction.

9) The benefits I may expect from it are: sharing of the research results.

10) The procedures of the investigation are as follows:

   I will complete a Student Information Questionnaire. I will also participate in a 30-45 minute golf lesson. This lesson will be video and audio-taped. One week after the lesson I will participate in a phone interview with the researcher regarding selected segments of the lesson. The phone interview will also be audio-taped.

11) The discomforts or stresses that may be faced during this research are: None

12) No risks are foreseen.

13) The results of this participation will be public. No portion of the data nor names of the participants will be used for commercial purposes. Audio/video tapes will be used by the researcher and permanently stored in the Sport Instruction Research Laboratory in a secured location and used for future research.

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Instructor Interview Questions

1. Do you have any formal training in teaching?

2. Are you aware that you use metaphorical language during your teaching?

3. Why do you use metaphors during instruction?

4. Do you have any instructional intentions for using metaphors?

5. Do you remember where you got the idea to use particular metaphors?

6. Do you remember using metaphors when you first started giving golf lessons?

7. Where did you/do you learn the metaphors you use in teaching golf?
   - do you make them up yourself
   - do you hear other golf instructors use them
   - do you take them from teachers in other activities

8. How do you know which metaphors might work with certain students?

9. At what point in a lesson do you derive the metaphors?

10. What is the best metaphor you have heard or used to describe or explain a golf swing?
    *what makes it so good?
Student Interview Questions

I. Interview questions for students who participated in the stimulated recall protocol. These questions were asked prior to the stimulated recall procedure.

1. What are your most vivid memories from the lesson?

2. Do you know what a metaphor is?

II. Interview questions for students who participated in the one-week follow-up interview.

1. What are your most vivid memories from the golf lesson you had last week?

2. Do you know what a metaphor is?

3. Do you remember the instructor using the metaphor (each instance of metaphor will be described)?

4. What came to mind when you heard this metaphor?

5. What do you believe the instructor was trying to convey by using this metaphor?

6. Did the use of this metaphor result in you consciously changing your performance on subsequent attempts?
APPENDIX C

METAPHOR CONSTRUCTION PROTOCOL
Metaphor Construction

Please provide as many examples of Non-literal language as you can.

1. To describe the full golf swing. (prompt: The golf swing is…)

2. To introduce correct hand-hold pressure during the full swing. (prompt: The grip is …)

3. In relation to the correct finish position of the full swing.

4. To relate information about stance and posture.

5. Any other examples of non-literal language?
APPENDIX D

STIMULATED RECALL PROTOCOL
Instructor Stimulated Recall

I. Responses generated while the instructor and researcher cooperatively viewed selected segments of the videotape.

1. Why did you use this metaphor here?

2. What was the idea you were trying to convey with the metaphor?

3. At what point in the lesson did you get the idea to use this metaphor?

4. Was this metaphor already in your memory, or did you make it up during the lesson?

5. Can you remember where you first got the idea to use this metaphor?
**Student Stimulated Recall**

I. Responses generated while the student and researcher cooperatively viewed selected segments of the videotape.

   1. Did you realize that the teacher was using a metaphor?
   2. What came to mind when you heard this metaphor?
   3. What do you believe the instructor was trying to convey by using this metaphor?
   4. Did the use of this metaphor result in you consciously changing your performance on subsequent attempts?
APPENDIX E

STUDENT INFORMATION QUESTIONNAIRE
Student Information Questionnaire

1) What is your current ability or skill level?
   Current handicap ______.
   Or,
   Average of last 5 rounds of golf ______.

2) Age ______.

3) Gender ______.

4) Number of years of golfing experience ______.

5) How often do you practice?

6) How often do you play?

7) How many lessons have you taken from a Professional previous to this one?

8) How many lessons have you taken with this Professional